FISU CONFERENCE
25th UNIVERSIADE

PROCEEDINGS

The role of University sports in education and society – a platform for change

BELGRADE,
JULY 2nd-5th, 2009

FACULTY OF SPORT AND PHYSICAL EDUCATION
UNIVERSITY OF BELGRADE
SERBIA

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FISU Declaration
Belgrade, July 5th, 2009

The role of University sports in education and society - A platform for change

The International University Sport Federation (FISU) Conference was held from July 2nd to 5th 2009, on the occasion of the 25th Universiade in Belgrade, Serbia.

More than 130 researchers, professors, university rectors, students and university sports officials from 35 countries from the five continents underlined the unique importance and special opportunities which university sport in the widest terms can contribute to the educational process within higher education. They also insisted on the fact that sport is much more than a tool for education: it should be established as a human right and part of human responsibilities.

The main theme of "University sports, a platform for change", was chosen in the context of the new "knowledge society", but also in the context of the economical, societal and ecological crisis affecting the whole world. The Intention was to elaborate on the undoubted value of participation in sport as part of a life-long learning process.

Internationally renowned keynote speakers variously demonstrated that knowledge generates new opportunities and power for mankind, but this requires more responsibility and accountability. Making ethics and value systems endogenous to the decision systems, in all fields including sports, is an absolute necessity for the global sphere, in order to realize world stability, sustainability, understanding and peace.

I – Conference participants discussed the fact that University Sport has the power to develop social, educational, cultural and ethical responsibility in young people. They strongly advocated an increasing role for University Sport as a key driver, both in offering the student a comprehensive educational experience and in delivering well founded, young citizens for the future.

Involvement in University Sport brings in particular the following benefits:

- Character formation and consolidation of ethical values, based on the respect for others, on fair-play and on truth;
- Acknowledgement of cultural diversity and the appreciation of intercultural contact;
- Team working, advanced levels of autonomy and self regulation, with obvious benefits at both cognitive and motivational levels; social competencies and active citizenship;
- Organization and project planning;
- Development of higher levels of thought and decision making;
- Life long learning - emotional intelligence and balance of the "self", especially through the capacity to defer gratification and to manage strategic long-term objectives;
- Good mental and physical health and increased productivity;
- Improved mobility as skilled, international and inter-generational communicators.

II - The development of these valuable skills through engagement in the field of university sport should be formalized.

1/ Participants emphatically welcomed the concept that Universities should organize physical education, physical activities, sport for all and competitive high level sport, as part of both extracurricular and required programs.

2/ Participants, while assessing their support for the general principle, urge organizations with competencies in higher education, all over the world, to engage in co-coordinating their policies to reach in the short term the following objectives, which are considered to be of primary relevance:

- development of transversal multidisciplinary scientific researches and educational programs including ethics, value systems, anti-doping, fair play, physical education, healthy lifestyle and sport;
- multidisciplinary courses should be formalized through specific diplomas or a credit point system in higher education.
- readiness of universities to provide sports facilities for students and university personnel to take part in physical exercise and sport activities according to their interests and aptitudes. To make effective, innovative use of resources, government and educational authorities will need to partner each other in the maintenance and development of quality facilities, especially those located within academic communities. Furthermore, university sport support services should be established as a core function of the university welfare and administration services, guaranteeing that students' views are continually monitored;
- making universities « central databases » for study and research in ethics, value systems, anti-doping, fair play, physical education, physical activities healthy lifestyle and sport;
- making universities the center of learning and exchange of information for the community so as to lead to cultural exchange;
- creating and continuously developing networking among universities, both nationally and internationally;

3/ Participants hereby undertake to attain these objectives within the framework of their institutional capabilities and taking full respect of the diversity of cultures, languages, national education systems and of University autonomy. To that end they will pursue the possibilities of inter-universities co-operation.

4/ Participants expect universities to contribute actively to the achievements of those goals.

5/ University sports – competitive sports and sports for all – is a major value added to youth and to human society, even though it is not equally developed in diverse nations, regions and continents. Participants ask FISU to emphasize the scientific analysis of university sports and impulse a world wide strategy:

-to develop new concepts and models of sports practices based on active, creative involvement of students in sports, cultural and artistic activities.

-to insure that university sports is sufficiently considered at all political and educational levels in diverse nations, regions, continents.

6/ Participants support and urge FISU to continue to develop a strategy in support of the above, which would utilize its international links with members and partners to develop a capacity building platform for accreditation and life long learning through university sport. In particular, it is suggested that FISU should establish formal links and cooperation with:

- UNESCO, the leading world organization in the essential fields of education, culture and ethical values. FISU should be active in participating in the works of CISEPS, the UNESCO permanent intergovernmental Committee for physical Education and Sport.

- WADA, the leading world organization for antidoping education.

- CIFP, the International Committee for Fair Play.

This will make greater the University Sports and FISU contribution to the practice and endogenisation of ethics values systems that the 21st century global human society needs as a necessary condition for its stability and for peace.

Universiade Belgrade 2009 FISU Conference
Faculty of Sport and Physical Education, University of Belgrade
2nd – 5th July 2009
Congress Hall Sava Centar, Belgrade, Serbia

Schedule

Day 0	**1 July, 2009**
9.00 – 18.00	**Registration**
Day 1	**2 July, 2009**
8.00 – 9.00	**Registration**
9.00 – 9.30	**Welcome Ceremony**
9.30 – 9.45	**Welcome Address by Deputy Prime Minister for European Integration Mr. Božidar Đelić** **Welcome Address by Minister of Education Mr. Žarko Obradović** **Welcome Address by Minister of Youth and Sport Mrs. Snežana Samardžić Marković** **Welcome Address by Rector of University of Belgrade Mr. Branko Kovačević** **Welcome Address by Chairperson of FISU Conference, Dean Dušan Mitić**
9.45 – 10.00	**Opening Remarks by Chairperson, Universiade Belgrade 2009 Organizing Committee, Dean Dušan Mitić** "The role of University Sport in education and society"
10.00 – 10.10	**Address of FISU President, Mr. George E. Killian**
10.10 – 10.20	**Address of FISU First Vice President and CESU Chairperson, Mr. Claude-Louis Gallien**
10.20-10.30	**Presentation of CESU members and Organizing committee of the conference**
10.30 – 10.50	**Break**
10.50 – 11.30	**Address of Keynote Prof. Wendy Brown** "Stand up sit down keep moving: can university sport provide a foundation for healthy life?"
11.30 – 12.10	**Address of Keynote Prof. Bingshu Zhong** "University sport: A Bridge linking Physical Activity with Health, Emotion, Intelligence and Culture"
12.10 – 13.30	**Lunch**
13.30 – 15.00	**Sub-Theme Presentations**

	University sport: trends, opportunities and challenges **hall annex 1/0 a** Introduction and Panel Discussion **1. Zhao Peiyu** -The Development of PE Electronic learning System and the study of Cooperative Method **2. Dimitra Papadimitrou** - The significant of 2007 Universiade to the economy of Bangkok Estimating the sport tourist consumption **3. Jadranka Plavsic** - An illustration of Successful tournament organization as seen at the Belgrade open tennis tournament for University students **4. Tatjana K. Tomazin** - Functional training Chairperson*:* **Luc Silance** Secretary : **Zhong Bingshu**, **Dragan Mirkov**	**University sport: a foundation for Healthy life style** **hall annex 1/0 b** Introduction and Panel Discussion **1. Rene Leveux** - The effect of university sport in the assimilation to university life an Australian perspective **2. Mohamed Afzalpour** -Evaluation of postural status and general health of Birjand University students **3. Irina Juhas** - Cross in function of education of students for healthy life style **4. Ameneh Balavi** - The effect of two different intensity of aerobic training on high density lipoprotein and A1 on female collage students Chairperson: **Wendy Brown,** Secretary : **Mahdi Telebpour, Irina Juhas**	**University sport: a foundation for fair play and ethnical value** **hall 2/0** Introduction and Panel Discussion **1. Parvaneh Shafie Nia** - Goal Orientations and Participation Motives for individual and team sport activity in University Students Athletes **2. Elijah Gitongu** - Challenges facing Sport development in Kenya University **3. Milan Mihajlovic** - Case Study- Silvana Vukas, Clean and jerks silver medalist at FISU world University weightlifting championship **4. Fatos Gjata** - Sociological aspects of University sport in Albania Chairperson: **Jeno Kamuti** Secretary : **Orhan Guvenen, Dusanka Lazarević**
15.00 – 15.30	**Break**		
15.30 – 17.30	Oral Presentations **hall annex 1/0 a** **1. M. Ghanbarzadeh** - The influence anaerobic test on pulmonary function criteria in the elite basketball players of Khuzestan province **2. Dopsaj Milivoj** - Comparative analysis jumping abilities at specific and non specific trained female students **3. Saideh N.S. Booshehri** - Women's Promotion to the management level in the Physical Education organization in the country: environmental and personal constraints Chairperson: **Zhong Bingshu** Secretary : **Luc Silance, Dragan Mirkov**	Oral presentation **hall annex 1/0 b** **1. V. Draskovic** - Influence of continues and dozed exercising on students corporal status **2. Aleksandar Ivanovski -** Students camp of Healthy life stile in Serbia **3. Dragan M. Strelic** - Application of the sophisticated technologies in the training process of the representatives of the Republic Serbia in biathlon Chairperson: **Mahdi Telebpour** Secretary : **Wendy Brown, Irina Juhas**	Oral Presentation **hall 2/0** **1. Mina Xiong** - Sports culture in College and Social Adaptability on the youth **2. Habibi Honari** - The study of Organizational Culture of Sport managers **3. Eduardo Gulliame**- University sports and students Chairperson: **Orhan Guvenen,** Secretary : **Jeno Kamuti, Dusanka Lazarević**
18.30 – 20.30	**Welcome Dinner** Hosted by Universiade Belgrade 2009 Organizing Committee restaurant of Sava Centar		

Day **2**	**3 July , 2009**		
9.00 – 9.40	**Address of Keynote speaker** **Prof. Jean Francois Toussaint** "L'évolution des performances et les limites humaines"		
9.40 – 10.20	**Address of Keynote speaker** **Prof. Albrecht L. Claessens** "Body composition in athletes: concepts and methodological aspects with focus on the BOD POD® procedure"		
10.20 – 10.50	**Break**		
10:50 -11:05	**Iris Olberding- "Tandem –a support young women in sport"**		
11: 05 – 11.35	**Address of Keynote speaker** **Prof. Jeno Kamuti** "Thoughts about Fair Play"		
11.35 – 12.10	**Address of Keynote speaker** **Prof. Luc Silance** "Tendances et innovations dans le sport universitare: une nouvelle coherence"		
12.10 – 13.30	**Lunch**		
13.30 – 15.30	**University sport: a foundation for education and academic achievement** **hall annex 1/0 a** Oral Presentation **1. Feng Di** - Strengthening PE Curriculum reform promoting Sunshine Sport Movement. The PE Curriculum reform Theory and Practice of Harbin Engineering University **2. Cecilia Gevat** - Speed running in the students faculty of physical education and sport **3. Rozi Georgial** - Anthropo-morphological characteristics of students of the swimming specialization faculty of Physical Education and Sports Sciences of the Kapodistrian University with and without training or competitive experience **4. Nesic Goran** - Technical tactic structure of compete activity at Universiade 2007 in Thailand Serbian female national Volleyball team Chairmen : **Slobodan Jarić**, Secretary: **Vladislav Ivanovič Stolyarov, Goran Nešić**	**University sport: a foundation for sustainable universal development** **hall annex 1/0 b** Oral presentation **1. Jakovljević Saša** - Basketball players and wrestlers academicals status in Serbia **2. Sudarsan Biswas** - University sport in India and Present scenario of physical education and sports in all level of educational system A critical analysis **3. Lidija Moskovljevic** - Relations between motor abilities and performing of free elements in rhythmic gymnastics **4. Boban Miljojkovic** - Organization model and functional and significance of orienteering as university sport at the criminalistic and police academy in Belgrade Chairman: **Lea Azucena Cruz** Secretary : **Milivoj Dopsaj**	**University sport: open session** **hall 2/0** Oral Presentation **1. Stancuescu George** -Evolution Somatic indices, Physical and Techniques a team of football players with children aged 10-12 years **2. Abdolhamid Habibi** - Relationship the forward head and Kyphosis disorders with the psycho health among the male staffs of Saderat bank **3. T. Okicic** - Influence of some relevant anthropological manifestation on crawl swimming sprint performance **4. S. Shakerian** -The reliability of body density with method body mass index, skin fold thickens bioelectrical impedance based on relevant method in men athletes swimmers from Ahvaz city Chairman: **Albrecht Claessens** Secretary: **Sanja Mazić**
15.30 – 16.00	**Break**		
16.00 – 17.00	Oral Presentations **hall annex 1/0 a** **1. Abdossaleh Zar** - The effect of exercise with low and high intensity on Changes of respiratory burst activities and neurophilis counts in judoiest	Oral Presentations **hall annex 1/0 b** **1. Florin Paraschiv** - High performance sports and creativity	Oral Presentation **hall 2/0** **1. Nemanja Pažin** - Evaluation of consecutive maximum contractions as a test of neuromuscular function reliability and generalizability

	2. M. Nikbakht - The relation somatotype anthropometry to physical and motor abilities in girl non athletes university students **3. Elijah Gitongu** - Challenges facing Sport development in Kenya University Chairmen: **Vladislav Ivanovič Stolyarov** Secretary: **Slobodan Jarić, Goran Nešić**	**2. R. Valizadeh** - The effect of eight weeks aerobic exercises on the Mental health of men student of Chamran University of Ahwaz Chairman: **Lea Azucena Cruz** Secretary : **Milivoj Dopsaj**	**2. Olivera Knezevic** - Isometric and isokinetic muscle strength evaluation Following ACL reconstruction in elite athletes Pilot study **3. Mohamed Keshk** - The effect of whey protein supplementation without and combined with shock training on muscle strength and body composition **4. Stanimir Stojiljkovic** - Influence of individual programmed exercises and nutrition on the body composition of students population Chairman: **Albrecht Claessens** Secretary: **Sanja Mazić**
17.00 – 18.30 17.00 – 18.30	**Opening Ceremony of Poster Presentations by FISU First Vice President and CESU Chair, Mr. Claude-Louis Gallien** Secretary: Ivana Milanovic, Gordana Vekarić 1. **Xuengong Du** - Choice of folk sport and collage sports in culture 2. **Farideh Sharififar** - The effect of LP G massage as a complement of aerobic in decreasing women's limb circumferences 3. **Felipe A**. **Roriz** - Psychological correlations of exercise behavior among university Students A study at major academic transition 4. **Yong Man Kim** - A study of effect of service quality of pro soccer club and behavior after purchases 5. **Un Sook Kim** - A study of effect of service quality for sport events on service quality brand satisfaction, brand trust and brand immersion of sports brand 6. **Kim Boo-ja** -The effect of Korean traditional dance on life stress Physique and Physical Fitness in adolescent female students 7. **Lei Le** - Discussion on some issues about university Sports Scientific research work in China 8. **T. Amzsha** - The study of relationship between leadership styles and the rate of occupational stress in the physical education offices managers of Khuzestan province 9. **T. Amzsha** - The study of leadership behavioral dimensions of coach in Iran Volleyball club first league games 10. **Hadi Samadi** - An investigation into effect of lower extremity muscular fatigue on the static balance from electromyography aspect 11. **Rohollah Daei** - Comparison of medal longitude arch among various sport 12. **Hooman Minoonejad** - An Investigation into the relationship between the maximum electromyography activity ad fatigue on the erector spine muscles with thoracic and lumbar curvatures 13. **Chungmi Lee** - The current Situation of east Asian University sport education and its task in future 14. **Stevan Grujic** - Improvement test to verify the physical abilities of the Military academy students 15. **Abdolhamid Habibi**/- the relationship between the malformations of the spine with the disabilities of blindness and deafness of the male university students 16. **Simindhokht Dezfuly** - Investigation and comparison of tendency to Sport for All in academic members of university **17.** El- Mataboly Mahmoud - **Effect of mental toughness training on athletic coping skills and performance level of reversal among elite young wrestlers** 18. **Magda Ismail** - Psychological characteristics among elite athletes in hall sports (boxing- gymnastic- fencing) 19. **Nader Kalantar** - The study and influence of a leisure computer -tailored exercise activity intervention in a life excellent setting in adolescent Ahwaz people 20. **M. Ghanbarzadeh** - A Comparison between a Morning and Afternoon Exercise Session on the Amount of Dehydration of Elite Speed and Endurance Runners in the Khuzestan Province 21. **Y. Youssef** - Effect of functional strength training on bone metabolic markers, certrain physical variables and kinematic analysis of the Harai-goshi judo technique 22. **Parvin Ramezani** - The Study of the Incidence and Influential Causes of Leg Pain among Iranian Professional Female Sprint and Endurance Runners. 23. **Tahereh Azmsha** - Comparison Anthropometric Characteristics of Bakhtiari, Arab and Roman ethnic groups Females students of the Khuzestan Province Universities 24. **Itaru Enomoto** - Relationship between profiles of exercise history and performance on a fitness test: a case study of female university freshmen in Japan 25. **S Shakerian** - The reliability of body density with methods: body mass index, skin fold thickness, bioelectrical impedance based on relevant method in men athlete's gymnasts from Ahvaz city	

	26. **A Mehdipour** - Investigate and compile talent identification characteristics in men's climber's cyclists from the viewpoint of the experienced coaches of Iran 27. **Habibi Honari** - The Study of Mental Health in Allame Tabatabaei University Athletes Students 28. **K. Atanasova** - Control and physical loading in students individual exercise with fitness device 29. **K. Atanasova** - Students motivation for participation in physical exercise and sport activities 30. **Goran Prebeg** - Team Building importance and applications in the education of students as future managers 31. **Tudor Bogdan** – Particular aspects of the students spectator the handball game 32. **Elijah Gitonga** - The grand coalition Government In Kenya. A recap for Sort development in Kenyan Universities 33. **Dana Badau** - Psychological training and informational adaptation in sport
19.00 – 22.00	**Dinner, Ship tour**

Day **3**	**4 JULY , 2009**
9.00 – 9.40	**Address of Keynote speaker** **Prof. Vladislav Ivanovič Stolyarov** "University sport: The new models of play rivalry and their pedagogical value"
9.40 – 10.20	**Address of Keynote speaker** **Prof. Rob Koehler** „Doping, behavior, society, sport and sustainable education"
10.20 – 10.50	**Break**
10.50 – 11.30	**Address of Keynote speaker** **Prof. Orhan Guvenen** „World Dynamics: Universitz Sport and Ethnical Values"
11.30 – 12.10	**Address of Keynote speaker** **Prof. Lea Azucena Cruz** "El Deporte Universitario en Centro América y el Caribe: Retos Cambios y oportunidades"
12.10 – 13.30	**Lunch**
14.00 – 18.00	**Cultural Tour - Bus tour through the city**
19.00 – 20.30	**Farewell Banquet**

Day **4**	**5 JULY, 2009**		
9.00 – 9.20	**Official address**		
9.20 – 10.00	**Address of Keynote speaker** **Prof. Adrian Gagea** "About the Advanced Science in High Performance Sport "		
10.00 – 10.40	**Address of Keynote speaker** **Prof. Mahdi Telebpour** "University sport: a foundation for healthy lifestyle"		
10.40 – 11.10	**Break**		
11.10 – 12.50	**University sport: a foundation for education ad academic achievement** **hall annex 1/0 a** Oral Presentations **1. S. Hejdanineyad** - Comparative study of efficiency evaluation in PE and Sports science with other Human science **2. V. Draskovic** - significance of university sport in evaluation of student physical status **3. Lei Li-** Discussion on some issues about University Sports Scientific research work in China Chairman: **Vladislav Ivanovič Stolyarov** Secretary: **Dušan Mitić**	**University sport: a foundation for sustainable universal development** **hall annex 1/0 b** Oral Presentations **1. Mahdi Armandia** - Comparison of Physiologic, Body composition and Anthropometric Characteristic Between Elite and Beginner Table Tennis players **2. M. Nikbakht** - Comparison of anthropometric and VO2 max parameters among elite and amateur junior wrestlers **3. Jelena Jovanovic** - Preparation and Organization of the Elbrus 2008 expedition Chairman: **Rob Koehler ,** Secretary: **Stanimir Stojiljković**	**University sport: open session 2/0** **hall 2/0** Oral presentation **1. Nenad Planic** - The relationship between the peak force and rate of force development and relaxation **2. Predrag Bozic** - Evaluation of bidirectional consecutive maximum contractions as a test of neuromuscular function **3. M. Nikbakht** - Effect of acute creatine and caffeine supplement on high intensity intermittent performance in club basketball players of Khuzestan province Chairman: **Adrian Gagea**, Secretary: **Aleksandar Nedeljković**
12.50 – 14.00	**Lunch**		
14.00-14.15	**Presentation of CESU members**		
14.00 – 14.30	**Presentation of two students from FISU Forum 2008** **1. Miss Iris Olberding** **2. Mr. Cristoph Bocklin**		
14.30 – 15.30	**Conclusion of the Conference: Sub-themes by each Chairpersons** **General conclusions: by Mr. Claude-Louis Gallien FISU First Vice President and CESU Chair, Dean Dušan Mitić, Chairperson of FISU Conference.**		
15.30 – 16.30	**Certificate Presentation and Closing Ceremony by Dean Dušan Mitić, Chairperson of FISU Conference.**		
	End of Conference and Departure		

TWO SIDES OF THE FISU COIN / TWO SIDES OF UNIVERSITY SPORT

Mr. George E. KILLIAN,
FISU President

It is with a great deal of pleasure that I have the opportunity to welcome you here this morning at the Opening Ceremony of the 2009 FISU Conference. It is a honor for me to have the opportunity to speak with you here today on a subject that is near and dear to my heart, "The role of University sports in education and society".

Before beginning my remarks, I would like to take a minute to give thanks to some very important individuals who have made this Conference become a reality. First, let me introduce Dr. Branko Kovacevic, Rector of the Belgrade University. I had the pleasure and honor of taking part in the "Presidents Summit" some months ago right here in Belgrade that Dr. Kovacevic produced that resulted in an outstanding international educational event. I'd also like to recognize Mr. Dusan Mitic, Dean of the Faculty of Sport and Physical Education here at the University for the role that he and his staff played in organizing this Conference. Thank you again gentlemen.

FISU, as most of you are aware, is a federation that has made its mark in the international sporting world by organising and promoting sporting events featuring university students. Like a coin FISU does have two sides, one side devoted to sporting events, the other side to education and cultural events.

First, the side that promotes sporting events. Every two years, FISU organises both a Winter and Summer Universiade which has now grown to rival the Olympic Games in size. In addition on the years where there are no Universiades, FISU will host some thirty individual sport championships covering a multitude of individual and team sports. The sites for these championships cover the globe.

Today, here in Belgrade, we turn our full attention to the other side of the coin. Some years ago, we had only a small segment of our overall program devoted to educational endeavours.

In the years that I have been involved in university student sport life, I have always said that the graduates of our universities worldwide are and will be the great future leaders of tomorrow. If

this be true, what leadership qualities do we expect our students to gain from their participation in our FISU program? Researchers in this area have found the following leadership qualities to be positive attitude, fun, enthusiasm, teamwork, confidence, and sense of fairness, creativity, cooperation and a desire of achievement. When prioritizing these values the results indicated that fun, self-esteem, team work were the leadership qualifications most highly prized by the participants. All of the above are obtainable in our FISU programs and if our students through the efforts of their Rectors worldwide are afforded the opportunity to participate in university sport, not only in there own country, but through the entire FISU program they will be quite easy to obtain.

As you will quickly realize, the two key words of this Conference as I see it are the words, Platform and Foundation. This is really what FISU is all about. These words are matched with one of the main FISU objectives, that of giving university students the right of opportunity. We are offering an opportunity to every university student athlete to meet and compete in a spirit of understanding with the ultimate goal of having the student athletes gain a better understanding of the world in which we all live. FISU with this very solid foundation based within our sport and education program, along with our core values such as respect, tolerance, and understanding is offering this extraordinary opportunity to tomorrows political world leaders to meet in one of the worlds largest university sport programs now in existence. That is why for FISU these two terms of Platform and Foundation are so important, because they are the basis of our movement.

The common aim of all our partners in higher education is to strengthen our foundations in order to continue to build up and to provide a better and more realistic platform as we strongly believe that sport in itself is one of the key factors in achieving this aim.

Let me point out to you that higher educations historic role has been always to provide leadership for and in our society. If we are to continue to support this role and to make it flourish around the globe then it is inevitable that we all work together in a productive way to see that all of our university students, where ever they reside are given the right foundations and the largest platform to catch the opportunities that will lead us to a better world.

In closing let me on behalf of the entire FISU Family wish you great success with this Conference and may all in attendance here today in Belgrade return to your homes and country with a greater regard for the importance of your personal involvement in university sport.

Thank you,
George. E Killian
FISU President

WELLCOME MESSAGE

Claude-Louis GALLIEN
First Vice president of FISU – Chairperson of CESU

The role of University sport in education and society is the guiding concept of this academic FISU Conference linked with the 25th Universiade.

Education of young people is doubtless the main challenge that our society meets, facing a period of dehumanization when financial powers organized worldwide physical and intellectual misery leading to the actual economical and social crash.

We should be convinced that sport, along with science and culture, might play a major role in a new higher education system, not devoted to meet only the requirements of instantaneous efficiency, but to provide constructing and provoking strategies to bring ethical sustainable answers to today's stakes.

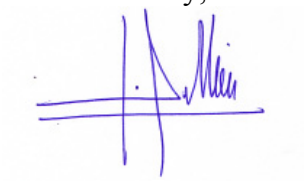
This academic Conference can be considered as significant as the Universiade itself. The universiade promotes goodwill and friendship among university students from all over the world. The Conference will offer, through keynote speakers, oral and poster presentations, a platform to exchange and coordinate traditional and innovating scientific concepts and sports activities among universities across the globe.

Holding this FISU Conference at the campus of the prestigious Belgrade university, founded in 1808, and one major university in the region with 80 000 students receiving the most innovant formation in a way that preserve the traditional aspects of Serbian culture, is an honor and a privilege. Belgrade university is an ideal place to demonstrate that sport can be an essential tool for educating young people of the world, to enable them understand each others, and to give them the way for building their own age and not just send back a reflect of the past or present eras.

I express my gratitude to the President of Belgrade University, Doctor Branko Kovačevic, to the Chairman of the organizing committee, Doctor Dušan Mitić, Dean of Faculty of Sport and Physical Education, and all the organizing committee members for their efforts in preparing for this conference. We have been working together, with great confidence and pleasure. It has not always been an easy task, but the team was good enough and overcame problems and difficulties. Finally, this conference will be one of the best ever organized, with 12 eminent key note speakers, and more than one hundred scientific presentations of the highest level.

I finally want to express my deepest thanks to Serbia and to the City of Belgrade, for allowing professors, researchers, coaches and students from all over the world to exchange and define the bases of an education using sport as an essential tool.

Sincerely,



Claude-Louis GALLIEN
1st Vice president of FISU - Chairperson of CESU

WELLCOME ADDRESS

Mr. Božidar ĐELIĆ
The Chairman of OK UB 2009,
Vice President of the Government for European integrations and
Minister of Science and Technological Development in the Government of the Republic of Serbia

Respected participants of the Conference, honored guests,

As a Minister in the Republic of Serbia, I participate in a large number of scientific and professional meetings, but it seems to me that the starting point of this conference – the excellence of body and spirit – is one of the best premises from which to start the overall progress of the society we live in.

And really, there is either a country or the society, apart from the status, wealth and tradition, which do not need young, capable people who unite their strength in an exceptional fitness of body and mind. There are no statesmen whose aim is not to encourage such a development and there should not be a system of education that separates everything that has been an inseparable value with its foundations since the ancient times.

I have a great pleasure to greet you in Serbia, in Belgrade, in the country and the city that are proud of their sports tradition and great, famous minds well-known in the whole world. As good hosts, we are doing our best to provide you the best working conditions, convinced that this conference is an extremely important segment of the Universiade Belgrade 2009. We shall do our best to implement the conclusions of this conference in our programs and to give our own contribution to the fulfillment of the mission of university sports.

I wish you a successful work and, from my heart, I would like Belgrade and Serbia to be written in your agendas as places where the union of sport and intellectual spirit is celebrated.

WELLCOME ADDRESS

Mr. Žarko OBRADOVIĆ
Minister of Education

The accelerated development and significant role of sport has involved all spheres of human life. As an activity that usually occupied free time, sport has become before all the main sociological and then also an economic attraction.

For such a progress, the field of education has a key role as special turning point of all changes occurred in the field of sport in the past thirty years. All international sports-related organizations indicate a necessity of further interconnection of these two important segments of the society.

The importance of involvement of educational process in sport has a clear significance for each individual, through educational, sociological and cultural component and especially in the sphere of incentives for opening of new working positions. Within the educational system, sports processes can play a vital role in acquiring new life values from sport, through team work, regular development of competitive spirit and learning of life rules in the society.

WELLCOME ADDRESS

Mrs. Snežana SAMARDŽIĆ MARKOVIĆ
Minister of Youth and Sport

Dear friends, dear guests,

I wish to greet you in the name of the Ministry of youth and sport of the Republic of Serbia, and in my personal name. I am very glad to have the opportunity to be part of this great event celebrating two fields in which the Ministry I represent, is involved – the youth and sport. We are happy because of the possibility to present ourselves appropriately, as good hosts and as the nation which understands sport in the right way and truly enjoys in it.

Sport itself contains values without which we cannot imagine a single successful society, because it promotes achievement of work results, competitive spirit, respect of opponents and healthy life style. The future of one society depends on relations of young generations towards these values and the Universiade is one of their greatest promoters.

Last year, at the initiative of the Ministry of youth and sport, the Government of the Republic of Serbia adopted the "Strategy of sports development in the Republic of Serbia in the period from 2009-2013". We consider this one of the major successes achieved by the Ministry of Youth and sport since its establishment, because for the first time in the history of Serbia, the plan of sport development was systematically developed and expressed in writing. The Strategy defined three priorities – sport of children and the youth, development of sports infrastructure and top sport. As you can see, all three priorities of the Strategy are united in the project „Universiade 2009.", which is a good example of what we would like to achieve in development of sport in Serbia. We intend to make sport available to everybody, through planned improvement of infrastructure and sports system of children and the youth, therefore of university sport as well and create thus conditions for achievement of top sports accomplishments. Our aim is to create through sport conditions for development of healthy, both physically and mentally, young population to represent the base for recruitment of elite athletes, but primarily enabled to participate in the right way in social life and realize its own objectives, whether or not directly related to sport.

While drafting the Strategy of sports development in the Republic of Serbia in the period from 2009-2013 we undertook a series of preparative actions, which among other things, meant also

harmonization of our strategic plans with the plans and directives of European sport as a whole. That way we achieved that Serbian sport, which is one of the fields, Serbia can boast of and in which we have always kept abreast of the world, sometimes even a step ahead of the world – become defined as one of the factors to accelerate connection of Serbia and the rest of Europe. The organization of this great event, ahead of us, is also a step towards such integrations and I am sure we shall enjoy it together.

To Belgrade and other cities involved in organization of the Universiade, I wish to present themselves as good hosts, to our guests I wish a good time and positive memories from our country, and to the athletes I wish plenty of sports luck, good results and success both on the fields and out of them.

WELLCOME ADDRESS

Prof. Branko KOVAČEVIĆ, Ph.D.
Rector of the University of Belgrade

Ladies and gentlemen, dear guests,

In the name of the University of Belgrade, allow me to greet you and wish you welcome to this gathering. As you know, the gathering coincides with the event which is second only to the Olympic Games in terms of attracting sportsmen from all over the world. Of course, this event is the 25th Summer Universiade which Belgrade proudly hosts this year.

Most of us university employees insist on the quality of education above all, although education itself is often observed as the sole process of learning. On the other hand, when we consider the needs of young people from all points of compass, as well as the needs of the whole society, this frequent tendency does not seem to be inclusive enough. More specifically, it has to be emphasized how significant the role of sports and physical activity is in one's academic and later professional life, since they enable the all-round development of an individual. Not only do sport and physical activity teach us about life, but they help us in building our own set of ethical values. They help us to develop competitive spirit as well as to show readiness for cooperation, teamwork, socializing and friendship. They make us more hospitable and tolerant to differences, and help us live in peace and harmony. No wonder then that sports is the tool of the United nations in the struggle for peace, friendship and cross-cultural understanding.

This is precisely why it is our task to bolster the cooperation between educational institutions and sport organizations, in order to integrate sport more firmly into the field of education. Thus the values of sport can be incorporated into education, making good sportsmen even better people and world citizens!

Let me thank you once again and wish you a pleasant and successful stay in Belgrade.

THE ROLE OF UNIVERSITY SPORT IN EDUCATION AND SOCIETY

Prof. Dušan Mitić, Ph.D.
Faculty of Sport and Physical Education, University of Belgrade

Dear Vice President,
Dear Ministers,
Dear Mr. Kilijan,
Dear Mr. Gallien,
Dear Colleagues,

It is my great pleasure, to welcome you in the name of my associates who have been engaged in preparation of this conference for a whole year, and to wish you fruitful work in the following few days.

All that time we were led by the idea that our role was to channel and direct energy of researchers and experts who treat wider issues of sport at Universities or more widely promotion of physical activities in students' population.

Systematic stimulation of regular physical activity through physical education instruction and experience of application of various competition models are based on spatial-technical conditions and logistic support by the Ministry of Education or a consortium of owners of certain universities.

Awareness of the importance of physical education is developed and accepted by the leading world institutions. The United Nations promoted their positive attitude about the significance of physical education and sport for the youth, by proclaiming the year 2005 the international year of sport on the entire planet. The Declaration from the closing meeting in Magglingen, in several chapters directly appeals to the Governments of all the states, to multilateral organizations within the UN system, sports organizations and directly to athletes with the distribution of concrete tasks and defining of directions of actions at each level of the activities:

- *Governments across all sectors:* promote the ideal of sport for all; develop inclusive and coherent sports policies; involve all stakeholders in their coordination and implementation; strengthen and invest in sport and physical education in schools and educational systems; and integrate sport, physical activity and play in public health and other relevant policies.
- *Multilateral organizations and the UN system:* take a lead role in policy dialogue on strategic and global levels; raise the awareness of international actors and other partners; strengthen networks and enhance coordination; and carry out and evaluate projects and programs.
- *Sports organizations:* integrate and implement sustainable development principles into their policies, programs and projects

- *Athletes:* act as role models and actively use their influence and experience to advocate for development and peace.

It illustrates how the great social power of sport can be used positively for peace and development. The aim of the conference is to take stock of experiences to date, present examples of pioneering projects and to establish an action-orientated agenda for the future. The event should contribute to ensuring that the enormous momentum in the area of sport and development continues and grows beyond 2005.

The level of social development and primarily the level of social awareness and current socio-political order define behavioral patterns and directly decide on the way and dynamics of investing in educational system and the system of development of sport and physical education. On the example of the Chinese University, represented by the Prof Liu Zhigang[1] we can see that they have accepted Campus as a model of university organization, with integrated all sports facilities, so that for greater period of a day students are within the university where they can also solve the greatest pare of their free time activities. From the photos we can notice high standards respected in both architectonic and functional sense. Based on the society determination and investments the following expectations were set out:

- Sports Fulfill University Student Needs
- Sports Promotes University Values
- Sports Breads University Revenues
- Sports Enhances School Pride

Physical activity, system of physical education and organized system of sports competitions move a series of subtle social interactions within a group so they present mighty means in the process of self-acknowledgement, on which the stability of each group is founded. Hartman 2009.[2] defines significance and possibilities of application of sport in the process of overcoming of racial and religious differences in the course social integrations:

- Social integration is a long lasting process. This process has **to be arranged as a holistic and educational orientated approach** through different stakeholders.
- Sport can only give a part-payment and assist to successful integration. **It takes more than sport and physical activities** to facilitate relevant and valuable results.

Sport is a suitable medium for better integration:

- Mutual experience through and with our bodies makes it easier to get known of each other.
- Language is less important.
- Jointly experiencing victories defeat and emotions create a feeling of community.
- Uniformed rules and norms make a better understanding.
- Sportive values of fair play, respect, international understanding create an atmosphere of familiarity.

This winter I've had a pleasure to be one of the lecturers at the first scientific conference at the Winter Universiade in Harbin within the University President Forum. I was especially impressed by the presentation of prof. Lee Tien-Rein[3], who as the President of Chinese Cultural

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[i] Liu Zhigang, President of Harbin Engineering University, Physical Education, Sports and University Education, 2009 Winter Universiade Sport Science Conference, University President Forum, Harbin, China

[ii] H.Hartman, Integration Through Sport, Remarks on criteria for success of programmes and projects, International Round Table, "Sport for All as the element of intercultural dialogue", Ljubljana, 15./16. May 2008

[iii] Dr. LEE, Tien-Rein, President, Chinese Culture University, THE ROLES OF SPORTS IN UNIVERSITY DEVELOPMENT, 2009 Winter Universiade Sport Science Conference, University President Forum, Harbin, China

University gave his perception of the role of sport in development of universities. By summing up experiences and ranges of students' involvement in the field of physical education and sport, he presented us the formula of university development (Figure 2) based on the square of intelligence, information and communication multiplied by usage of information technologies with the square of staff in the process, and all that is raised to n power which depends on sport development in that particular environment.

$$U.\ D. = (I^2 \ X \ P^2)^S$$

- "U.D." = university development
- "I^2" = intelligence multiplied by information and communication
- "X" = educational technology
- "P^2" = people multiplied by process
- "S" = sports

Figure 2. Formula of university development (Lee Tien-Rein, 2009.)

Instead of a conclusion I shall cite the last point of the Declaration form Magglingen 2005. which reminds us that without the right support from the media which should be aimed at encouragement to physical activity in the function of development of physical education on which the whole structure and development of sport can practically be established:

Media: adopt editorial strategies that ensure the coverage of social and political aspects of sport; train journalists; and raise awareness of the possibilities of sport for development and peace[1].

References

1. Dr. LEE, Tien-Rein, President, Chinese Culture University, THE ROLES OF SPORTS IN UNIVERSITY DEVELOPMENT, 2009 Winter Universiade Sport Science Conference, University President Forum, Harbin, China
2. H. Hartman, Integration Through Sport, Remarks on criteria for success of programmes and projects, International Round Table, "Sport for All as the element of intercultural dialogue", Ljubljana, 15./16. May 2008
3. Liu Zhigang, President of Harbin Engineering University, Physical Education, Sports and University Education, 2009 Winter Universiade Sport Science Conference, University President Forum, Harbin, China
4. Magglingen Call to Action 2005, 2nd Magglingen conference sport and development, 4-6 decembre 2005

[iv] Magglingen Call to Action 2005, 2nd Magglingen conference sport and development, 4-6 decembre 2005

Sub Themes 1.

University Sports:
Trends, Opportunities and Challenges

The Development of "Physical Education Electronic Learning System" and the Study of Cooperative Learning Method

Zhao Peiyu[1], Feng Di[2], Ji Liewei[3]
Physical Education Department of Harbin Engineering University, Harbin, P.R. China

Abstract

Introduction
The goal of physical education is to cultivate students' consciousness and skills of life-long participating in sports activities. With the development of study theory and cognitive theory in P.E., self and cooperative learning will be more and more applied in the situation of P.E. teaching and learning. Whereas, the "Physical Education Electronic Learning" has been developed as well as exploring the matching method - collaborative learning for the "Physical Education Electronic Learning".

Methods
Literature study, logical analysis and software engineering research methods have been used in the study of electronic learning and cooperative learning.

Results
Related Concepts
Physical Education Electronic Learning System (abbreviation PEELS): PEELS is a web-based online PE teaching and learning system. It is also a cooperative learning activity which PE teachers and students are able to cooperate each other based on this system with same learning objectives and certain stimulation. By dividing into teams or groups, students will have the ability to master the techniques, tactics and related knowledge of certain sport.
Structure and Function
PEELS consists of 3 modules (interactive module, resource modules and assisted module) and 7 sub-systems. Interactive module will be great help for users to facilitate and enrich the interactive tools. Resource module includes "network programs", "sport fashion", "download center", "photo center". Assisted modules provide the function of user management and back-stage management.
Development Technology
PEELS would be possible to achieve its dynamic page with the structure of Browser/Server (B/S), ASP technology of Access database and Windows NT Web Server with IIS.
Learning Process
Synchronizing and cooperative methods have been used to obtain a better teaching result.

Conclusion & Suggestion
Conclusion
The PEELS has been constructed because of this research. Cooperative learning set up a new PE teaching model, and creates multiple cooperative interactions between teachers and students. Moreover, cooperative learning will be able to fully exert students' initiative, subjective and cooperative. As a result, it will be huge impact on students learning abilities, attitude, passion, and experiences, and be useful for cultivating the consciousness of life-long participating in sports activities.
Suggestion
With the development of computer technology and improving of PEELS, PEELS can become an intelligent P.E. teaching system which can guide students to learn at the discretion of their personal interests which will realize individualized teaching.
Cooperative learning is student-centered self learning, but this does not mean that teachers can give them free rein to students. As the organizers and tutors of cooperative learning, teachers should not only enable students to develop the consciousness of self-learning and using the PEELS independently, but also actively help students to find suitable and effective learning methods for them in consequence of promoting students' abilities of self-learning and problem solving.

1. Introduction

Physical education teaching is a highly practical bilateral activity, and audio-visual teaching method is an effective teaching method which requires teachers to model and explain the sports techniques. Because of the excellent technical skills and complexity of sports techniques, sometimes teachers feel incompetent to explain techniques clearly. Moreover, owing to the open teaching venues, wide activity areas, diversified teaching facilities, the teaching is failed to overcome the traditional teaching method ---teachers tell and perform the gist of techniques, then students imitate, self - practice after class.

As a teaching model, collaborative learning, compared to traditional learning, can fully stimulate the students' initiative, subjectivity and collaboration, which will enable students to adapt society more quickly. With the advancement of computer science, it becomes a trend to develop online collaborative learning system and build life-long learning method. Therefore, combining the characteristics of physical education, the authors construct a PE online collaborative learning system. The system provides the demands for network educational resources and online learning; changes the modern teaching method; provides the stage of self and collaborative learning; provide more information recourse for teachers.

This study concludes that PE-learning learning system is web-based sports online collaborative learning system (Physical Education Electronic Learning, abbreviated as PE-learning). It is also a cooperative learning activity which PE teachers and students are able to cooperate with each other with same learning objectives and certain stimulation. In the PE collaborative learning, teachers create suitable teaching conditions where students gain physical and emotional changes by enjoying the collaborative learning atmosphere. This article focuses on introducing the design and development of the learning system, combining related theory of online collaborative learning and practical teaching condition.

2. Design of PE-learning system

2.1 The structure of PE learning system

Our group has initially built the PE online collaborative learning system which embodies 7 sub-systems. Its main structure refers to Figure 1. (http://sports.hrbeu.edu.cn/)

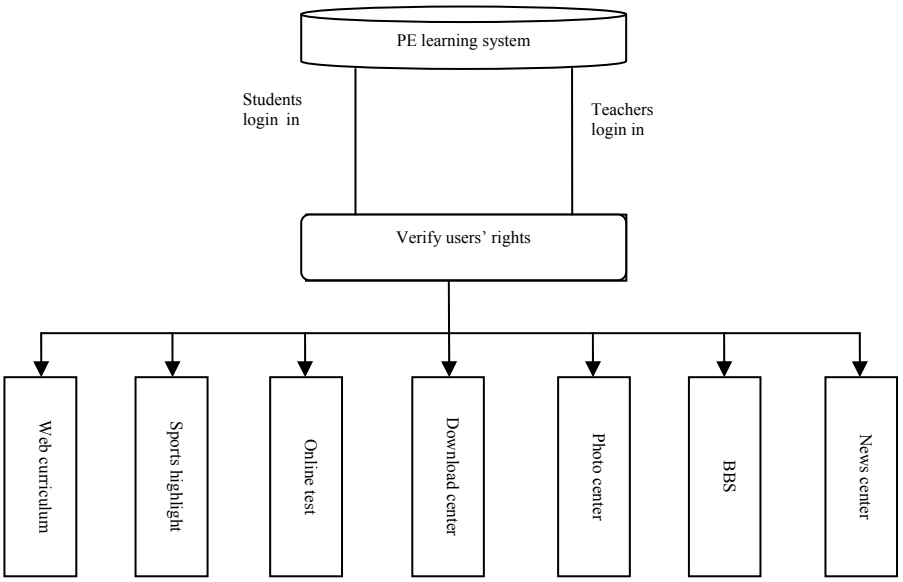

Figure 1.Framework of PE learning system based on network

2.2 Functional design of PE-learning

The PE learning system consists of three functional modules, which are interactive module, resources module and assisting module. The interactive module provides users convenient and rich interactive method. The resource module includes columns of "network programs", "sport highlights", "download center", "photo center". Interactive module and resource module are united as well as inseparable. Assisting module provides the function of user management and background management. Specified functions are explained as follows:

2.2.1 Column of network programs

Besides the function of home page, navigation of online different levels courses are developed and the navigation bar can be hided in the upper left corner of the page, which facilitates online learning much more easily. (Figure 2)

Figure 2 Home page of online course

2.2.2 Column of sport highlights

Sport highlights provide online courseware for users. Mainly base on the textbooks that published by HEU, some words, pictures, and videos can be found on the web pages. (Figure 3)

Figure 3 Homepage of sport highlights

2.2.3 Column of online test

This section contains four functions: students' practice, question library management, user management, and help. Students can choose questions to test freely after login in, and then get an answer. The question library will be updated periodically by administrators. Help is operating guidance for users.

2.2.4 Column of download center

This column provides teachers and students with download resources, including technical instructions, electronic lesson plans, picture and video files and other related software.

2.2.5 Column of photo center

The column of photo center contains sports fitness, sports highlights, and campus competition. Each section provides a large number of pictures of abundant content for viewing and downloading.

2.2.6 Column of news center

News center will promptly upload the latest curricular and sports news on the internet, providing timely information for students and teachers.

2.3 The development of PE learning systems technology

The learning system is based on B / S structure, adopting the Windows NT Server Web server, and is equipped with IIS. The learning system can provide dynamic online learning pages which are based on the ASP technology of Access database.

The dynamic website consists of foreground pages and background management. Foreground is a relatively stable module, and the entire database is installed from background management system. Background management programs allow users to remotely manage the content of foreground. The background management is the backbone of website, and its core technology lies in its capability to upload text, image data and classification management. Background management tends to adopt the framework of the structure, which is divided into menu button areas and management areas. The kernel of management process is the operation on the database including deletion, adding, editing; as long as the database is designed reasonably, management procedures in general is relatively easy to design and the framework of management can integrate all different management pages into one. The PE learning system adopts easy-dynamic website management. Please visit URL http://help.powereasy.net/Index.html for its installation method. In addition, animation techniques, audio and video production techniques are used to achieve the development of teaching resources.

3. The study of collaborative learning

3.1 Group rotation learning assisted by touch-screen computers

Group rotation learning assisted by touch-screen computers means dividing students into several collaborative learning groups according to the conditions of venues and teaching requirement. In the teaching process, the groups learn and practice through multi-media according to plan and time. Through watching courseware, multimedia collaborative learning has achieved human-computer interaction which will establish the correct concept of techniques. After establishing the right concept, students will take practice. Ultimately, they achieve automation as final destination. We hope we could achieve a perfect interaction among teachers and students.

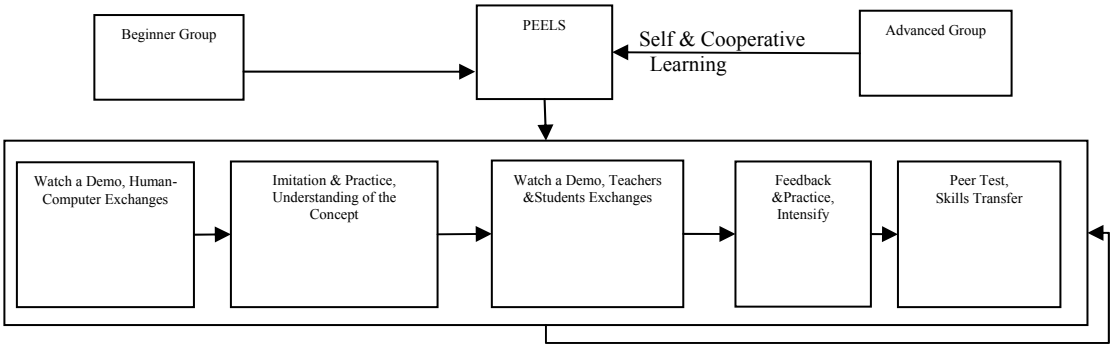

Figure 4 The strategy map of group rotation learning assisted by touch screen computer

However, how to divide groups and facilitate the development of cooperative teaching, the study comes up with the following principles to grasp:

The principle of differentia:
If the students are form into groups randomly, the students with high levels performance will become the most popular partners; and the students with low levels performance will be reluctant in participation. As a result, it will affect students' enthusiasm and their all-round personality development. So, students must be divided into groups of different levels (n = 6-8) according to their physiques, athletic ability, motivation, personality characteristics and gender differences, so that it will fully mobilize the enthusiasm of each student, and be conducive to different levels of students to learn from each other, mutual cooperation, and progress together.

The principle of collaboration with different tasks:
The purpose of cooperative learning is to fully take advantage of the share of network resources and get a maximum learning result. Taking the tactics learning into consideration, the group members couldn't cooperate if every student cannot participate in tactical practice. Therefore, group leaders should carry out a reasonable division of different tasks with the guidance of teachers, members' characteristics and the learning content, to develop tactical plans, to distinguish responsibilities and obligations of each member.
The principle of timely adjustment:
In order to foster the all-round abilities of students, group members regularly exchange their tasks. Group members could exchange according to the learning content, and each group can adopt a sub-topic, finally share the result after they complete the whole task. Students could carry out the cooperative learning inter-groups or within groups. Cooperative learning changes the students' relationship from individual competition to group competition, from the one-way communication between teachers and students to multi-communications between teachers and students.

3.2 Online cooperative self-learning

Online cooperative self-learning is that students learn the content through online and offline courseware which enables students to master the basic knowledge of the project, techniques and rules. Students, who are the subjects in teaching activities, will determine the contents and collect relevant information in accordance with the teaching objectives. Teaching content will be produced into multimedia courseware to supply students mastering sports techniques, and groups can carry out cooperative learning and share the results of group learning based on the multimedia courseware. The strategy map will be illustrated in Figure 5.

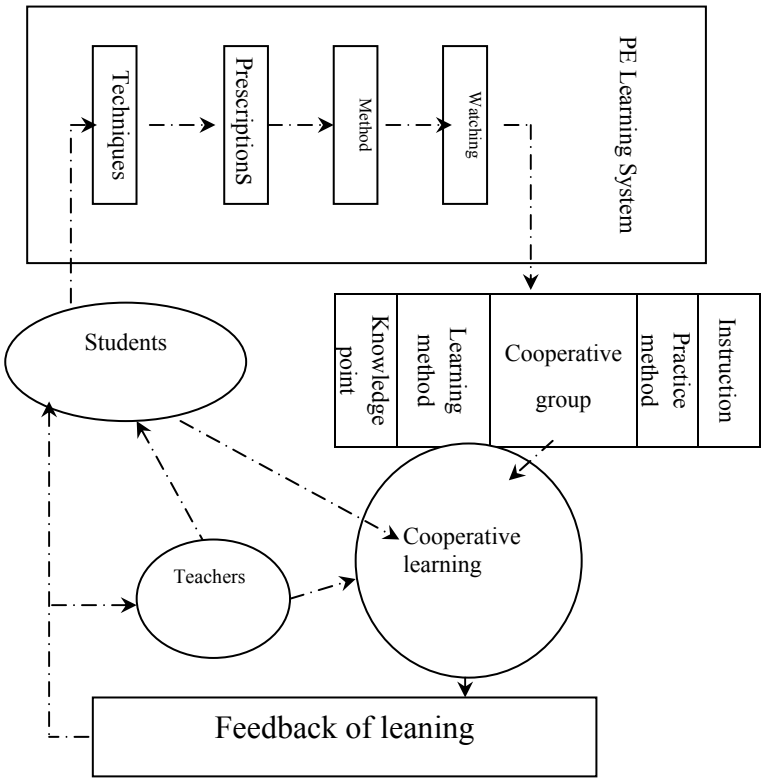

Figure 5 The strategy map of online cooperative self-learning

4. Conclusions and suggestions

4.1 Conclusions

In this study, a PE cooperative learning system (PE-learning) has been constructed primarily as well as a PE courseware platform. PE-learning has one server system, five touch-screen computers, and two projectors. System is based on B / S and Client hybrid structure, dynamic pages using ASP technology; chooses Windows 2000 Sever operating system and is equipped with IIS.

Cooperative learning set up a new PE teaching model, and creates multiple cooperative interactions between teachers and students. Moreover, cooperative learning will be able to fully exert students' initiative, subjective and cooperative. As a result, it will be huge impact on students learning abilities, attitude, passion, and experiences, and be useful for cultivating the consciousness of life-long participating in sports activities.

4.2 Suggestions

4.2.1 Due to slow download times, and the shortage of teaching videos, this system did not install the webcast and VOD. With the advancement of P2P technology, webcast and VOD will be achieved in the future.

4.2.2 With the development of computer technology and improving of PE Learning System, it can become an intelligent P.E. teaching system which can guide students to learn at the discretion of their personal interests and will realize individualized teaching.

4.2.3 Cooperative learning is student-centered self learning, but this does not mean that teachers can give free rein to students. As the organizers and tutors of cooperative learning, teachers should not only enable students to develop the consciousness of self-learning and using the PE Learning System independently, but also actively help students to find suitable and effective learning methods for them in consequence of promoting students' abilities of self-learning and solving the problems.

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The Study of Relationship between Leadership Styles and the Rate of Occupational Stress in the Physical Education Offices Managers of Khuzestan Province

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Abstract

Introduction
The purpose of the study was relationship between leadership styles and rate of Occupational stress in the managers of physical education offices of the Khuzestan Province.

Methodology
The method of the study was based on survey and by using of standard questionnaires of Hemphill & Cons (1966) leadership style and Spielberger Job Stress (1991). Their reliability was 0.84 & 0.95 respectively by using of Alpha Cronbach. Statistical sample was included of 59 managers and 260 assistant and staffs working at the physical education offices of the Khuzestan Province.This research studied 3 variables were include managers leadership style, managers job stress and individual characteristics. The Significant of this study was $p \leq 0.05$.

Results
Results showed that from point of view the staffs' 19% of managers have the task- oriented leadership style, 64% have the relationship leadership style and 17% have the mi**d**dell leadership style. There was a significant and positive relation between task-oriented leadership style with level of managers' job stress. But there was a significant and negative relation between relationship-oriented leadership style with level of managers' job stress. However there was a negative and weak relation between middle leadership style and managers job stress that it was not significant at the level of $p \leq 0.05$. There was a significant and positive relation between job stress and the level of education and also there was a significant relation between task-oriented leadership and relationship-oriented styles of managers with the level of education. Finally, there was a significant relation between middell leadership style and record of managing at the level of ($p \leq 0.05$).

Discussions
The findings of the study emphasized that the almost of managers selected the relationship leadership style. Also task-oriented managers possess high job stress. Finally, according to the results of this research, it is suggested that an educational programs to increase knowledge level of managers about the leadership styles and selecting the most suitable style to increase the functional level and finally, to increase the efficiency at the offices and inhibitory of occupational stress by the expert should be edited. Also, the emergency of having workshops to avoid the manager's job stress by the psychologist and professional experts is recommended.

Introduction

Organizational leadership with every word which it will be explained, as managing of the human power, leading, penetration, guidance of individuals and coordinating of many diverse efforts to achieve the goals by flowing use of behavioral sciences to reach the organizational goals. One of the main issues of behavioral sciences is the selection of leadership style (1). It has been a long time that in the efficiency of organizations. Discussion, variables like leadership style, the role of organizational structure, organizational commitments, occupational stress (intra organizational stress) in the organizational behavioral, are the matters of interest for all scientists (2) (8). Following the leadership style suitable for the organization space, is one of the bases of modern management. Grossman believes that managing in sport consist of four elements that are: manager's quality, leadership style, situation and the follower's characters (3). In one text with the subject of leadership styles and organizational suitability in the sport programs between universities, Bradly and Leen (2000) were searching for the answer of the question; is there a better managing method for the sport administrators? (4). In the discussion of individual and professional characters of administrators in the relation with produced stress, the leadership issue is very important and the used leadership styles and manager interaction with the managing method, are referred to the efficiency of body organization and staffs (5).

Today, the human force as the most valuable organization investment deals with a lot of problems and managing experts and organizational psychiatrists are focusing on the factors that affect the increasing or decreasing of efficiency. One of these factors is the occupational stress that has unfavorable effects on the body and soul of human force and decreases of its efficiency (6). Based on above mentioned factors, the current research aims to answer the following questions: what kind of leadership styles do the physical education managers of Khuzestan province use? And is there a relation between functional manager leadership style and the occupational stress resulting from job effects?

Methods

The research method was survey and field. The statistical population of this research is the total number of managers, assistants (n=59) and physical education offices staffs of all parts of Khuzestan province. According to the final statistic information of physical education office 260 persons (N=260) were calculated in this survey-field research. The statistical community and statistical sample was equaled. According to the research goals, the best way of data gathering was using of questionnaire. The questionnaires used for the purpose of this study were:

1- individual characteristics staffs and managers research-made questionnaire, there were used to investigate (age, sex, level of education …) at the organizations. 2- 23Questions of leadership styles standard questionnaire. At first, these questions of standard questionnaire were supplied by Hemphill & Cons on (1966), then rewrited by Halphin & et al (1997). And so, the reliability of questionnaire was calculated by using of the experimental research and Alpha Cronbach

(r = 0/84). 3- To evaluate the occupational stress of managers, we use of Spiel Berger job stressor questionnaire on (1991) (7), with nine values Likert test. Alpha Cronbach which is acceptable, was (r =0/95). The resulted date was analyzed with the use of SPSS software (VER= 13.5) in two levels of descriptive statistics such as (means, frequency, standard deviation & variance) and deductive statistics such as Pearson correlation coefficient.

Results

A: First: Most Descriptive Statistics

The results of this study indicated that 19% of managers have the task_ oriented style, 64% have the relationship leadership style and 17% have the middle leadership style (figure 1). About the individual characteristics, the administrators have the great frequency in the age group of 41-50 by 37% and with the least frequency in the age group of 30-40 by 29 %(figure 2). 93% of managers were married. 46% of managers have the diploma, by the great frequency and 5% of managers are under diploma, by the least frequency. Also, 20% of managers are the Bachelor of Science educated and only 7% of managers have a Master of Science (figure 3). Going on, 34% of managers studied in the physical education field and 66% of managers studied the non-physical education fields (figure 4). All of the physical education administrators of Khuzestan province are employed formally. The greatest circulated vita (C.V.) is between 11-20 age with 43% and the least (C.V.) "between" 1-10 groups with 26% were reported. 24% of managers didn't have any managing experiments. It seems that physical education office of province have the expand transmission of manager and other staffs. The highest level of experience in sport managers was between 11-20 years with

50% and the lowest level among was 1-10 years with 18%. Eventually, 42% of managers have the services experience by more than 21 years.

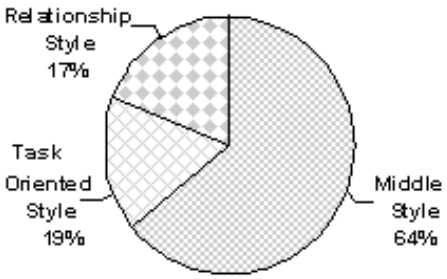

Figure1: The types of leadership style managers

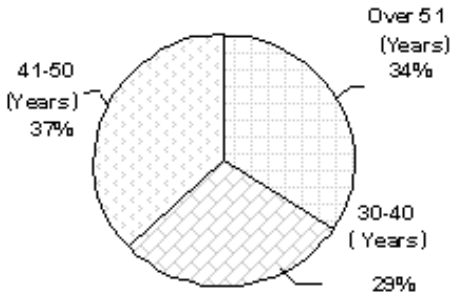

Figure2: Age-groups of managers

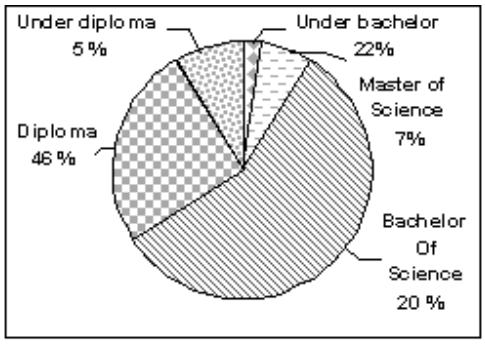

Figure 3: Managers educational levels

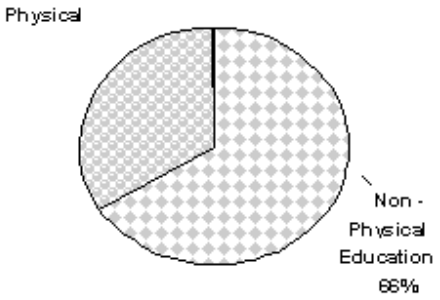

Figure 4: Managers fields educational

B: Second: As the Table (1) Show in Most of the Research Hypotheses

According to the results of table (1) there is a significant relationship between task oriented style & relationship style and the occupational stress. According to research findings, in most of cases, there is a significant relationship between the level of education and the occupational stress and there is a significant relationship between leadership oriented style with the level of education. (p =0/041, r =0/333). In addition, there is a significant relationship between middle leadership styles of managers with the managing experience (r = 0/663, p =0/037).

Table (1): shows the results of Pearson correlation coefficient between leadership styles and occupational stress of managers

Independent Variables	Parameters Predictor Variables	(r)	(p-value)	(n)	result
Occupational Stress	Task Oriented Style	+0/597	*0/049	11	confirm
Occupational Stress	Relationship Style	-0/494	*0/002	38	confirm
Occupational Stress	Middle style	-0/155	0/669	10	deny

*(p≤o.o5)

Discussion

The result of this research shows that there was a significant and positive relation between task - oriented leadership style and level of managers' job stress. It seems that the strict and inflexible behaviors of managers and the emphasis on the organizational goals, the limitation of relationship canal, persisting on reaching to the goal under any circumstances are the effective factors manager in experiencing of the high levels of job stress. Marker, Miller & Smith, Krahenbuwl and Ross stated that the lack of accurate leadership and managing is one of the important psychological factors in job stress (4). This result is synchronized with the Bagery's results (2005) (6). The result of this research doesn't confirm the Mehry's results (2006). There is a significant linear and negative relationship between relationship-oriented managers and the level of occupational stress. This result doesn't synchronize with the Bagery's results (2005) (6) and finally, the result of this research doesn't confirm the Asadi's results (1997) (1). Also, there is a vice versa relationship between the middle leadership style of managers and the level of job stress that is significant at the level of $p \leq 0/07$. One of its reasons is the flexibility of managers as one of the middle leadership style characterizations that will use the different styles according to the different situations. This result is synchronizing with the Bagery's results (6). Finally, according to the results of this research, it is suggested that an educational programs to increase knowledge level of managers about the leadership styles and selecting the most suitable style to increase the functional level and finally, to increase the efficiency at the offices and inhibitory of occupational stress by the expert should be edited. Also, the emergency of having workshops to avoid the manager's job stress by the psychologist and professional experts is recommended.

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An Illustration of Successful Tournament Organization as Seen at the Belgrade Open Tennis Tournament for University Students

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Abstract

Introduction

The Belgrade Open tennis tournament has been an open competition for all university students which has been held for the past four years (up until four years ago, a similar competition was held for university students and professors). The organizers of the tournament today are the Univerzitetski Sportski Savez Beograda (The Sport University Association of Belgrade) and the Teniski Savez Beograda (The Tennis Association of Belgrade). Participation is granted to all students attending higher-education establishments, academies and university faculties, post-graduates and those who have graduated within the past six months. The tournament comprises of five categories: women's singles, men's singles, women's doubles, men's doubles and mixed doubles.

Methods

Using descriptive method, we are trying to illustrate growth of participants and better quality of the tournament over four years of organisation.

Results

A different approach to the organization of the tournament was taken in 2005. thanks to the initiative of the students themselves who wanted to get together, make new friends, have a great time and, obviously, play some tennis. The first tournament of its kind was held at the SRC 'Olimp' Sports Centre from the 27th to the 29th of July 2005. 23 men and 9 women from 18 different faculties and higher-schools entered the main draw. That tournament however did not include a women's doubles draw due to the lack of interest for the same at that stage. A first students' ranking list was compiled and the tournament winners received trophies, medals and certificates.

The following year (2006), the tournament was entered into the Belgrade tennis calendar not as one but as three separate tournaments (one of each taking place in the spring, summer and fall). For the first time that year, the tournament managed to get the aid of sponsors so that the players were able to play for valuable prizes adding a greater sense of competition to the tournament. Thanks to the media attention which the tournament attracted, the number of participants rose to about 70 per tournament. After the three tournaments in 2006., 94 men and 29 women from 30 different higher-learning establishments were to be found on the ranking list. Students from other Serbian cities such as Čačak, Niš, Valjevo and Novi Pazar and even other countries such as England, Slovenia and the USA attended subsequent tournaments. The level of play was also raised as former and current professional players (ranked on the Serbian ATP list) applied to play.

In 2007., the tournament progressed with tournament shirts being manufactured for the first time. The number of applicants rose to 85 students by the fall; 64 men and 21 women. The level of play was also increased with the attedance of players with rankings on the world doubles ATP list.

In 2008., the tournament reached a new level with the participation of different foreign nationals and the participation of ATP player Ilija Bozoljac. The same year, the tournament gained medical supervision from the Sektor medicine sporta Republickog Zavoda za Sport (The Sector of Sports Medicine of the National Institute of Sport).

The tournaments are financed entirely from the entry fees paid by the players but this is barely enough to pay for court time at the various clubs (120 hours ±30 hours). The trophies, certificates and tennis balls are provided by the Tennis Association of Belgrade whilst the Sport University Association of Belgrade supplies medals and certificates of their own kind. Food and drinks for the participants as well as prizes for the winners are provided by tournament sponsors usually referred to as "friends of the tournament".

Discussion

In conclusion, the organization of this tournament has increased the interest for tennis amongst students and the average number of participants per tournament has risen from 32 to 90 students. The quality of tennis has also greatly increased. The participants are motivated more and more each year owing to both the quality of play and the prizes at stake. We hope that the positive development of the tournament will continue through 2009. and onwards.

Introduction

Tennis is a sport, which gives quality of sport experience and at the time competitive experience. It gives you the opportunity to be with to be with your friends and/or family and helps you stay in form. Apart from this, it is one of the few sports available to both men and women.[1]

Tennis can be played by: old and young, women and men, skilled champions as well as beginners. They all join in the of outminding the opposition on the other side of net. In this game of outminding it is not a rare case that less skilled tennis player wins the match by using superior tactics. At the same time, this is a sport, which requires quick anticipation because you need to react quickly and use your advantages and the opposing player's flaws. Self discipline is required from the player whilst in training and selfcontrol during the match to resist its temptations. Every level of play caries with its self a certain dose of charm, but common for all levels is the socialization moment.

The advantages of this sport are multiple. It is play during the whole year the priority is given to the summer season when it is play on outdoor courts in clean air. In these conditions, healthy physical activity is guarantee. Besides the benefit of spending time out in the open, players activate all muscle groups. One of the other advantages is your only need one other person to play. A coplayer can be found easily because tennis is played all over the world. It's a sport in witch you widen your circle of friends very quickly and new sport and business friendship are made very easily. Strenghtening of the competitive spirit strenghtens the determination to prove yourself and win matches, so there is a growing number of competitors on the recreational level as well as on the professional level.

Led by this competitive spirit our group of students engaged itself in organizing tennis tournaments for students. It all started by chance from a talk in the DAVIS CUP mach between Serbia-Belgium. The students expressed there wish to compete before the people from TSB. The officials were skeptic about us succeeding in gathering enough players (8) because of the back of players in senior category. Because of this the will to prove them selves began to emerge in the students who said to themselves "We can do it". The Tennis Association of Belgrade promised is it we gather enough players, they would provide the calls as well as the medals and certificates. The Sport University Association of Belgrade, as in most of the previous cases, stood on side of the students this time also, and gave there support. This was only the beginning. A lot of hard work was still needed so that the whole competition would be successfully organized. We had to follow some of the basic rules of organization of these type of manifestations. First we had to find courts, then balls, then competitors, for nothing would mean without them. We also needed judges, medical help if needed, media attention and funding the prizes.

Contacting a great number of people gave its result. All of them wanted to help the students. This is how we found the courts at the Sports and recreation center "Olimp". The balls were already provided for. All the students who players from The Sport University Association of Belgrade were helpful. Some media houses came to our aid so the word about the tournament had spread quickly.

Methods

Besides other tournaments, Tennis Student Championship of Belgrade has had a long tradition of being organized by the University Sport Association of Belgrade for the full 10 years, from 1995 till 2005. Since the year of 2005 this tournament is being organized by Tennis Association of Belgrade (TAB) and the University Sports Association of Belgrade. Until the year of 2005, participants could compete in 3 categories: men, women and professors. In 2005, besides the men's and women's singles, participants showed interest in competing in doubles, which led to creation of 2 more categories: men's and mixed doubles.

The very first tournament of this kind hosted by the Center for Sport and Recreation "Olimp", Belgrade Open Tennis Championship for Students, took place from the 27th to the 29th of July in 2005. Twenty three men and nine women from 18 different faculties and higher-schools entered the main draw. Competition was held in 4 categories: men's singles, women's singles, men's doubles and mixed doubles. For the first time students were ranked on an official list. Tennis Federation of Belgrade awarded the winners with medals and acknowledgments, whereas Student Sport Federation of Belgrade provided the tournaments with trophies for first place for men's and women's singles, as well as with medals for men's and mixed doubles.

During one of the Tennis Association of Belgrade's meetings in 2006, students have initiated organization of Belgrade Open Tennis Championship for Students with set dates in spring, summer and fall. In order to avoid conflicted schedules, dates were determined while taking into consideration academic schedules, so students could compete after taking exams, as well as senior tournaments, in order to avoid overlapping of

dates. For the first time, full information on tournament, including time and place of this tournament were marked on the Tennis Federation of Belgrade's official calendar and found on the Federation's web site. The tournament's name included word 'Open', indicating that students from all over the world could take participation in it, as long as can show some proof that they are attending either higher-education establishments, academies and university faculties, or post-graduates or that they have graduated within the previous six months. Starting from the first spring tournament, besides men's and women's singles and men's and mixed doubles, students could participate in women's doubles as well. This event took place on tennis courts of tennis club „Arsenal" in the week of April 15- 21st in 2006. Thanks to the media attention which the tournament attracted („Time Code"of 3K channel, „Record"of Kosava TV channel, Akcija radio, B92 radio, Sportski zurnal), the number of participants rose to about 70 per tournament. Students from Belgrade Universities, from other Universities of other cities (Nis, Cacak), as well as students studying abroad in England, USA and Slovenia participated in this event.

Being a sport journalist, I have had chance to be present at some of the professional tennis tournaments. These tournaments gave me a good idea of how one tennis tournamnet should be organized, which later helped me while organizing tournamnets for students. In order to make this student tournament as successful and well-organized as the professional ones, I contacted certain companies which would help us by providing us with its products. At the spring tournamnet participants and spectators could enjoy products of 2 brand names: Pardon and Coca Cola. Sport equipment company Babolat provided valuable prizes for the winners, fish restaurant „106" awarded the winners of mixed double with a dinner, whereas Euro<26 provided Euro<26 and ISIC cards for the winners in each category.

Students proved to be very skillful and knowlegable when it comes to tennis. Certain matches were on the level of the professional ones in terms of game shown. The friendly and positive athmospere among players was present at the tournament, and even when those who lost their matches would be still highly involved in the tournament as the support for other players. „Players party" organized for participants in one of the Belgrade night clubs was only one of the ways for them to further socialize and have a good time.

The expectations for the tournametn coming up in Summer were higher. The tournament organized in Spring set high standards for the following Belgrade Open. This Fall tournament was successfully organized. For the tournament itself number ofparticipants increased, including new and former participants (ranked on the Serbian ATP list), thus contributing to better performance and game shown. The number of media closely reporting on this tournament increased as well, and this time tournament had support od the first channel of National TV and TV channel Metropolist. The tournament, hosted by the cenetr for sport and recreation „Olimp", took place from 26th to 29th of July in 2006. Besides the sponsors who provided us with prizes for the winners at the Summer Belgrade Open (BABOLAT, EURO<26, fish restaurant „106"), this time 2 new sponsors joined our tournament: ZPU (Zdravstveno potporno udruzenje- Health Support Society), and watch company Fossil. Winners in both men's and women's single categories were awarded with a 10-day vacation on Zlatibor mountain, whereas Fossil provided with a watch for the winner in women's single category, as well as with Fossil T-shirts, water bottles and bags.

Fall tournament was highly anticipated after the one in summer. Fall Belgrade Open was organized on tennis courts of the tennis club „ Master" in the period September 30- October 4th in 2006. Even though this tournament was highly promoted in media, number of participants went down by 10% because of the conflicting schedules of the tournament with academic ones. This did not affect the tournament in any way as compaired with the previous tournments even better players applied. Number of players coming from other cities (Nis, Cacak, Kragujevac, Novi Pazar) in Serbia also increased. Players studying abroad participated again, thus keep making the tournament an international one. Besides traditional sponsors (Coca Cola and EURO>26), prizes were provided by the hair salon „Peđa", Beauty Salon „New Stile", restauran „Đurđevdan", apartments „Rajevac", which provided winners of both men's and women's double with 7-day vacation on Zlatibor mountin. Tournament continued tradition in organizing „Players party" at the beginning and closing a tournament.

After having organized 3 tournaments in 2006, the Serbian ATP list had 94 men players and 29 women players from 30 faculties and higher-education establishments.

In 2007, the tournament progressed with tournament shirts being manufactured for the first time. The number of applicants rose to 85 students by the fall; 64 men and 21 women. The level of play was also increased with the attedance of players with rankings on the world doubles ATP list.
In 2007, the tournament was organized for its second consequtive year. Spring Belgrade Open was hosted by tennis club „Set Net“ from the 21st to the 25th of March. Players from all over Serbia (Niš, Novi Sad, Novi Pazar, Čačak, Valjevo, Zrenjanin, Kraljevo) came to Belgrade only to participate in this tournament, which was another proof of high popularity of the tournament. This time, former and certain players ranked on the world doubles ATP list participated. When it comes to sponsors, sport equipment „Wilson“ and farmaceutical company „Hemofarm“ help with the tournament with their products and prizes.

In Summer, from 30th of July to 3rd of August, Center for Sport and Recreation „Olimp“ hosted next Belgrade Open. For this occasion, the tournament progressed with tournament shirts being made for the first time, having automobile dealership company Porshe financing shirts and textile company Panter manufacturing them. Food products company Marbo Product provided all the players and participants of the tournament with its „Pardon“ products. The prize fond has increased and this time all winners were awarded by ZPU with a 5-day vacations on Zlatibor mountain, by sport equipment companies Beosport and Babolat with sport equipment, as well as by EURO>26, beauty salon „Ladies EM“, restaurant „Đurđevdan“ with their products and services. As in the previous instances, the tournament had good media cover, as several TV channels and sport newspapers reported on it.

The following Fall Belgrade Open that same 2007. year was organized from 29th of September to 4th of October. CSR „Olimp“ hosted the event again. The number of participants increased up to 89 players. The organizers did not face any major challengers as the major points of organizations were very well-established. For this occasion, company Eurolink financed manufacturing of tournament shirts, which were made by textile company Panter.

In 2008, good media cover and well-done promotion made Spring Belgrade Open with even greater number of participants-97 players. This record-setting number of students competed on tennis courts of tennis club „Set Net“ from 18th to 25th of April. The tournament reached a new level with the participation of different foreign nationals and the participation of ATP player Ilija Bozoljac. Health care company Nivea, newly joined sponsor, awarded all winners with its products, whereas The Collection Long bar, another new sponsor joining the event and the long list of sponsors from previous tournaments, awarded the winners of women's doubles with a dinner. The same year, the tournament gained medical supervision from the Sektor medicine sporta Republickog Zavoda za Sport (The Sector of Sports Medicine of the National Institute of Sport), thus ensuring that players are provided with medical assistance during the entire duration of the tournament. As at previous tournaments, the organizers kept the tradition of parties at Belgrade night clubs and other kinds of fun activities. With all this, everybody once again had a good time and highly anticipated the next tournament.

The next tournament was Summer Belgrade Open. It took place at tennis courts of CSR "Olimp" in the period of July 26- August 1st. All matches were played on clay surface from 9 am until 11 pm. The shirts for players were sponsored by watch company BWP (better known by its famous brand Fossil), and for the third time made by textile company Panter. Numerous sponsors complimented all the winners: company for sport equipment Beosport with Wilson equipment, sport equipment company Babolat with its products, restaurant Đurđevdan with a dinner for the winners of mixed doubles, Euro 26 with its cards for all the winners, with its T-shirts for players who took second place and with its hats for third place players. The Sector of Sports Medicine of the National Institute of Sport continued to provide medical assistance for all players.

The most recent tournament organized is the Spring Belgrade Open. For the fourth time, tennis courts of CSP "Olimp" hosted the event which took place this year from the 25th of April to the 1st of May. Bad weather conditions and certain holidays interfered and prolonged the finish of the tournament until May 10th, when the final match was played. The prizes for the winners and for those who won second and third places were awarded by Nivea. Restaurant „Đurđevdan“ awarded the winners of mixed double wiht a dinner for two, EURO 26 card were provided for the winners in each category. In 2009, we have continued to provide our participants with medical assistance of the Sector of Sports Medicine of the National Institute of Sport.

Results and discussion

The section methodology and Table 1 show us an evident increase in the number of participants in over the years of tournament. At the same time, significant improvements are made when it comes to organization of these tournaments. The nature of the tournament has changed over the years, and from a small, local tournament it one grew to an international one. Since the beginning, the players have been ranked on a Serbian ATP list based on their results for a 356-day period. Part of this list is published in a Tennis Association of Belgrade's tennis magazine, Tenis Info (Tennis Info). Large number of media involved in promoting and reporting on this tournament shows that people are interested in these kinds of events.

Table 1

	Women players	**Men players**	**Overall**
Summer BO in 2005.	9	24	33
Spring BO in 2006.	18	50	68
Summer BO in 2006.	18	51	69
Fall BO in 2006.	17	45	62
Spring BO in 2007.	22	59	81
Summer BO in 2007.	21	46	67
Fall BO in 2007.	24	65	89
Spring BO in 2008.	25	72	97
Summer BO in 2008.	18	53	71
Spring BO in 2009.	17	66	83

Over the years, we have noticed that the best way to get people interested in and involved with the tournament is via personal contacts, instead of via media. Also, a large number of people applied for the tournament for the first time after hearing about it from people who already took participation in it. Another proof of the tournament's good organization and tradition are the players coming from all over the Serbia and world to Belgrade just so they could participate in it. Even when students are not able to participate, they are always present at the tournament to support their friends and have a good time. These tournaments were occasions for creating many friendships as well as opportunities for some players to find partners for playing in doubles.

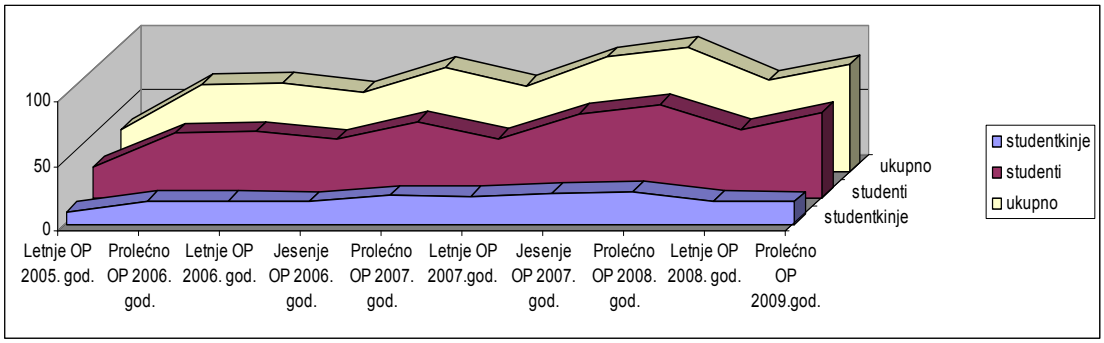
The organizing committee of the tournament was created in order to make all major decisions related to it. The committee is only one part of the whole tournament, consisting of:

1. Tournament planning and preparation
2. Organization
3. Facilities
4. Marketing
5. Public relations
6. Competition
7. Ceremonies
8. TV and other media
9. Supporting events
10. Logistics
11. Security

The organizers from two different associations, Tennis Association of Belgrade and Tennis Association of Serbia, consolidated tournament and game rules. Over the years, during the tournaments, we have put an

effort to comply with these rules and make each event a successful one. With this said, we required from each applicant to in a timely manner sign up for the category they want to participate in, as well as to have some kind of proof that they are attending either higher-education establishments, academies and university faculties or post-graduates or that they have graduated within the past six months. The main draw is determined at the ceremony open to participants and public. For the main draw, players ranked on world ATP and WTA are top seeded, followed by the players ranked on the Serbian ATP and WTA list and the student ATP and WTA list. Besides that, the rules of the tournament limit all players to two single matches and one double match a day, and allow standard time for warm-up, and break between matches, based on the duration of the match completed previously. Starting with the first Belgrade Open in spring 2005, students could enter the tournament in 5 different categories: men's singles, women's singles, men's doubles, women's doubles and mixed doubles. With the increase in the number of categories from 3 to 5, the number of participants increased as well. This meant that we are limited when it comes to choosing tennis courts that can meet the capacity of participants and games to be played. Over the last 5 years, also as the result of the increase in number of players, that is, number of matches, a 2-day weekend tournament now lasts up to 6 days. The size of the tournament and the number of participants has varied from year to year, and this usually depended on dates of playing, weather conditions, students' academic schedules, etc. These variations are shown on the graph number 2, and this graph shows us what we have concluded through this research- in the spring, students have the most spear time, and therefore the number of the participants is the highest. For most people, summer is time of vacations, and students belong to that group of people. This results in decreased participation of students. In fall, students' priorities are lectures and exams, thus not having time for extracurricular activities such as Belgrade Open. This explains the reason the number of students goes down in fall as well.

Graph 1



Besides all the difficulties and obstacles the organizers have been facing when it comes to organizing tournament each time, the number of students have tripled since 2005. We hope that our efforts will contribute to even larger number of student in future who will take participation in future. Many researches have found a positive correlation between playing a sport and being a better communicator, more diligent, responsible and organized. Many great sporting events as well as the success of our athletes contribute to spreading a positive, athletic state of mind among youngsters, as well as older members of society. This is beneficial for a society as a whole.

The tournaments are financed entirely from the entry fees paid by the players but this is barely enough to pay for court time at the various clubs (120 hours ±30 hours). The trophies, certificates and tennis balls are provided by the Tennis Association of Belgrade whilst the Sport University Association of Belgrade supplies medals and certificates of their own kind. Food and drinks for the participants as well as prizes for the winners are provided by tournament sponsors usually referred to as "friends of the tournament".

Conclusion

In conclusion, the organization of this tournament has increased the interest for tennis amongst students and the average number of participants per tournament has risen from 32 to 90 students. The quality of tennis has also greatly increased. The participants are motivated more and more each year owing to both the quality of play and the prizes at stake. We hope that the positive development of the tournament will continue through 2009. and onwards.

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Comparative analysis of jumping abilities at specifically and non-specifically trained female students

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Abstract

Introduction
Volleyball is in category of sport games, where in relation to motoric structure movement activities, dominate varies types of jumps. Adequate level of preparation on aspect of jumping abilities is directly related to efficiency of realization basic elements of techniques- services, blocks, settings and spikes (Nešić, 2006). Consummation of this work is to suggest difference between jumping abilities in volleyball players (students) that take part in games in league of association rang as specifically trained population and students of Criminal-police academy as population which have been treated as target of physical fitness as for nonspecifically trained population.
Methods
Overall sample consist of 17 examinees of female athletes: 8 volleyball players (specific trained) and 9 students (nonspecific trained). Jumping abilities is valuated using by following test battery: counter movement jump – ABL +, Squat jump – ABL -, index of ABL + / ABL -, in favor of evaluation of jumping skills technique (% reactive influence of momentum of arms on height of jump), standing long jump – LJ+, index of ABL + / LJ +, as ratio of vertical and horizontal jump ability. All testing have been executed in standard condition, using methods of field testing. Statistical procedures have been done using software SPSS 10.0. by MANOVA. General difference level have been made using Wilks'Lambde, and for partial difference have been used Student t test.
Results
It has been established that in between treated groups there are general statistic difference – Wilks'Lambda Value 0.270, F value 5.934, p=0.007. Tests of between-subject effects have shown that on partial level of difference following data have been statistically significantly different: ABL +, F value 25.11, p=0.000; ABL -, F value 5.45, p=0.034; ABL + / ABL -, F value 8.59, p=0.010; and SJ +, F value 17.11, p=0.001;as for ABL+ / SJ + it had not been found statistical significantly difference, F value 3.69, p=0.074. High level of difference have been find in percents between treated groups is deduce in ABL +, 18.0 %,in ABL -, is 10.43%, in SJ +, is 12.93 %, and for ABL + / ABL, is 9.51%.
Discussion and Conclusion
Results have indicate that volleyball players, as specifically trained population have statistical important higher level of jumping abilities. To addition to it have been established that adaption from aspect of technique of jump (ABL +, i.e. elevation of jump with momentum of arms), is higher in specifically trained population versus nonspecifically trained for 7.61 %. In other words, volleyball players have better specific jumping coordination, in relationship on nonspecifically trained population for given 7.61%.

Introduction

Volleyball belongs to the category of sports games, in which, compared to the motoric structure of moving activities of short and explosive-like movements of linear and combined type, different types of jumps dominate (MIlisic, 2003). These jumps can be two-leg jump, one-leg take off jump, standing jump, with different types of run-ups and after different landings, as well as counter movement jumps and squat jumps with one or both arms.

In earlier researches it has been found that there are jumps in basic structure of volleyball, and these are: for attack, block, setting the ball for the attack, service, but the authors have emphasized that these jumps are not of the maximal intensity, but adjusted to the given situation (Tomic and Nemec, 1989).

In the research that included the sample of male volleyball players from the different rank of competition, Vukovic (1996) found that there were statistically important differences in characteristics that were examined, both in manifesting (body height, length of arms, width of pelvis, width of hand, body mass, leg volume, forearm volume – in morphological space; standing abroad jump, standing high jump according to Sergeant, medicine ball throw from supine position, sit and reach on a bench, sit and reach in sitting position with feet spread, sit and reach in sitting position on the right, Japan test, 3x9 m running, Jelka test – in the field of motoric), and in latent space (a factor in which structure two latent dimensions were distinguished: explosive-like strength and agility and longitudinal dimension of skeleton). Found differences confirm the thesis that taller players of higher ranks of competition who are more successful in volleyball games also have a better level of physical preparation, as well as more expressed anthropometrical characteristics.

The latest researches of volleyball as a sports game have found that competitive activity of volleyball players comprises of the following elements: 1) *space structure* – jumps: attack jump, block jump, setting the ball for the attack jump, service jump; falls – half-rolls, sun; walking – hop steps, cross steps, running; hitting the ball – for spiking, for service; 2) *time structure* – active game time; passive game time – during the set, among sets; the overall game time and overall game time plus the time needed for warming-up; 3) *technical – tactical structure* – that comprises technical – tactical elements of volleyball game, i.e. their expression during the match (Nesic, 2002a).

Likewise, it has been found that an adequate level of preparation from the aspect of jumping abilities has the direct link with the efficiency of realization of fundamental elements of technique – services, blocks, settings and spikes (Nesic, 2006). The given link shows that the level of preparation of the level of volleyball players' jumping abilities can be treated as a very important segment of overall physical preparation, without which a player does not have an adequate basis for efficient realization of abovementioned elements of volleyball technique.

Because of more efficient control of training process and the effect of applied training means and methods it is necessary to define models of training level from the aspect of important indicators (jumping abilities of female volleyball players) in relation to the trained and non-trained i.e. control population. The differences found on the general level can be, in that case, treated as the effect of training, i.e. the achieved level of athlete's adaptation under the influence of such training. The objective of this work is to determine the differences between jumping abilities of female volleyball players (female college students) that have competed in the league of national rank, as specifically trained population, and female students of The Police Academy, as the population that has been exposed to aimed physical exercises, i.e. non-specifically trained population.

Methods

The total sample has comprised of 17 female examinees and these have been: 8 female volleyball players of ZOK NIS – PETROL that have competed in the first national Serbian league (specifically trained) and 9 female students of The Police Academy in Belgrade (non-specifically trained).

Jumping abilities have been estimated by the following battery of tests: counter movement jump (ABL +), squat jump (ABL -), ratio ABL + / ABL -, in order to estimate jumping skills technique (% of reactive influence of arms swing on the height of bounce), standing abroad jump – Dalj +, and ABL + / Dalj +, as a

quotient of the ratio of vertical and horizontal jumping abilities. All testing have been done in standardized conditions and by applying the standardized procedures by method of field testing (Bosko, 1994; Zeljaskov & Daseva, 2000; Nesic, 2002b).

Statistical data processing has been done by application of SPSS 10.0 software. General level of differences has been found by applying MANOVE, with Wilks' Lambde criterion, while the partial differences have been found by applying Student t test on the level of probability of 95%, $p<0.05$.

Results

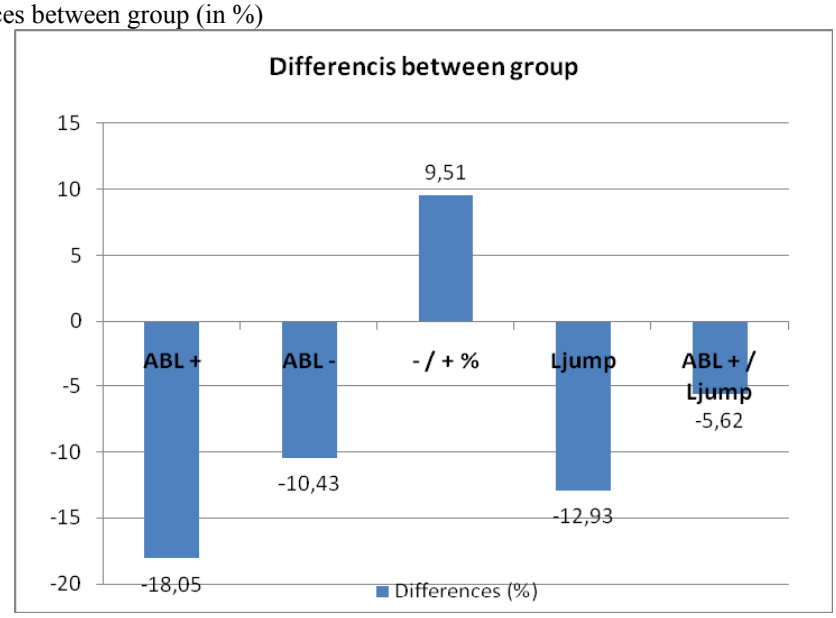
The results of descriptive statistics have shown exceptionally high homogeneousness of the results since the variation quotient (cV%) of control sample is in the range from 7.18% for L_{Jump} to 9.29% for ABL+, while in the case of female volleyball players it is in the range from 4.66% for ABL+/Jump to 10.41% for ABL-.

It has been found that there is a general statistically important difference between tested groups on the level of Wilks' Lambda Value 0.270, F value 5.934, p = 0.007. Tests of between-subjects effects has shown that on the partial level the difference has been found in the following variables: ABL +, F value 25.11, p=0.000; ABL -, F value 5.45, p=0.034; ABL + / ABL -, F value 8.59, p=0.010; and Dalj +, F value 17.11, p=0.001; while in ABL + / Dalj + statistically important difference has not been found, F value 3.69, p=0.074 (Table 1). The greatest difference expressed in percentage between the observed groups is found in ABL +, 18.0 %, in ABL -, is 10.43 %, in Dalj +, is 12.93 %, while in ABL + / ABL, is 9.51 % (Diagram 1).

Table 1. Elementary descriptive values

		ABL +	ABL -	-/+ %	Dalj	ABL + / Dalj
KPA	MEAN	37,75	32,30	0,8580	184,80	0,2048
	SD	3,51	2,86	0,0620	13,27	0,0185
	cV%	9,29	8,85	7,22	7,18	9,03
Odbojkasice	MEAN	46,06	36,06	0,7835	212,25	0,2170
	SD	3,87	3,76	0,0556	13,66	0,0101
	cV%	8,40	10,41	7,10	6,43	4,66
	Δ %	-18,05	-10,43	9,51	-12,93	-5,62
			-7,61			

Diagram 1 Differences between group (in %)



Discussion and Conclusion

Specificity of female volleyball players has to be in accordance with the structure of competitive activity (Dopsaj, 1994) that includes a sequence of different type of jumps (one-leg jumps, two-leg jumps, with run-ups, without run-ups, counter movement jump and squat jump). The results show that female volleyball players of ZOK NIS – PETROL that has played in the first national league of Serbia, as specifically trained population, has statistically significantly higher level of jumping abilities compared to the controlled population of well trained persons. Received results have been expected, and by themselves they do not represent a scientific surprise; however, the value of this research is in the proof about the possibility of applying very simple motoric tests by the method of field testing in the estimation of the status of overall physical training of female volleyball players regarding the achieved level of jumping abilities. Besides, it has been found that the adaptation from the aspect of jumping technique (ABL +, i.e. counter movement jump) is higher in the case of specifically trained population if compared to non-specifically trained for 7.61%. In other words, female volleyball players have better specific jumping coordination compared to the non-specifically trained population for the given 7.61%.

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Discussion on Some Issues about University Sports Scientific Research Work in China

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Abstract

Introduction
Beijing Olympic 2008 is an important opportunity to promote development of China. It is a strong driver for development of university sports work in China. As the preceding and supporting work for university sports work, university sports scientific research work also has an important opportunity for development.

Methods
Using the method of literature, logical deduction and induction, this paper makes discussion on the status, contents, features and problems of university sports scientific research work in China, and proposes solutions for these issues. As an example, the advantages of The Scientific Research Center of Beijing Sport University in scientific research works supporting university sports are also discussed.

Results
1. Sports scientific research works play a critical role in promoting improvement of university sport. In China, many universities build up their unique features and enhance their operating level through sports research works, and have established teaching and training modes meeting their own sports campus.
2. University sports scientific research works mainly include university sports education scientific research work, scientific research works in university sport game training, university sports science & technology developing and research works, and scientific management of university sport.
3. University sports scientific research works in China have four features: the first is that sports scientific research works are clearly aimed at supporting university sports practice; the second is that university sports scientific research works absorb and apply more and more knowledge and methods from other disciplines; the third is that university sports scientific research works have a strong strength in talent and hardware; the fourth is that the research field of university sports scientific research works is continuously expanding.
4. University sports scientific research works in China are facing various challenges: the first - university sports scientific research facilities and personnel cannot meet the actual need; the second - the ability of sports scientific research works to resolve problems in university sports practice is not very strong; the third - university sports training science & technology security system needs further integration; the fourth - university sports scientific research results need a exchange, promotion and application system; the fifth - involvement of non-sports colleges and departments in university sports scientific research works is low.
5. Major measures to comprehensively improve university sports scientific research works. Firstly, change our minds and establish and improve university sports scientific research work management system. Secondly, build a stable university sports scientific research work supporting team. Thirdly, closely combine university sports scientific research works with sports practice. Fourthly, pay attention to cross-discipline permeation to improve level of scientific training. Fifthly, enhance international exchange and corporation in university sports scientific research works. Finally, continuously combine diversification with distinctiveness in sports science and technology service measures.
6. A security system meeting needs of university sports scientific research works – take The Scientific Research Center of Beijing Sport University (SRCBSU) as an example. Since established in 2007, SRCBSU has been adhering to a guiding policy of deriving from sport practice and serving sports practice. They aim at leveraging their discipline and talent advantages and every possible resource to meet high-level scientific training needs of sports teams. Their experiences include: integrating first-class resources to build a service platform; focusing on improving service level through administrating measures; building their scientific research team and enhancing scientific research activities; introducing cutting-edge techniques and methods; hold a science and technology lecture hall to educate teachers and coaches.

Discussion
Although facing various challenges, university sports scientific research works are developing toward becoming healthy and ripe. We shall treat current problems in a positive altitude, closely combine scientific research with university sports practice, enhance university sports science and technology service awarness, improve service quality, and promote continuous improvement of university sports scientific research works.

Introduction

Beijing Olympic 2008 is an important opportunity to promote development of China social economy and various works. Especially, it is a strong driver for development of university sports work in China. As the preceding and supporting work for university sports work, university sports scientific research work also has an important opportunity for development. Leveraging this opportunity to fully improve the overall strength of China university sports scientific research work is a responsibility and historical mission of university sports work.

Methods

Using the method of literature, expert interview, logical deduction and induction, this paper makes discussion on the status, contents, features and problems of university sports scientific research work in China, and proposes solutions for these issues. As an example, the advantages of The Scientific Research Center of Beijing Sport University in scientific research works supporting university sports are also discussed.

I. The Position and Role of Sports Science and Technology in University Sport

Sports scientific research works play a critical role in promoting improvement of university sport. In China, many universities build up their unique features and enhance their operating level through sports scientific research works, and have established teaching and training modes meeting their own characteristics and very distinctive campus sports culture.

Peking University proposed to develop a "1G1B1S " teaching system, and Zhejiang universities developed a teaching and training mode utilizing after school sports clubs, which promoted the development of university sport. In sports training, through researching in a mode of "Sport and Teaching Combination", combined with scientific and technological means such as biochemistry monitoring, psychology assistance, training recovery, etc., the competitive sport level of university sport have been continuously improved. With assistance of scientific and technical service, "Tsing Hua Mode", which has been kept on the road of "Sport and Teaching Combination" for many years, has brought up many outstanding gold medal athletes. Many universities have achieved great results in sports scientific research works, and have successfully applied their research results in resolving various problems in sports teaching and training.

The university sports scientific research works can reflect the critical role of university sports scientific and technological work from one aspect. Scientific Thesis Seminar on China National University Games has already run eight, and got positive response of university sports teacher and scientific research personnel in China each time. Fields of university sports scientific research work include hot spots in university sports education reform; theory and practice of new curriculum standards; based on universities and society-oriented sports social scientific research; ways and operating modes for universities to build high level sport teams; human movement science and issues such as undergraduate's physical health and mental health, scientific and technical services in sports training, etc. Sports scientific and technological works play a big role in promoting continuous improvement of university sport.

II. Contents of University Sports Scientific and Technological Work

The object of sports scientific and technological works is to provide services for university sports practice. So, university sports scientific and technological works shall resolve problems in sports practice and study their essence and law. The objects of university sport are to enhance student's physical constitution, promote student's comprehensive development in physical and mental health, develop student's ability and habit to do physical exercise all the life, and bring up excellent athletes to provide talents for high level competitive sport. Therefore, university sports works in China include sports teaching and activities for all students and sports training for high level sports teams. Both of the two areas need enhanced sports scientific and technical works.

1) Scientific Management of University Sport

To realize scientific management for university sport, we shall focus on management system reform, observe basic principles in scientific management, and keep aware of external and internal conditions for university

sports management. Scientific management work includes scientific management of sport teaching works, after school sports activities, sports training, and games, etc.

2) Sports Scientific Research Work in University Sport Teaching

Sport teaching is the core of university sports scientific research work, and its precondition shall be enhancing student's physical health. Contents of university sports scientific research work include defining target, building curriculum system, setting curriculum structure, establishing teaching modes, applying teaching methods, developing after school sports activities, and studying student's physical health, etc.

3) Scientific Research Work in University Competitive Sports Training

The core for scientific research work in university competitive sports training shall be enhancing level of competitive sport. Contents of this work include defining target of competitive sports training, establishing sport team management modes, establishing a coach development system, providing scientific and technical service for sports training, establishing a evaluation system for competitive sports training work, and applying technical means such as biochemical mental rehabilitation, etc.

4) University Sports Discipline Building and Scientific Research

Sports discipline building and scientific research is a major future university sports work. University sport shall leverage discipline comprehensiveness of university to develop research workers and explore new sports discipline. Furthermore, university sports scientific research work shall be focused on achieving and applying sports scientific results.

III. Features of University Sports Scientific and Technical Works in China

1) Sports science and technology are clearly aimed at supporting university sports practice

University sports scientific research works are derived from practice and supporting practice. Clearly focused on reform and development of university sport, these works discuss university sport developing strategy and hot spot issues in university sport development, actively explore the basic law of university sport development, and aim their research and practice at primary needs of student's comprehensive quality cultivating.

2) University sports scientific and technical works absorb and apply more and more knowledge and methods from other disciplines

University sports scientific and technical work is on the road to integrated multidiscipline and cross discipline research. Many disciplines including pedagogy, sociology, economics, history, psychology and human science have been effectively integrated into university sports research works, which greatly promoted the development of Chinese university sport. In the meantime, new research methods are continuously emerging, and research means are continuously updated. These are providing new ideas and methods for university sports scientific research works. For example, scientific training activities of Tsing Hua university diving team include eight areas: physiological and biochemical monitoring, health and athlete injury monitoring, nutrition and body weight monitoring, psychological counseling and monitoring, and ancillary system for skill training.

3) University sports scientific and technical works have a strong strength in talent and hardware

As Olympic spirit spreads extensively, many universities have newly built their sports scientific research center or institute, or begun to perform sports scientific and technical works cooperating with sports scientific research organizations, training base or other scientific research units. The Scientific Research Center of Beijing Sport University has been established under this environment. Since its scientific research center's establishment, the university has actively introduced various resource, purchased many top end scientific research equipments, integrated and put it in share all of its experiment resources, and fully leverage its science & technology and talent strength to actively carry out various scientific research works.

4) The research field of university sports scientific and technical works is continuously expanding

Contents of university sports scientific and technical works are becoming more and more extensive, which include study of university sports reform target and developing strategy, university sports teaching works, participation of undergraduates in sports activities, scientific and technical supports for university sports training, university sport teacher, physical constitution of undergraduates, high level university sports team,

university sport and market economy, university sport and national fitness, lifelong sports concept developing, physiological issues in university sport, and human movement research in university sport, etc.

IV. Challenges Faced by University Sports Scientific and Technical Works

1) University sports scientific and technical facilities and personnel cannot meet the actual need

Many universities still unilaterally emphasize sports teaching and training but ignore sports scientific and technical works. They have not built any sports scientific research organization, or assigned any special person in charge of scientific and technical works. Of course, they also lack advanced scientific research equipment and devices. Due to the lack of university sports scientific research organizations and persons, both depth and extent of sports scientific and technical work are insufficient. Especially, the ability of sports scientific and technical works to research in depth and resolve actual problems in university sport is also insufficient. Additionally, while sports scientific and technical works in sports universities are active, the involvement of non-sports universities in university sports scientific and technical works is clearly insufficient.

2) The ability of sports scientific and technical works to resolve hot spot problems in university sport is insufficient

University sports scientific and technical works lack in-depth and extensive research and exploration from aspects of sociology, system science, and philosophy, etc., and attention paid to hot spot problems in university sports development is insufficient. For example, research on young student's physical constitution and health and research on scientific sports training of university youngsters are insufficient. Research in some areas such as sports facilities and sports of the handicapped is even blank.

3) University sports training science & technology security system needs further integration

Developing scientific sports training is a systematic project. Because the training security system has not been integrated in a scientific way, and sports training have not leveraged knowledge from comprehensive science fields such as natural science, social science, and information science, etc., sports training lacks scientificity, systematicness and effectiveness. Thus, basic integrated physiological, biochemical and psychological evaluation system, medical monitoring, information exchanging, training management cannot work effectively. In particular, high-tech training means and athlete load monitoring conditions cannot meet needs of development of modern university sports training.

4) University sports scientific research results need an exchange, promotion and application system

Due to the phenomenon of emphasizing theory but ignoring application in university sports scientific and technical works, sports scientific research works are isolated from sports teaching and training, thus they cannot be promoted and driven each other. On the other hand, due to factors such as lack of effective incentive mechanism and scientific research funds, high quality results from university sports scientific research works cannot be exchanged, spread or applied. Lateral combination between sports scientific research and those in other disciplines is insufficient, therefore science and technology strength of universities is not fully leveraged in sports scientific and technical works.

V. Development Prospects and Improving Measures of University Sports Scientific and Technical Works

1) Change our minds and establish and improve university sports scientific and technical work management system

We shall pay adequate attention to scientific management of university sport and build a beneficially operated system to create good conditions and environment for faculty's scientific research works. We shall also create a strong scientific and technical atmosphere and encourage university sports workers to improve their professional quality and scientific research level. Federation of University Sports of China shall organize scientific research forces to resolve major problems in university sports development under new situation. We shall enhance international exchange in university sports scientific and technical works, and learn and borrow advanced cutting-edge methods and theories. Additionally, we shall establish an university coach training system to develop a high quality scientific research style coach team.

2) Build a stable university sports scientific and technical service team, and expand knowledge fields of sports personnel

We shall build a comprehensive scientific research team integrated various disciplines such as scientific research, training monitoring, physical training, sports nutrition, and medical monitoring, etc. to carry out comprehensive scientific research activities and services and resolve critical problems in university sports education and training. We shall broaden knowledge of university sports faculty and make them master new knowledge, new techniques and new methods in university sports education and training in time to form a reasonable knowledge structure and leverage their strengths in university sports scientific and technical works.

3) Closely combine with sports practice, and broadly apply research results in university sports practice

The ultimate objectives of university sports scientific and technical works is to improve undergraduates' heath level and drive breakthrough in competition results of sports teams. Therefore, sports scientific and technical works shall originate from actual needs of undergraduates and sports teams to truly resolve actual problems faced by university sport. The relation between university scientific and technical works and university sports teaching and competitive sports training is mutual promotion, so university scientific and technical works shall be closely combined with practice to innovate. We shall also emphasize application of research results to actually guide practice of teaching and training.

4) Enhance scientific research work and pay attention to cross-discipline permeation to improve level of scientific training

Enhance science level of university sports works by means of actively developing research project, providing scientific research incentive, and broadening view by establishing academic exchange system, etc. Fully leverage university's advantage of complete disciplines to promote cross-discipline permeation, thus leverage strength of multidiscipline to innovate new ways in university sports scientific and technical works. To realize high level sports training, we shall integrate sports science and technology with sports training, comprehensively analyze from multi disciplines, and continuously enhance sports science level with advanced scientific methods.

5) Continuously combine diversification with distinctiveness in sports science and technology service measures

In university sports scientific works, we shall enhance research on sports scientific research methodology, and gradually establish a scientific comprehensive methodology suitable for characteristics of university sports science. We shall insist on integration and unification of qualitative study and quantitative study. We shall pay attention to both qualitative analysis and research and exploration of quantified indexes to promote research and development of university sports science.

VI. A Security System Meeting Scientific and Technical Needs of University Sport – Take The Scientific Research Center of Beijing Sport University as an Example

Since established in 2007, The Scientific Research Center of Beijing Sport University has been adhering to a guiding policy of deriving from sport practice and serving sports practice. They aim at leveraging their discipline and talent advantages and every possible resource to meet high-level scientific training needs of sports teams. Their experiences include:

1) Integrating first-class resources to build a service platform

The scientific research center gets not only funds from State Sport General Administration of China, but also financial supports from Ministry of Education, Science and Technology Ministry, and horizontal cooperating units. At present, the center occupies building area 5276 square meters, and is equipped with top end sports research equipment valued at RMB 45 million to provide service for university sport. The center actively meets multifunction need for scientific and technical works, and transforms from traditional theoretical demonstration and experimental teaching to aiming itself at training, high level sports teams, national fitness supports, and leading cutting edge science and technology, etc. Superior hardware and multi functionality lead to a complete university sports scientific and technical service system.

2) Focusing on improving service level through administrating measures

Facing top class equipment and diversified tasks, the center makes efforts to enhance management level. Their management works include laboratory building, equipment administration, on-site services for sports teams, personnel inspiration, funds administration, service development, scientific research innovation, and international academic exchange, etc. In works, the center comprehensively utilizes its strong disciplines and motivates persons from various disciplines. For example, services for national teams living in university involve training monitoring, function evaluation, sports nutrition, fatigue recovery, physical stamina training, psychological regulation, theory lessons teaching, team management, medical monitoring, sports skill analysis, and gathering and administration of scientific and technical information, etc.

3) Building scientific research team and enhancing scientific research activities

Through its primary scientific research workforce consisting of professors, aiming at actual needs of university sport, the center provide scientific and technical services to solve various difficult problems in teaching and training, and provides various guidance including physical training, rehabilitation therapy, psychological counseling, sports technical analysis, sports nutrition, etc. To help coaches get to know precise and timely physical performance information of athletes, the center has created physical performance files for excellent athletes. The center has also developed an online administrating platform, through which coaches can instantly access and analyze athlete test data to guide their scientific training activities.

4) Complete disciplines, abundant information, and distinctive advantages

The sports university is a cradle for sports talents, the origin of sports scientific and technical knowledge innovation, and a creator and disseminator of new sports scientific research methods and means. The scientific research center is configured with complete disciplines and excellent talents. Its cross-permeated disciplines and relatively stable high level scientific and technical team will assist to create new research projects and innovation results. The center has created a comfortable academic atmosphere, provides frequent domestic and international academic exchange opportunities, which can facilitate them to acquire current sports scientific and technical information around the world. These factors have made the center become an important base for university sports scientific and technical innovation.

5) Innovate in autonomous techniques, and develop sports science and technology

For knowledge innovation, the scientific research center has kept the front of university sports science and technology at the center all the time, and prepares important knowledge and techniques for development of sports science and technology. To transfer the most advanced training methods to sports teams, the center not only actively introduces cutting edge techniques and promotes advanced methods, but also innovates in autonomous techniques and develops sports science and technology. The center frequently holds various training classes and sports scientific and technical lectures to promote new techniques and methods and develop university sports personnel.

6) Build an innovating team, integrate and develop multi-specialty talents

The scientific research center actively builds its cross-department, multi-disciplinary, and multi-level innovating team, and constantly explores its developing concept of integrating production, teaching and research. In practical works, the center insists on developing practical talents that meet actual needs of university sports teams. Under leadership of scientific research experts and through practical exploration, a batch and batch graduates have gradually become excellent young and middle-aged cadre men for sports scientific research.

Discussion

University sports scientific research works mainly include sports teaching, sport game training, discipline building and scientific research and sports management. Although facing various challenges, university sports scientific research works are developing toward becoming healthy and ripe. We shall treat current problems in a positive altitude, closely combine scientific research with university sports practice, enhance university sports science and technology service awarness and improve service quality, and promote continuous improvement of university sports scientific research works.

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The Influence Anaerobic Test on Pulmonary Function Criteria in the Elite Basketball Players

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Abstract

Introduction

The purpose of the research is the cross comparison of criteria related to the pre and post anaerobic pulmonary function such as MVV, FEF25-75, PEF, FEV1/FVC, FVC, FEV1 based on the results obtained from the Running - Based anaerobic sprint test on the elite basketball players of the Khuzestan Province.

Method

The sample populations were 20 pro-basketball players from the eight professional basketball teams present in the Khuzestan Basketball league with an average age range of 26.55 and an average weigh and height of 82.34 kg and 186.35 cm respectively. The average BMI was 23.69 kg/m² and each player on average had played professional basketball for approximately five years. Before and after the running -Based anaerobic sprint test, the criteria for the pulmonary function were measured. The sample population was given light basketball practices for 10 minutes prior to the running -Based anaerobic sprint test. In order to compare the results obtained from the measuring of pre and post pulmonary functions, a t-test was used.

Results

The obtained results showed that there was no significant difference between the following values of Maximal Velontary Ventulation (MVV),Force Experator Volume 1 scecent / Force Vital Capacity (FEV1/FVC) ($p>0.05$); however there was a significant decrease in the values of Force Experatory Flow 25-75pr (FEF25-75), Peak Experatory Flow Rate (PEFR),Force Vital Capacity (FVC)and Force Experator Volume 1 scecent (FEV1) being respectively 12.60%, 10.28%, 7.82% and 5.41% ($p<0.05$), Mean +14, SD=0/23.

Discussion

The fact that bronchial spasms as a result of athletic activity are responsible for a 10% decrease in FEV1, a 15% decrease or more in PEFR and a 25% or more decrease in FEF25-75. In over 60% of the sample population, the existence of bronchial spasm due to athletic activity can be defined with one single value.

Introduction

The pulmonary system is composed of the lungs, the central nervous system, the chest cage, the diaphragm and the muscles between the chests and the blood circulation system within the lungs. The central nervous system is responsible for the controlling of the muscles of the chest cage which act as a pump for the pulmonary system [1]. The act of breathing which refers to the inhaling and exhaling of air from the internal environment of the lungs into the external atmosphere [2], is reliant upon the pulmonary system and any deficiency in the operation of the said system and air passages will result into an insufficiency in the inhaling and exhaling of air in the lungs and may effect the amount of oxygen consumed both during the resting phase and during warm up calisthenics thus endangering the well being of the individual. Resistance against the inhaling of air is the most common cause for obstruction and deficiency in breathing. The obstructing of the air passageways has grave and often fatal risks and it is possible that even the smallest air passageway within the trachea bronchial system, the larynx and the esophagus [3]. The amount of air inhaled during heavy exercise may increase ten to twenty fold; however the design of the pulmonary system is of such that it is capable of meeting the light and heavy oxygen demands of both short term and long term activities. It is of note that individuals who abnormally consume large amounts of oxygen during exhaustive athletic practices will deal with inhalation problems . Research has shown that when athletes perform exhaustively there is a large diminishing of arterial oxygen due to the limited amount of time that red blood cells are able to remain in bronchial capillaries [1].

Method

The current research is a semi-empirical research. The sample population was selected from the elite professional basketball players in the region in order to study the extent of bronchial spasms due to exercise in this particular group. 20 players were selected from among the eight Professional basketball teams in the Khuzistan Province, each with at least five years of experience in the field on a professional level. The average age range was between 21 to 29 years old and neither of the players did not have any history of asthma, allergy or any other pulmonary disease nor did they have any skeletal deformities especially in the chest cage region. Primarily the indices for pulmonary function such as FVC, FVC/FEV1, FEV1, MVV, FEF25-75 and PEF were measured in the pre-test stage. In the next stage for every ten minutes of basketball activity, a Running –based anaerobic sprint test (RAST) was taken from the sample population and in the post-test stage the indices were once more measured. A Japanese digital Spiro meter model HI-601 was used to measure the pulmonary function indices. In order to compare the results of the tests the pulmonary functions of the pre and post test stages were compared and a t-test applied to determine the correlation coefficient between the values. In order to analyze the data SPSS software was utilized with a version of 11.5 and a level of significance equal to 0.05.

Spiro meter test methodology:

The variables of gender, age, height, weight and environmental temperature were carefully recorded and entered into the device. Since the variables of height and weight are among the important variables for analyzing the pulmonary function test results, they were incorporated as central values in the speedometer for the predicting of Speedo metric values. Each candidate had to perform the test three times and the best record obtained was recorded. The RAST test was performed as six 35 meter sprints both alternately and with an active rest period of 10 seconds each.

The Results Obtained from The Study:

In the research carried out the indices of FEV1, FVC, PEFR and FEF25-75 in the pre and post test stages had a significant drop and were respectively 12.60%, 10.28%, 7.82% and 5.41% ($p<0.05$); however between the indices of FVC FEV1 and MVV there were no significant changes observed ($p>0.05$). As per the definition for Bronchial spasms any decrease more than 10% in the FEV1 and more than 15% in the amount of PEFR or a decrease more than 25% in FEF25-75 is defined as a spasm [2]. In the research carried out it was observed that only one index i.e. FEV1 had a significant decrease measuring 19% in 60% of the sample population due to bronchial spasm. The results have been incorporated in Tab. 1.

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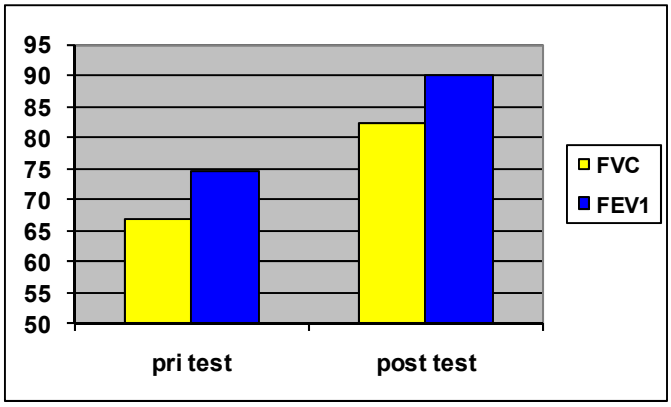
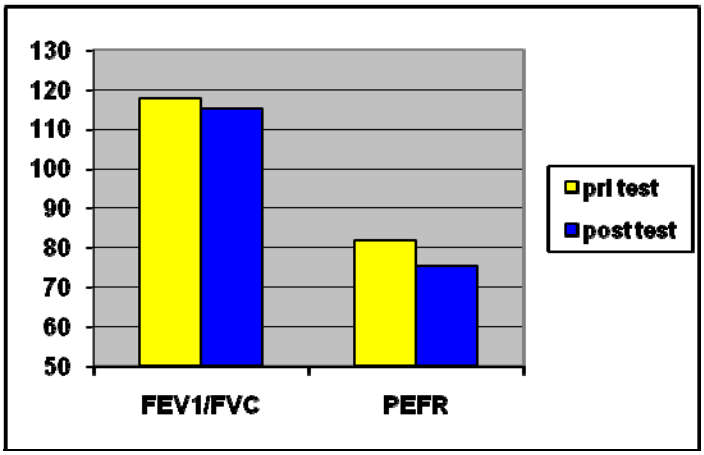
Table 1: The average values for the pulmonary indices of FEV1 and FVC in the pre and post test

Statistical index	stage	average	Standard deviation	Amount of t	Samples	P
FEV1	Pre-test	82.93	7.47	5.17	19	0.001
	Post test	72.48	10.89			
FVC	Pre-test	81.47	5.16	9.34	19	0.005
	Post test	73.07	5.64			
FEV1/FVC	Pre-test	117.71	5.83	0.717	19	0.651
	Post test	115.36	14.21			
PEF	Pre-test	81.86	5.92	7.37	19	0.001
	Post test	75.48	6.76			
FEF25-75	Pre-test	78.85	4.75	7.49	19	0.001
	Post test	74.59	5.25			
MVV	Pre-test	117.29	15.81	1.67	19	0.109
	Post test	112.22	19.79			



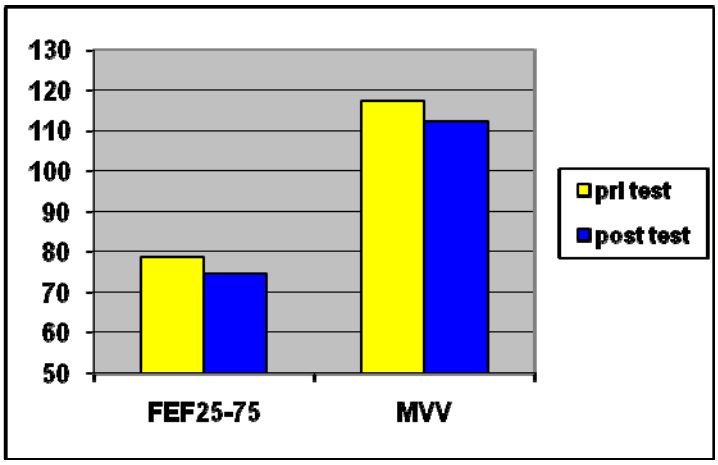
Graph 1: The average values for the pulmonary indices of FEV1 and FVC in the pre and post test.

The second graph represents the averaged amounts of the pulmonary indices of FVC/FEV1 and PEFR in the pre and post test stage



Graph 2: The average values for the pulmonary indices of FVC/FEV1 and PEFR In the pre and post test.

The third graph represents the averaged values for the pulmonary indices of FEF25-75 and MVV in the pre and post test stages.



Graph 3: The average values for the pulmonary indices of FEF25-75 and MVV in the pre and post test

Discussion

By measuring the indices for pulmonary function it is possible to determine the rate of muscle development, the existence of any obstruction or limitation in the air passages and the existence or non-existence of swelling and bronchial spasms due to exercise in the sample population. The most important indices which measures the strength of pulmonary muscles, especially the muscles associated with inhaling was the Maximal Voluntary Ventilation index (MVV). The existence of values higher than the foreseen ones inferred that the said muscles were stronger than normal .

Another means for the evaluating of the exhale resistance in air passageways is the reviewing of the results of rapid exhaling into a spirometer. The spirometer is used for measuring vital signs known as FVC [4]. Indexes such as the amount of exhaled air in the first second (FEV1) is a good index for the determining of the exhale resistance in air passageways. The FVC index is one of the suitable indices applied for the determining of exhale resistance in air passageways and for the determining of the lung's capacity and the amount of air which can be inhaled. The FVC index depends on the elasticity of the lungs and the resistance of the air passageways. Studies have shown that the elasticity of the lungs, the resistance of the air passage in the alveoli regions and the narrowing and compliance of the air way passages are among the physiological mechanisms which are determinant in the amount of air passing through the lungs. Physiological conditions which may decrease the tension of the elasticity of the lungs and increases the resistance of the air passages and thus substantially decreases the speed of the air flow significantly.In addition the indices of FEV1, PEFR and FEF25-75 are also important indices in the reviewing of the extent of bronchial spasm due to athletic activities among athletes . If after any activity the rate of FEV1 reaches a level of +10%, the rate of PEFR reaches a level of +15% and the rate of FEF25-75 increases by +25% the resulting phenomena is defined as bronchial spasm . Some research state that a decrease of approximately 6.5% can be defined as minor Bronchial spasm [3].In the research carried out the indices of MVV, FEV1/FVC failed to show a significant difference in both the pre and post stage tests. In addition among all the indices measured, the amount of these two indices was higher than that the values defined on the basis of age, gender, weight and height of the sample population and incorporated in the sperometer. As the two indices are directly related to the pulmonary muscles especially the rib cage muscles, it seems that in the sample population who have over five years of professional basketball training the said muscles have been fortified and strengthened. Should the amount of these indices decrease, it implies that the said muscles have detrained. It is of note that in the study there was no significant decrease in the amount of both indices.It has been stated that exercising in a cold environment is a cause of bronchial spasm among athletes, however in the study carried out the exercises were held in a warm climate and the sample population had had an extensive exposure to training in an arid climate. With due regards to this fact, one index of bronchial spasms was observed among the sample population (a 19% decrease in the FEV1 index among 12 members of the study group). I t can be implied that the type of exercise carried out can be considered a cause for the occurrence of bronchial spasms rather than the temperature of the environment itself.

The research also found that there is a significant decrease in the values for FEV1 PEFR, FVC and FEF25-75 and no significant difference in the indices MVV and FEV1/FVC. Of note is the fact that the results of the research failed to parallel the results obtained by Varma et al [3] due to the fact that the methodology applied was over four sports and thus different in its application. The results of the research however paralleled the

results obtained by Mehmet et al. (2004) which was carried out on the athletes of four different sports even though the methodology of the research and the protocols applied varied greatly. If instead of the RAST protocol for exercise, a simple exercise protocol (such as the treadmill exercise utilized in Mehmet research (2004) had been applied, the results of the study would have been rather different from what was reported [4]. In the research carried out by Ozturan, D and et al(1999) which was carried out on a group of basketball players a significant difference was observed in the indices for pulmonary function measured after the pre and post RANK test; however the difference was attributed to exhaustion, especially in the pulmonary muscles rather than to criteria such as swelling or obstruction of the air passages [4].The research results imply that since the sample population partook in an extensive anaerobic activity, thus requiring continuous laborious and intense breathing it resulted into a type of swelling and spasm known in literature as a bronchial spasm due to athletic activity (albeit with the existence of only one index). In this case due to the intensive rate of inhaling and the quantity of air entering in addition to the narrowness of the air passage, combined with the uniqueness of basketball training which is largely anaerobic symptoms of bronchial spasms might be seen [3]. This may be largely due to the nature of the extensive anaerobic over a long period which would ultimately decrease the pulmonary function indices of the athlete.

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Sub Themes 2.

University Sports:
a Foundation for Healthy Lifestyle

Cross in Function of Education of Students for Healthy Life Style

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Abstract

Introduction

Since cross as social sports event, affects health of all age categories, it has both national and cultural significance. Its integral influence refers not only to improvement of health, but also to acquisition of knowledge, opinion development, formation of personality, system of values, habits and necessity of permanent running outdoors. As motion activity, cross is used by all students of elementary and high schools in our country. It is natural that they continue to use it even later, because it has developmental formative role in creation of students' knowledge on its significance for human health. The alphabet of every healthy way of life is running outdoors. One of the most efficient ways to eliminate harmful consequences of today's sedentary way of life is using of running as natural form of movement necessary to everybody. Running provides necessary quantity of oxygen for the body, improves work of heart and lungs, activates blood circulation and metabolism. It reduces nervous tension, improves sleeping, working ability and plays a vital role in health prevention. Therefore, it is not necessary to stress its significance within the PE classes and thus in education of students to use cross running in function of healthy life style. Since 1983, the program of education of students, future experts, has been held at the Faculty of Sport and Physical Education, about application of cross in PE instruction. The aim of this program is to educate students through an individual approach, coordinated with didactic requests related to load components in function of health.

Methods

We applied a program of cross running of 6 weeks (two training sessions a week). The sessions were carried out on an official track, appropriate for cross running in the Kosutnjak woods. After the introduction with the track, an initial measurement was carried at a distance of 3600m for males and 2400m for females. Afterwards, based on the obtained parameters, an individual program was structured and it was realized by each student. After the applied program, a final measurement was performed within the competition „Open championship of the Faculty of Sport and Physical Education in cross".

Results and Discussion

The program was conducted in the period from 1983 to 2008, among the students' population N=2701, of which 1914 males and 787 females. The results achieved at the final measurement demonstrated that male students can be classified in the category of „good endurance" (Cupper, 1971) based on average running velocity which amounted 3,66 m/s. However, the female students are on the edge of category "moderate" towards "good endurance" because their running velocity was 2,98 m/s. The results of the students display certain decrease in the last decade, which can be explained by greater influence of sedentary way of life, opening thus the issue of further tendency and necessity to offer them a program to eliminate such situation.

Conclusion

Thanks to many-year theoretical/practical instruction, which referred to education of students from the field of cross, at the Faculty of Sport and Physical Education of the University of Belgrade, a standpoint was reached on necessity of application of the presented program among the students of other faculties. The use of running programs outdoors and modern individual approach would contribute to elimination of consequences of sedentary life style and would influence the overall improvement of students' health.

Introduction

Since cross as social sports event, affects health of all age categories, it has both national and cultural significance. Its integral influence refers not only to improvement of health, but also to acquisition of knowledge, opinion development, formation of personality, system of values, habits and necessity of permanent running outdoors. As motion activity, cross is used by all students of elementary and high schools in our country. It is natural that they continue to use it even later, because it has developmental formative role in creation of students' knowledge on its significance for human health. The alphabet of every healthy way of life is running outdoors. One of the most efficient ways to eliminate harmful consequences of today's sedentary way of life is using of running as natural form of movement necessary to everybody. Running provides necessary quantity of oxygen for the body, improves work of heart and lungs, activates blood circulation and metabolism. It reduces nervous tension, improves sleeping, working ability and plays a vital role in health prevention. Therefore, it is not necessary to stress its significance within the PE classes and thus in education of students to use cross running in function of healthy life style. Since 1983, the program of education of students, future experts, has been held at the Faculty of Sport and Physical Education, about application of cross in PE instruction. The aim of this program is to educate students through an individual approach, coordinated with didactic requests related to load components in function of health.

Method

Within track and field classes a 6-week program of cross running was applied (two training sessions a week). The Program was implemented in the period from 1983. to 2008. in students' population N=2701, of which 1914 were males and 787 females. The sessions were carried out on an official track, appropriate for cross running in the Kosutnjak woods. After the introduction with the track, an initial measurement was carried at a distance of 6000m for males and 4000m for females. Afterwards, based on the obtained parameters, an individual program was structured and it was realized by each student.

The individual training program was structured in two ways:

- based on the running velocity realized at initial measurement and
- based on the value of heart rate.

For the first way, each student should calculate loading intensity at the training class by determining the assigned intensity by mean running velocity realized at the initial measurement. For the second way each student should calculate the assigned loading intensity at the training class by determining maximum heart rate, i.e. Karvonen formulae (Nikolic, 2003).The assigned loading at the training class of cross were in the zone that stimulated development of aerobic energy potential – aerobic capacity. Students were obliged to observe and record the following loading parameters:

- pulse at the beginning of running,
- pulse in the course of running,
- pulse at the end of running,
- length of the distance that was run,
- number of repetitive distances (volume),
- realized time and
- duration of pause between distance repetitions.

The students recorded the realized values of the aforesaid parameters in the Practicum of athletics (Stefanovic, Juhas, Jankovic, 2007), so that they could later analyze the training, in order to find out whether they successfully realized the assigned task. After the applied program, a final measurement was performed within the competition „Open Cross Championship of the Faculty of Sport and Physical Education ".

Such methodological approach enabled students to get to know that theoretical knowledge can be verified and applied in practice. That way conditions are created to train as many students as possible for the use of cross as a well known and recognized resource for improvement of healthy life style.

The results in the paper were elaborated by descriptive and comparative statistic procedures and illustrated in tables and graphs.

Results and Discussion

In the Figure 1 the tables display the values of mean running velocity at the initial measurement. It was 3,51 m/s in males whereas in females it was 2,89 m/s.

Figure 1. Tabular display of mean running velocity at the initial measurement

	N	Min	Max	Mean	Std. dev.
Female IN	26	2,43	3,155	2,89	0,192
Male IN	26	3,06	3,816	3,53	0,198

Figure 2 displays the values of mean running velocity at the final measurement. In males it amounted to 3,57 m/s, and in females 2,93 m/s.

Figure 2. Tabular display of mean running velocity at the final measurement

	N	Min	Max	Mean	Std. dev.
Female FIN	26	2,47	3,22	2,93	0,184
Male FIN	26	3,19	3,83	3,57	0,177

Based on average running velocity, the males, observed according to Cupper (1971), can be classified in the category of persons of „good endurance“. However, the female students were on the edge of category “moderate” towards “good endurance”.

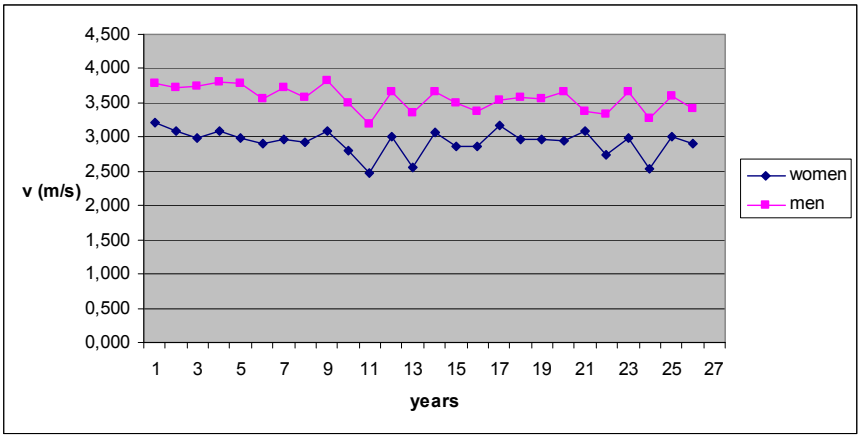
The results showed that there is a statistically significant difference (p=0,000) between initial and final measurement (see Figure 3), which indicates that the preparation program for cross competition, structured according to all criteria of modern knowledge from the field of sports sciences, was efficient. The realized cross training program significantly affected the improvement of running speed in aerobic conditions. Future task in work with students would be the application of such a structured program, leading them in the category of persons of excellent preparedness.

Figure 3. Significance of differences between initial and final measurement

	Paired Differences					
	Mean	Std.Dev.	Std.Error Mean	t	df	Sig. (2-tailed)
FEMALE	-4,30E-02	4,26E-02	8,35E-02	-5.165	25	0,000
MALE	-5,60E-02	7,14E-02	1,40E-02	-4,02	25	0,000

The Figure 4 represents a trend of cross running at final measurement in real time period.

Figure 4. Trend of cross running at final measurement in the period from 1983 to 2008



The trend of results in male indicates that in the first nine years of the observed period there was greater average running velocity when compared to the remaining period.

In females, there is neither ascendent or descendent flow of the results trend, but oscillations appear in the period between the 1992. to 1995. years. While analyzing the results it should be kept in mind that there is a significant influence of weather conditions on achievement of results.

Generally, there is a fall of results of average running velocity, which among other, can be explained by an increasing influence of sedentary way of life, which raises a question of further trend and necessity to offer student a program which would eliminate such a condition. In order to realize such an idea, it should be considered that there is no possibility to increase the existing number of cross classes. Therefore, it is necessary that students independently apply a permanent running program throughout a whole year, and not only within a short period of time. Thus, we should insist on creation of a running habit by raising of awareness on preventive significance of cross for cardiovascular and respiratory system.

Globally, as future experts in the field of physical education and sport, it is necessary that in their own work they manage animate, by their own example, school population, in order to make running integral part of their life style.

Conclusion

The results realized at cross competitions of the Faculty of Sport and PE, of the University of Belgrade, in the period from 1983. to 2008. showed that there is efficiency of individual approach of elaboration of cross preparation program. It was find relative stability of the results during the observed period, with small descending tendency in both male and female students. Thanks to many-year theoretical/practical instruction, which referred to education of students from the field of cross, at the Faculty of Sport and Physical Education of the University of Belgrade, a standpoint was reached on necessity of application of the presented program among the students of other faculties**.** The use of running programs outdoors and modern individual approach would contribute to elimination of consequences of sedentary life style and would influence the overall improvement of students' health.

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Influence of Continuous and Dozed Exercising on Students' Corporal Status

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Abstract

Introduction
In the researches so far the dominant problem in the period of studying is a sudden aggravation of corporal status due to apparent sedentary way of life. The consequences are not measured only by the degree of deformity manifested but also by functional deficit which is an index of destruction of whole body.
Methods
This research encompassed the sample of 106 students enrolled in the first year of studies. It involves two groups of students monitored from the first to the third year of studies. The first group (56) exercised according to the program predicted as compulsory and the second one (60) did not go in for any organized and continuous form of exercising.
The tests encompassing assessment of postural status and foot status (method of inspection, motor and functional status were used for assessment corporal status of students.
Results
At the initial measurements the results that were obtained show that the group of students not having regular physical activity (over 90%), manifested deformities with accent on spinal column and feet, which presents significant disturbances in functioning of the entire body. The group of students who is regularly involved in physical activity at the initial measurement indicates to percentage (over 60%) of presence of deformities also with accent on spinal column and feet, but with reduced quantity of painful manifestations. In the group which practices the factor of previous exercising is dominant because it affects the selection when enrolling in the first year of the studies. In the assessment of physical status by applying a battery of tests in the group of those who do not do exercises, a bad physical status was diagnosed, measurable by a deficit formed in a longer time period. Measurability of deficit indicates to development of destruction which significantly affects corporal status of the students. The students who continuously and organized went in for exercises point out to corporal status which is not on a satisfactory level, but has a tendency of development and formation in shorter time interval (between 6 and 12 months).
The diagnosed deficits are indexes of formation of a criterion in application of training technology in achievement of appropriate corporal status. Motor status of the group of students who do not do exercises shows a reduced working field of the muscular group, sore bone-joint system and deficit in the number of repetition of a stereotype movement. In the group of students who regularly use physical activity, the working field of the muscular group, rough muscular power and training of stereotype motor actions is more expressed..
The functional status, measured by heart frequency in peace and load is directly linked to postural and motor status.
The final measurement in the group of students without activities showed the aggravation of all the measured parameters and presence of the symptoms which overcome the significance of general corporal status and enter in the zone of disturbed health. In the group of students with an obligation to regularly use physical activities (minimum twice a week) the obtained results demonstrate the quality of application of training technology expressed in mobility of bone-joints system, reduced pain and beginning of breaking of stereotypes of more coarse motor actions and formation of creative, diverse kinetic program.
Discussion
Inactivity as a phenomenon of behaviour of a modern man is a measurable risk factor that seriously damages health. Imminent need of the body to function is movement (physical activity). The applied physical activity must be planned, dosed, designed, professionally led, measurable, continuous in order to attain the desired result which is evident.
By applying training technologies the aim of sport is achieved and the sense of sport fully gains its completeness of value.

Introduction

In the researches so far the dominant problem in the period of studying is a sudden aggravation of corporal status due to apparent sedentary way of life. The consequences are not measured only by the degree of deformity manifested but also by functional deficit which is an index of destruction of whole body. When treating the deformities with a program of corrective exercises, there are more and more limits pointing out to chronic changes in corporal status.

Continuous exercises are the only way to act in the field of prevention, correction and therapy with regard to the student's status at the first year of studies. The initial restrictions when going in for sports mostly cause abandoning of sport. Insufficient physical activity indicates to serious changes in corporal status.

By long lasting monitoring of students' health status it was established that the influence of standard on comfort and life style is measurable, as well as that lack of physical activity causes and accelerates degenerative changes in all diagnosed deficits in first-year students. Stereotype and lack of sports activities in elementary and high school cause also passive attitude towards physical culture and sport during the studies. The causes are mostly related to insufficient knowledge about sport (motor education) and fear and unpleasantness of a possible risk from efforts. Morphological status as a consequence of inactivity only points out that functional values of the body are also reduced (cardiovascular, endocrine, respiratory). Time of studying is burdened by intensive learning so that consciously the problem is postponed after the completion of studies which is mostly an excuse. Only in students with formed healthy habits and sports status, the activities are expected to be continuous. The intensity of studying obligations is proved by the fact that top athletes cannot coordinate studying obligations with sports obligations. In this period a hypokinetic syndrome is expressed and can cause damage to the body for entire life. Healthy habits are difficult to acquire but easy to lose. Modern way of life understands that healthy habits are clear and already formed, that the notion on quality and real need of programs is directed towards life quality. The program that a student gets in the course of his/her studying is too extensive, heavy, demanding so that they spend their free time passively.

Group of subjects

This research encompassed the sample of 106 students enrolled in the first year of studies. The groups were mixed. The sample involves two groups of students monitored from the first to the third year of studies. The first group of 56 students exercised according to the program predicted as compulsory (GSV) and the second one (50) did not go in for any organized and continuous form of exercising (GSNV).

Research methods

In the assessment of students' body status, the tests were used encompassing evaluation of postural status and foot status, motor and functional status.

When assessing the postural status, a method of inspection i.e. observation was used. The observation was carried out in standard, standing position, with a minimum clothes on. They were observed frontally, laterally and from the back. The assessment of postural status were registered in a clinical record where possible asymmetries were recorded indicating the changes in body posture. Certain segments were determined whose discrete (mild) deviation was marked with grade 1 and more significant deviations i.e. asymmetry with grade 2. Normal status without asymmetry was graded with 0.

The foot status was done by method of plantography i.e. method of foot prints. The assessment was done by Tomsen's method with determination of the degree of fallen arches. The students with normal physiological arch had 0 degree of fall while the students with deteriorated foot status were categorized in three groups:

1. group of 0-30 degrees
2. group of 31-60 degrees
3. group over 60 degrees.

For functional status the tests for assessment of cardio vascular systems were carried out. The testing was performed at treadmill. The students walked on the treadmill at 6,5 km/h and heart rate was taken as a measure. The heart rate was measured at state of rest, after 2 minutes of work, as maximally realized pulse even after the recovery.

In the assessment of motor status we have carried the tests of assessment of repetitive strength of five muscle groups. The test was done for shoulder girdle – front flying, for chest muscles – straight bench, for legs – semi-squat, for stomach – raising of the upper body part up to 90 degrees in relation to the position for legs and for back muscles – exercises for strengthening of trunk extensors.

For each student individually a health record was kept. The anamnesis of their current health situation was recorded. The noticed problems shall be presented in table.

Results

At the initial measurements the results that were obtained show that the group of students not having regular physical activity (over 90%), manifested deformities with accent on spinal column and feet, which presents significant disturbances in functioning of the entire body. The group of students who is regularly involved in physical activity at the initial measurement indicates to percentage (over 60%) of presence of deformities also with accent on spinal column and feet, but with reduced quantity of painful manifestations. In the group which practices the factor of previous exercising is dominant because it affects the selection when enrolling in the first year of the studies. In the assessment of physical status by applying a battery of tests in the group of those who do not do exercises, a bad physical status was diagnosed, measurable by a deficit formed in a longer time period. Measurability of deficit indicates to development of destruction which significantly affects corporal status of the students. The students who continuously and organized went in for exercises point out to corporal status which is not on a satisfactory level, but has a tendency of development and formation in shorter time interval (between 6 and 12 months).

Bad corporal status was expressed on the spinal column. Kyphosis is the deformity observed most in students i.e. curving forwards of thoracic part of spinal column. In majority of students with expressed kyphotic posture, by taking detailed data, we established that it is present in both elementary and high school. Growth and development of a child affects that deformities also progress and very often they are covered up by clothes. Kyphotic posture is most often combined with scoliosis. The dominant side in motorics, mostly determines also the degree and side of scoliosis. Consequently, the weakness of abdomen and back muscles results in an expressed presence of lordosis. Having in mind the significance of spinal column and the way of formation of corporal status of students, we can point out neglect at pre-school and school age.

Spinal column status	normal status	Deteriorated status		
		skoliosis	lordosis	Kyphosis
GSV	19	16	0	8
GSNV	15	21	2	11
status stopala	o degree	1 degrees	2 degrees	
1 group of students	37	13	6	
2 group of students	24	17	9	

The reported problems in the health record

No.	PROBLEMS	Number of Students
1	Discopathy – herniated disc L4/5	7-4
2	Discopathy – herniated disc L5/S1	7-2
3	Spondylosis –cervical painful syndrome	18
4	Blood pressure	27
5	Lumbar painful syndrome	16
6	Anaemia	6
7	Vertigo	14
8	Headache	5
9	Diabetes	1
10	Obesity	33

There is also a close connection of the deformities of spinal column and foot status with domination of kyphosis and lordosis.

The diagnosed deficits are indexes of formation of a criterion in application of training technology in achievement of appropriate corporal status.
Motor status of the group of students who do not exercise shows a reduced working field of the muscular group, sore bone-joint system and deficit in the number of repetition of a stereotype movement. In the group of students who regularly use physical activity, the working field of the muscular group, rough muscular power and training of stereotype motor actions is more expressed. The basic problem of motor status in both groups of students are the stereotypes. In the non trained group, a stereotype appears when strengthening of those muscular groups which require daily activities, and in the group of students who train, the stereotype is expressed in strengthening of already developed muscular groups while small muscular groups are neglected which is closely related to the spinal column problems.
Lack of strength of stomach and back muscles causes weakness of neck part of spinal column because the treatment is mostly using a synchronized strengthening of stomach, back and neck muscles.
The functional status, measured by heart frequency in peace and load is directly linked to postural and motor status. The movement is imposed as means, and not as an aim and it is measured by values of functional system. It is impossible to achieve a functional system without movement (exercises). Exercises enable that cardiovascular, respiratory and endocrine system function in compliance with the needs of the body at strain. In order to strengthen the functional status, a longer period is necessary and it can be achieved exclusively by training technology which is planned, dozed and professionally led.

The final measurement in the group of students without activities showed the aggravation of all the measured parameters and presence of the symptoms which overcome the significance of general corporal status and enter in the zone of disturbed health. In the group of students with an obligation to regularly use physical activities (minimum twice a week) the obtained results demonstrate the quality of application of training technology expressed in mobility of bone-joints system, reduced pain and beginning of breaking of stereotypes of more coarse motor actions and formation of creative, diverse kinetic program.

Discussion

When a child stands into his/her feet for the first time (verticalization) he/she starts to form “strength” of the spine which is often reasonably referred to as *life column*. From the first step and the period of verticalization a chance is more expressed for spinal column deformation. The intensive spinal column development (to the age of 18) is demanding in treatment, and after the age of 18 all deficiencies are treated by therapy. «Strength» of the body in intensive development is reflected also in tolerance of deficits. The diagnosed deficits indicate the upcoming time of health deterioration.
Real values in the body as qualities are estimated through functional system which directly affects physical status. The physical status measured by functional features of cardiovascular system is the most expressed in adaptation to recovery or at rest. A man very often cannot recognize irrationality of functioning of cardiovascular system.

Inactivity as a phenomenon of behaviour of a modern man is a measurable risk factor that seriously damages health. Imminent need of the body to function is movement (physical activity). The applied physical activity must be planned, dosed, designed, professionally led, measurable, continuous in order to attain the desired result which is evident.
By applying training technologies the aim of sport is achieved and the sense of sport fully gains its completeness of value.

The additional aggravating circumstance in formation of healthy habits is time period of necessary motor education and achievement of the level of functional abilities which are mostly acquired in the period of 3 to 5 years. For that reason, there are thousands of rational reasons for postponing and avoidance of any physical activity. From the lack of physical status, toxins as metabolic stimulants and real psychophysical need appear. Very often in beginners, after a short interval of exercises (from 6 months to a year) saturation appears followed by boredom up to the level of repulsiveness at the very thought of exercising. Therefore a slogan was created that healthy life is boring and healthy food tasteless.
In order to fight laziness which is a dominant characteristic of young people it is necessary to apply training technology with educated and professional staff. The improvised work will surely provide an improvised result and consequently lack of the required quality.

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Study of endurance exercises in dehydration impairs of endurance runners elite of Khuzestan Province

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Abstract

Introduction

The purpose of the study was to compare the effects of a single track training session in the morning and evening on the extent of dehydration on elite speed and endurance runners in the Khuzestan province. This study compared the effects of dehydration on endurance exercise performance in temperate and cold air environments

Method

In this regards, ten speed and five endurance runners whom were participating in the Khuzestan tryouts for the National elite track and field teams were selected. All the members of the team were selected as our sample population was limited to the elite runners and there were few subjects available. A semi empirical study was performed and the variation of circadian rhythm was determined via a pre-test and post test. The training programs of the sample population consisted of one speed and endurance training session which was designed by their coaches and carried out under regular conditions in the morning and evening. The temperature of the training hall was controlled at approximately 32^0 C both in the morning and evening. The obtained results were analyzed using a correlated t-test at a meaningful level of 0.05($p \leq 0.05$).

Results

On four occasions, 8 men (age = 24 ± 6 yr, height = 170 ± 6 cm, weight = 72.9 ± 11.1 kg, peak O_2 consumption = 48 ± 9 $ml \cdot kg^{-1} \cdot min^{-1}$) were exposed to 3 h of passive heat stress (45°C) in the early morning with deuhydration (EUH)] or without ((DH; 3% body mass) fluid replacement. Later in the day, subjects sat in a cold (2°C) or temperate (20°C) environment with minimal clothing for 1 h before performing 30 min of cycle ergometry at 50% peak O_2 consumption followed immediately by a 30-min performance time trial. Mean skin temperatures, heart rate, and ratings of percieved exertion measurements were made at regular intervals. Performance was assessed by the total amount of work (kJ) completed in the 30-min time trial. Skin temperature was significantly lower in the cold compared with the temperate trial, but there was no independent effect of hydration.

Discussion

Body temperature in both trials was higher than EUH after 60 min of exercise, but the difference was only significant within the temperate trials ($P < 0.05$). Heart rate was significantly higher at 30 min within the temperate trial (DH > EUH) and at 60 min within the cold trial . ($P < 0.05$). Ratings of percieved exertion increased over time with no differences among trials. Total work performed during the 30-min time trial was not influenced by environment but was less ($P < 0.05$) for DH than EUH in the temperate trials. The corresponding change in performance (EUH – DH) was greater for temperate (–8%) than for cold (–3%) ($P < 0.05$). These data demonstrate that *1*) DH impairs endurance exercise performance in temperate but not cold air but *2*) cold stress per se does not.Mean + 8,SD=0/17

Introduction

PERSONS EXERCISING IN COLD WEATHER can incur substantial fluid losses. [1]. and are commonly advised to maintain hydration to avoid cold injury and sustain performance. Despite these assertions, recent research shows that dehydration (DH; reduced body water) does not increase the risk of hypothermia or peripheral cold injury.[2,3]. Similarly, DH in excess of 2% body mass impairs endurance exercise performance in hot and temperate environments with the magnitude of effect largest in the heat .[4,5]. The extent to which this is true in cooler environments is unknown, but there is evidence that the mechanisms for DH -mediated fatigue in warmer environments are blunted in the cold and may therefore have less impact. Hyperthermia and cardiovascular strain are two major factors implicated in the genesis of DH -mediated endurance exercise fatigue in hot and temperate environments.[4]. Both the independent and combined effects of hyperthermia and hypovolemia on cardiovascular strain dynamics in the heat have been elegantly described.[6,7,8]. Recent examination of the same parameters during exercise in cooler environments (3–8°C) indicates that core temperature elevations associated with HYP are significantly reduced.[6,9]. Tachycardia is also attenuated and stroke volume and cardiac output better preserved during progressive dehydration up to 4% of body mass during both moderate (50% maximal O_2 uptake). [9]. and more intense (72% maximal O_2 uptake) [6]. exercise cold stress. Taken together, cardiovascular strain attributed to hyperthermia and hypovolemia in warm and hot climates is blunted in cooler conditions, which may preserve endurance exercise performance. Although multiple meteorological variables can influence endurance exercise success. [2]. performances typically improve as air temperatures decline.[2]. This data support an "optimal" air temperature threshold near 12°C; above or below this temperature, performance is relatively impaired.[2]. Endurance performance limitations in hot environments are well documented. [3]., but evidence during exercise cold stress is complicated by the comparison reference temperature. [2]. wearing heavily insulated clothing and possibly the choice of an open-ended endurance exercise task [1,7]. The best explanation for fatigue offered by cold performance studies also implicates factors other than cardiovascular strain or O_2 uptake as performance limiting. Competitive endurance athletes appear to perform at a high level coincident with significant body water losses in cool environments. but few studies have manipulated hydration state to experimentally compare the impact of DH on performance in cold vs. more temperate conditions. Those that have are difficult to interpret due to the absence of true control conditions . or wearing heavily insulated clothing [3].

Method

Eight healthy volunteers (age = 24 ± 6 yr, height = 170 ± 6 cm, weight = 72.9 ± 11.1 kg, body fat 22 ± 6%) participated in this study and completed all phases of experimentation. Subjects (8 men,) were physically active and moderately fit [peak O_2 consumption ($\dot{V}O_{2\ peak}$) = 48 ± 9 $ml \cdot kg^{-1} \cdot min^{-1}$]. Subjects were provided informational briefings and gave voluntary and informed written consent to participate. Investigators adhered to endurance runners athletic – Khuzestan Province Regulation the use of volunteers in research and the appropriate of faculty of physical education & sports science Shahid Chamran University,Ahwaz – IRAN.Each subject's $\dot{V}O_{2\ peak}$ was measured using an incremental cycle ergometer protocol with continuous gas-exchange measurements (TrueMax, ParvoMedics, Sandy, UT). The calculated workload at 50% $\dot{V}O_{2\ peak}$ was validated during 30 min of steady-state cycling 1 day later. The ergometer used (Lode Excalibur Sport, Lode, Groningen, Individual linear factors (LF) were calculated [$W = LF \times (rpm)^2$] for each subject to reflect a 50% $\dot{V}O_{2\ peak}$ exercise intensity at a pedal cadence of 60 rpm. The linear factor setting provided room to increase work output during the time trial before reaching maximal sustainable workloads, which were estimated from $\dot{V}O_{2\ peak}$ testing at ~100 rpm. Practice trials included 30 min of steady-state cycling (50% $\dot{V}O_{2\ peak}$), followed immediately by a 30-min performance time trial. Three practice sessions were used to reduce training and learning effects.[8,16]. Semi-nude body mass (shorts only) was measured after voiding and before breakfast each morning for 10-days to establish a normal individual baseline body mass for euhydration (EUH) assessment on test days. All experimentation began within 3 days of completing preliminary procedures. A counterbalanced 2 x 2 (hydration x environment) experimental design was employed. Each was separated by at least 48 h. Experiments were conducted at the same time of day, and they were tested in the follicular phase of their menstrual cycle to control for circadian and ovulatory fluctuations in body temperature. On the morning of each trial, body mass was measured with an electronic precision balance scale (Toledo 1D1 accuracy ±20 g, Worthington, OH) for comparison against within-subject 10-day averages, and a 10-ml venous blood sample was collected for serum osmolality determination. A standardized breakfast was provided, after which subjects rested in a seated position for ~1 h before moving to a hot room (45°C, 50% relative humidity, 1 m/s air speed) for 3 h of passive heat exposure with (EUH) or without (DH) fluid replacement. A 2-h recovery period followed in which a shower was permitted and a small snack was provided (200 ml of water and 250 kcal). and heart rate (HR) were collected remotely

at regular intervals throughout testing. Rating of perceived exertion was assessed at 30 min and again immediately after the completion of exercise. Gas-exchange measurements were made once in the initial 10 min of exercise using an automated system, and workloads were adjusted to reflect a 50% $\dot{V}O_{2\ peak}$ intensity. Following tests for normality of distribution and equality of variances, treatment effects were analyzed using a paired *t*-test and one- or two-way ANOVA for repeated measurements. A one-sample *t*-test was also used to compare performance effects against a hypothetical value of importance. [18]. When appropriate, Tukey's honestly significant difference procedure was used to identify pairwise differences among means following significant main and/or interaction effects. The primary outcome variable of interest in this experiment was time trial performance. An analysis selecting conventional α(0.05) and β(0.20) parameters showed that eight subjects would provide sufficient power to detect a 5% change in time trial performance (~15 kJ) using the mean total work (295 kJ) and coefficient of variation (CV; 2.5%) calculated from trials of negligible difference (i.e., practice *trials 2* and *3*; $P > 0.05$) during 2 wk of time trial practice. All data are presented as means ± SD except where indicated.

Results

EUH was estimated on the morning of each trial by a body mass within 1% of the average 10-day baseline [3]. Two subjects >1% lower than 10-day baseline were given additional water with breakfast. Serum osmolality (289 ± 1 mosmol/kgH_2O) confirmed EUH [21]. The fluid deficit achieved before the start of each DH trial was –2.9 ± 0.7 and –3.0 ± 0.8% of body mass for cold and temperate, respectively. Values for EUH trials were –0.3 ± 0.6 (cold) and –0.4 ± 0.7% (temperate) of starting baseline. Differences were significant ($P < 0.05$) between hydration levels (DH vs. EUH) but not between environments (cold vs. temperate). Thus subjects were adequately matched for preexercise hydration status. Table 1 presents individual and mean time trial performance data. Total work in temperate DH was lower than temperate EUH ($P = 0.012$). There was no effect of hydration in the cold (cold EUH vs. cold DH) and no independent effect of environment on performance (cold EUH vs. temperate EUH). Associated mean power outputs from Table 1 were 140 ± 30 (temp DH), 152 ± 30 (temp EUH), 154 ± 36 (cold EUH), and 150 ± 35 W (cold DH). Viewed individually, all eight subjects performed worse when dehydrated in temperate air, whereas only five of eight experienced the same from DH in the cold. Fig. 1 presents the % change in performance from EUH to DH in temperate and cold environments. The change was significantly larger for temperate (–7.6 ± 5.9%) than cold (–2.7 ± 4.9%) ($P = 0.021$). The means and 95% confidence limits for performance (–12.6 to –2.7% temperate; –6.8 to 1.4% cold) provide the likely range of the true change effects and illustrate why there is a difference between DH and EUH within temperate but not within cold (i.e., confidence interval crosses zero for cold). In addition, only the range of the confidence interval for temperate falls entirely outside the a priori zone of indifference ($P = 0.04$, 1-sample *t*-test).

Table 1. Time trial work performance

	Cold		Temperate	
Subject No.	EUH	HYP	EUH	HYP
1	156.3	157.3	165.1	161.0
2	207.3	191.0	214.0	184.9
3	289.5	291.7	300.6	289.4
4	298.4	274.0	300.5	243.1
5	308.0	324.9	308.8	296.5
6	361.8	342.3	311.5	297.4
7	296.0	293.2	276.8	251.0
8	300.8	282.0	304.3	291.4
Mean	277.3	269.6	272.7	251.8*
SD	64.5	63.6	53.9	53.3

*Significantly lower ($P < 0.05$) than cold EUH and temperate EUH.

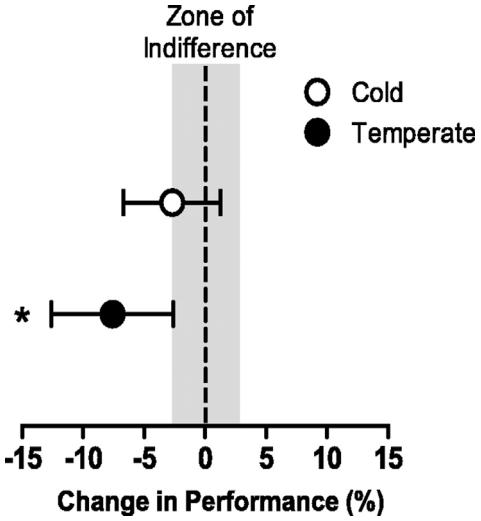

Fig. 1. Percent change in performance from euhydration (EUH) to dehydration (DH) in temperate and cold trials. Data are means; bars are 95% confidence intervals. Shaded area represents zone of indifference (±2.5%) based on the typical performance variability measured during practice sessions (see text for detailed explanation). *Significant difference between trials (paired *t*-test, $P = 0.021$) and significant difference from zone of indifference (1-sample *t*-test, $P = 0.044$).

Metabolic rate. Metabolic rates during the initial 30 min of cycling were calculated from a 2-min gas sample made 5 min into exercise and adjusted to reflect ~50% of $\dot{V}_{O_2\ peak}$. All measurements were similar ($P > 0.05$) at 49 ± 6 (cold EUH), 51 ± 5 (cold DH), 47 ± 2 (temperate EUH) and 48 ± 3% (temperate DH) $\dot{V}_{O_2\ peak}$. Subjects were therefore matched among trials for exercise intensity preceding the cycling time trial.

Cardiovascular strain and thermoregulatory strain. Figure 2 A and B, represents HR and perceived exertion responses to exercise at 30 and 60 min of exercise. Data collected at rest were unreliable due to extreme shivering in the cold trials and were therefore excluded from the analysis. All 60-min HR exceeded 30-min values ($P < 0.05$). HR for temperate DH at 30 min was higher than for temperate EUH and cold HYP. Both temperate DH and cold DH were higher than temperate EUH (~5 beats/min; $P > 0.05$) and cold EUH (~11 beats/min; $P < 0.05$) at 60 min. Rating of perceived exertion increased over time with no differences among trials (60 min > 30 min; $P < 0.05$). T_{re} increased significantly over time in all trials (Fig.3A) At rest, T_{re} was higher in both cold compared with temperate trials due to rigorous shivering. No differences among trials were seen at 30 min, but temperate HYP was higher than cold EUH (0.4°C; $P < 0.05$) and temperate EUH (0.3°C; $P < 0.05$) at exercise cessation. Skin temperature was significantly lower in the cold (Fig.3B) and was independent of hydration status.

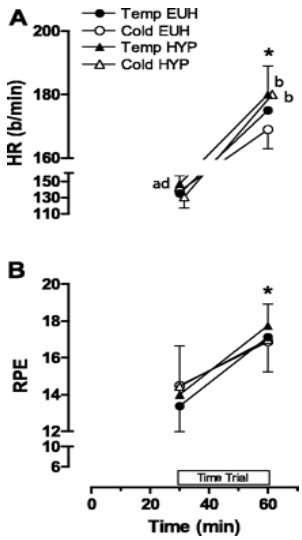

Fig. 2. Effect of hydration and environment on heart rate (HR; *A*) and ratings of perceived exertion (RPE; *B*). Values are means ± SD. [a,b,c,d]Significant differences ($P < 0.05$)

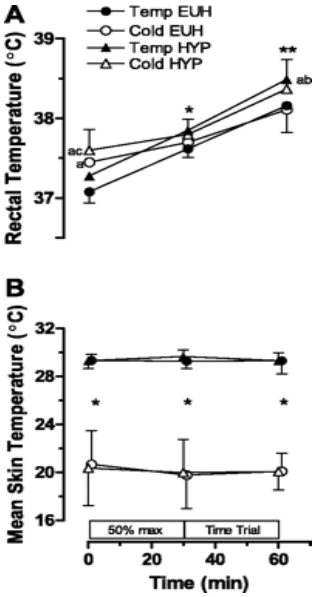

Fig. 3. Effect of hydration and environment on rectal (*A*) and mean skin temperatures (*B*). Values are means ± SD. Significance by letter designation as indicated in Fig. 2.

Discussion

This study determined the effects of DH on endurance exercise performance in temperate and cold air. In accordance with our hypothesis, the principal finding of this study is that DH by –3% body mass impaired cycling time trial performance in a temperate, but not a cold, environment. In addition, we found that cold stress per se did not reduce performance. The % change in performance (EUH – DH) within cold (–2.7 ± 4.9%) and temperate (–7.6 ± 5.9%) environments was statistically different [Fig.1].The 95% confidence limits were plotted about the mean to provide insight into the likely range of the true change value (Fig.1).These limits were also applied in the traditional sense to examine the importance of the change relative to an evidentiary standard other than zero mn. Sawka ; ma.Gleser and ja.Vogel; mn.Ramanathan[2]. This standard is the zone of indifference selected a priori as any value within the typical noise of the performance measurement (i.e., 2.5% CV) [3]. Although the choice of 95% confidence limits for this integrated analytic approach is admittedly conservative [2]. the fact that the entire temperate confidence interval lies outside this zone (Fig.1). strongly supports the conclusion that the performance impairment due to HYP in temperate environments is both statistically significant and of practical importance [2]. No statistical difference in performance was observed between EUH and HYP in cold air, but since one-half of the cold interval lies outside the zone of indifference, the meaning of this effect is ambiguous at best [3].The preservation of endurance performance in cold air when hypohydrated may be explained by differences in cardiovascular and oxygen uptake dynamics. Although the present experiment was not designed to assess the mechanisms behind performance changes, reasonable explanations can be gleaned from our observations when combined with the work of others. [4]..In addition, hypovolemia reduces maximal O_2 uptake and endurance capacity even in the presence of normothermia and cool skin [5]. It is conceivable that hypovolemia and a higher T_{re} (≈0.30°C) and HR (≈5 beats/min) in temperate HYP (Fig.2A) reduced stroke volume, cardiac output, and oxygen uptake enough to reduce performance (253 kJ) relative to temperate EUH (273 kJ) despite similar efforts (Fig.2B) However, the preservation of performance in cold DH (270 kJ) vs. cold EUH (277 kJ) occurred with similar T_{re} differences and a larger HR disparity (11 beats/min) between DH and EUH (Fig.2A) It therefore remains possible that cold skin in cold DH (Fig.2B) maintained a larger central blood volume and better preserved stroke volume and cardiac output [4]. Similar T_{re} and HR at exhaustion between cold DH and temperate HYP also seem to support this conclusion since performance in temperate DH, but not cold DH, was less than cold and temperate EUH (Table.1)

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Students Camps of Healthy Lifestyle in Serbia

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Abstract

Today a big number of students are less using physical activities. Most of the time is dedicating to studies, exploring the literature, researches and exams. Preoccupation with the education and some exam obligations are not leaving a lot of time to do some sports recreational activities which can reduce stress, enlarge good mood and expand working capacity.

Main goal of student's camps is to promote healthy way of living where physical activity has dominant role. Attendance of the camps will be filled with large numbers of sports recreational programs in which students will have opportunity to overview their abilities and easer decide their real activity in their lives afterwards. Beside, the program has the role to make better communication, to increase religious and national tolerance, to increase humanity towards disabled, weak and old people. Educational and creative workshops are the basic ways of implementing day and evening programs. A concept of student's camps is shown in scheme 1, and is based to focus the energy of students in direction of active participation of creating and designing all programs with help of fully trained animators and instructors. Public evidence and active participation in creating a program are movers of activities and method to direct the energy of participants. Main target is that with expand number of activities we do the repositioning and stabilization of physical activities in one systematic regular exercising and to raze physical and mental abilities. Through health care and education they will get basic information about nutrition, first aid, different diseases addiction (drug, alcohol...). Project is based on cooperation of Ministry of education, youth and sport, and health, as government representative and Sports for All associations, Student parliament as non government representative. Faculty of sport and physical education and Association of experts in recreation, Student polyclinic with help of tourist agency would take care of direct realization of the project.

Introduction

Today a large number of students are less using physical activities. Most of the time is dedicating to studies, exploring the literature, researches and exams. Preoccupation with the education and some exam obligations are not leaving a lot of time to do some sports recreational activities which can reduce stress, enlarge good mood and expand working capacity.
Main goal of student's camps is to promote healthy way of living where physical activity has dominant role. Attendance of the camps will be filled with large numbers of sports recreational programs in which students will have opportunity to overview their abilities and easer decide their real activity in their lives afterwards. Beside, the program has the role to make better communication, to increase religious and national tolerance, to increase humanity towards disabled, weak and old people. Educational and creative workshops are the basic ways of implementing day and evening programs. A concept of student's camps is shown in scheme 1, and is based to focus the energy of students in direction of active participation of creating and designing all programs with help of fully trained animators and instructors. Public evidence and active participation in creating a program are movers of activities and method to direct the energy of participants. Main target is that with expand number of activities we do the repositioning and stabilization of physical activities in one systematic regular exercising and to raise physical and mental abilities. Through health care and education they will get basic information about nutrition, first aid, different diseases addiction (drug, alcohol...). Project is based on cooperation of Ministry of education, youth and sport, and health, as government representative and Sports for All associations, Student parliament as non government representative. Faculty of sport and physical education and Association of experts in recreation, Student polyclinic with help of tourist agency would take care of direct realization of the project.

Period of leaving during the studies is always bringing some specific things in our lives. Biologically this is the period where ends the development of one person. Psychologically this is the period of young adolescents who are still searching the personal identity and place in the society. Their interests for traveling, humor and sports recreational activities (Pantic 1981) are exposed and represents the generator of their behavior. The same time students are studying professions that have chosen. Expectations from parents and surrounding are always present. Studies, lectures, exams and preparations for exams are different from previous way of education. There is no pressure of constant questioning, but exams are present and they must be prepared. Instead of simple reading a book, now they have to make research and use adequate methodology of learning. Lectures are not obligatory but the evidence of participations at the classes exists. Same time exercises are obligatory and each individual has possibility to choose which activities will take and what to do with his free time. The freedom of choice can create the conditions for person to develop himself or get in the trap of hedonism, enjoying and parties. Students are less taking physical activities. Preoccupation with the education and some exam obligations are not leaving a lot of time for students to do some sports recreational activities which can reduce stress, enlarge good mood and expand working capacity. Sport has chosen the most talented, students from the other hand the state has cut physical education in schools from 1998.
The project STUDENTS CAMPS OF HEALTHY LIFESTYLE has for the main goal to gathered large number of students during the summer and winter holiday. It has been planned for camps to last 7 days each. Camps are not created for young sportiest, either to sport professionals, but they can take part too. It is important to mention that is planed large numbers of recreational activities and modification of sports events but with rules that motivate students for participation. Participation is very important thing comparing to sports events where wining is the most important fact. Friendship and creative doing are dominant things together with different activities are ways to learn new things and get nice habits. Comparing to University sports games which gathered the best sportiest of the world at University level, STUDENTS CAMPS OF HEALTHY LIFESTYLE are created for all the students that have wish and energy to meet their generations and build healthy way of living.

Previous expirience

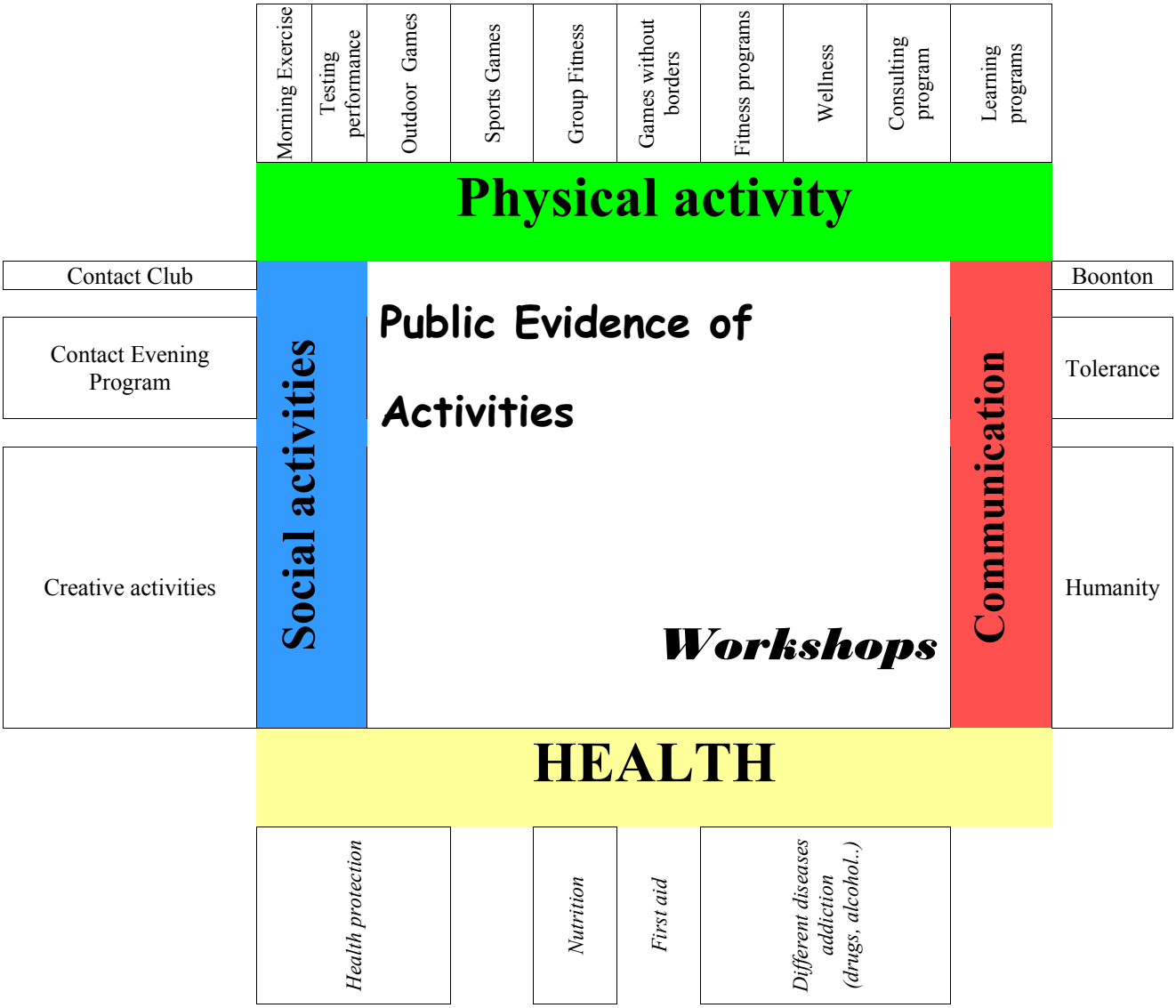
Model of sports recreational competitions (SPRET) in primary schools as theoretical possibility was promoted at congress at Avala 1994 (Mitic 1994). The congress was organized by Association for sports recreation of Yugoslavia. At FISCOMMUNICATIONS 1995, in Nis this program was analyzed from the point of better communication between the classes in school that were involved in the program. Modification of this version was published "Nastava i Obrazovanje"no. 1, 1997, pg.68-79. At international scinetific

congress, december 1997, at Novi Sad, were exposed expirience of this program(SPRET) in primary school „ ALEKSA ŠANTIĆ“ from Kaluđerica.
The idea of such modeling of sports recreational competitions of students was years of expirience of authors and several generations of students who were doing the program with students of high schools under the command of Profesor Živanović.
The necessity of movement in process of searching personal place and personality with the students, is the base for the concept of participations in activities where we get the points in imaginary sistem of competitions.
The next check of the model of public evidence was successfully done on ten winter festivals of recreation for children. Association Sport for all Belgrade established this manifestation for the children age 10 to 14. State system has taken only 15 % children talented for sports, so the rest of them joined the recreation festivals. Festival was created as group competition (each team 10 persons), where each individual had personal public evidence. Festival is based on participation in offered activities where each activity brings points for individual and group score. Every participant that gets over 50% points wins the diploma “master of snow hills”, if person gets over 75% points at festival wins diploma a „snow AS”, and if the person gets 100% points diploma is called “champion 100%,, . Groups can be organized from school, municipality, different organizations, best students, employee’s children, humanitarian organizations and etc.
Seminar for training animators that is obligatory for the students from department of recreation at Faculty of sport and physical education in Belgrade is polygon for more then 30 years where we do testing and valorization of sports recreational programs, different social games and contact evening programs. The positive answer of students has encouraged us to develop the concept in direction of general student population.

Concept

Main goal of student’s camps is to promote healthy way of living where physical activity has dominant role. Attendance of the camps will be filled with large numbers of sports recreational programs in which students will have opportunity to overview their abilities and easer decide their real activity in their lives afterwards. A concept of student’s camps is shown in scheme 1. Educational and creative workshops are the basic ways of implementing day and evening programs. A concept of student’s camps is based to focus the energy of students in direction of active participation of creating and designing all programs with help of fully trained animators and instructors. Public evidence and active participation in creating a program are movers of activities and method to direct the energy of participants. Each individual creative contribution represents one part of chain in building of communications inside small groups and developing positive atmsosphere. Individual contribution to the program influent the grow of selfconfidence feeling. This is the way of developing feeling of group functioning , creates feeling of connection with the group, program and place. On the basis of large number of participants in creation of programs, the impresion is that the program belongs to them which is not far away from the thruth. The sucessful way of leading such a group can be seen only if the group has the feeling of cretivity and cant be seen that someone more expirienced is helping. The direction of energy of participation is based on total sistem of public evidence and they open new posibilities that provocate students and motivate them for team work. The program has the role to make better communication, to increase religious and national tolerance, to increase humanity towards disabled, weak and old people. The other segment expected efects of program is in more care about healthy life. They are based on more knowledge about nutrition, protection at work, dangerous seekness of todays life as aids and etc.

scheme 1: students camps of healthy lifestyle in Serbia



Training

It is planed that the realization of camps is done by the students who already have previous expirience and have passed similar camps with yanger or older people. At audition will be selected the best and they will have special trainig. Program of trainig is adequate for developing skills and abilities necessery for this project. After the training selection will be made for the ones that will be working at camps. The most of them will be instructors and animators for all kind workshops and activities. The next phase is international camps, so trained persons will have to know foreign lenguages. From all candidates is expected high level of psyco-phyisical preparations, so they can move and keep others with positive energy. The concept of animators training is based on the sheme and expirience of Belgrade school for animators (www.bsa.dif.bg.ac.rs) that works sucesfuly since 2002.

Realization

It is planed for the camps to last during winter and summer holidays. Program of camps depends from the space and technical conditions of specific destination. Program can be modified concerning specific places as the sea, lake, pool, sports fields, ski tracks etc. The most important thing is that location of object is dislocated from crowded places so the group can have certain discretion. Beside the sports fields mentioned, it is necessary to have classrooms for the social activities and logistic equipment as microphone, computers, projector etc. This all is necessary because of public evidence, handbook, flayers etc.

Program

When we speak about physical activities, every day start with morning exercise, which has for main target to wake up the body, and create a health habit of regular morning exercising.
Afterwards starts activities on the open place such as "orientation as fun game", "treasure hunting", "excuse me please" etc. School of alpine and Nordic skiing, games at snow, ice skating, make the day activities. Camp is opportunity to try some new activities and get new experience in motorycal movement so they can easily to continue with some of them back home. Testing the student's physical conditions with the battery of Eurofit tests represents base for their health monitoring and recommendation about their fitness in future.
All physical activities in combination with contact club, evening programs, educational and creative workshops lead toward the successful camp. Each person posses some creativity, at the camp everyone has own chance to show it and will be encourage for that. At the camp will be functioning workshops about communication and health. It will be shown how to behave (basic bon ton), how to communicate to everyone (disabled people, different religions, nationalities, and race ...), how to expand our views, and when we think about health, new diseases, how to cope with diseases of our nearest people, how to give first aid, how to avoid negative trends (alcohol, drugs…). Education will finish with workshop about the nutrition.
Social games and activities are in function of improving communication. Contact club games give possibility for creative contribution of individuals and open space for group working and team building. Evening contact programs are new challenge and opportunity to participate in creation of good evening and depend from individual participations. It is a rule that we always remember event where we took active place. The quantities of direct involvements as result give the feeling of connection to group and program and enlarge the pleasure of attendance.

Partners

Project is based on cooperation of Ministry of education, youth and sport, and health, as government representative and Sports for All associations, Student parliament as non government representative. Faculty of sport and physical education and Association of experts in recreation, Student polyclinic with help of tourist agency would take care of direct realization of the project.

Conclusion

STUDENTS CAMPS OF HEALTHY LIFESTYLE, event that promote healthy way of living and gathered people of active way of living towards themselves and souronding. When we are talking about excersices and health, at first place we put keeping the present situation with our good health and wish to prolong the „youth" as sinonim of good functioning organism and life`s joy.
We need to give quality to life. Not to use artificial ways of prolonging life when we start loosing control.
Camp is opportunity to make control of psycho-physical status. From the camp we can't expect a large fitness improvement but it is opportunity to check present health status through battery of tests. Also to accumulate positive energy that is made, when on the one place you have people with the same ideas. Camp is supposed to be place to promote new accomplishments, new ways of working out, actual technical innovations, new contacts and personal experience.
Through the lectures, workshops, discussions, exchange of opinion and ideas, each individual is becoming more reach. The size of one nation, when we are talking about recreation, we do not measure by the medals won in competitions, but with a number of participants in recreational activities. It always depends from the level of education for the same activities. Education is based on tradition of society, family, personal experience, educational system, propaganda that makes organization because of society need. Main target is that with expand number of activities we do the repositioning and stabilization of physical activities in one systematic regular exercising and to raise physical and mental abilities.

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Sub Themes 3.

University Sports:
a Foundation for Fair Play and Ethical Values

The Study of Leadership Behavioral Dimensions of Coaches in Vollyball championship of Iran Universities

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Abstract

Introduction

The purpose of this study is survey of leadership behavioral dimensions of Coaches in iran volleyball champion ship of Iran Universities.

Methods

The study was descriptive research and the statistical population included all of coaches and volleyball players. In the first stage of the development of the LSS (Chelladuri & Saleh, 1978) coaches and players responded to a standard questionnaire. SPSS software was used for analyze data. Statistical tests were Spearman Correlation Coefficient, Mann Whitney U, Tiny and Willcoxon test in the level of $\alpha \leq 0.05$.

Results

The greatest percentage of score was related to interpretation of player about coaches' leadership behavioral dimension which indicated positive behavioral dimension feedback during their training and instruction. Least score was related to dictatorial behavior dimension feedback of coaches. Table 1 shows these results.

Table 1. Results of difference between leadership behavioral dimensions of coaches about himself and view of players about behavioral dimensions of them.

Difference between Leadership Behavioral Dimensions of Coaches about himself and its comparison with view of athletics about Behavioral Dimensions of them					
Behavioral Dimensions	Exercise Behavior	Dictatorial Behavior	Democratic Behavior	Social Support Behavior	Positive Feed back Behavior
Test Results	Significant difference	Non-Significant difference	Significant difference	Significant difference	Significant difference
Difference between the view of athletics about Leadership Behavioral Dimensions Coaches and preferred Leadership Behavioral Dimensions of them					
Behavioral Dimensions	Exercise Behavior	Dictatorial Behavior	Democratic Behavior	Social Support Behavior	Positive Feed back Behavior
Test Results	Significant difference	Non-Significant difference	Significant difference	Significant difference	Significant difference

Discussions

The LSS could be used profitably in the analysis of coaching behavior and its effectiveness. For instance, leadership theory and research suggest that leadership behavior should be varied according to the situation and the needs of the individual. Because scales similar to the LSS are used in other fields, it would facilitate comparison with and extensions of research findings from those fields.

Introduction

Today, leadership in sport or coching is one of the most difficult jobs. Martinez believes that coaching is diffrent job from other jobs at the society this proffession is a difficult job and it needs some diffrent skills. The sport leadership is the connecting chain betwean sporsman and team goals. The coaches have a special position at sport fields. Their roles is so important that they were couted the main axis of sport teams (2). One coach must have the extraordinary skill and knowledge to teach the sporsman. Job conditions at this job is very difficult. Because the coach work is in front of the view of all sport managers, audiences, players and journalist (4) (5). In the robin frost opinion the coaches are the main base of sport systems. Among three factor of players, coaches and audence, the coaches is the strongest organizer and the foundation of all advances. The coaches are dealing with alot of factors like skills teaching, characeristic development, adapt of players with each other and soon. The impotance of the role of coaches at sport and successfullness of plays, the study of leadership behavioral dimensions is necessary (3).

Methods

The current study is descriptive which was done during the volleyball championship of Iran universities of Yazd university in summer 2008. The statistical population included all of 26 coaches and 160 sportsmen that were the sample volume.for gathering the data, the LSS standardad questionare (Chelladuri & Saleh, 1978) was used for the measurement of leadership behavioral dimensions of coaches. In this questionare the leadership bahavioral dimensions of coaches incuds: exercise behavior, social support behavior, positive feedback behavior, dictatorial behavior and democratic behavior. This questionare filld according to the undestanding of coach of behaviors and the undrestanding of their coaches behaviors. SPSS software was used for analyze data. Statistical tests were Spearman Correlation Coefficient, Mann Whitney U, Tiny and Willcoxon test in the level of $\alpha \leq 0.05$.

Results

For measuring the current hypothysis, spearman correlation coefficient was used .

1. there is a significant different between leadership behavioral dimensions of coaches about himself and view of players behavioral dimensions of them at $\alpha \leq 0.05$. (exept the dictatorial behavior). (Table 1 shows these results:)

Table 1. Results of difference between leadership behavioral dimensions of coaches about himself and view of players about behavioral dimensions of them.

Difference between Leadership Behavioral Dimensions of Coaches about himself and its comparison with view of athletics about Behavioral Dimensions of them					
Behavioral Dimensions	Exercise Behavior	Dictatorial Behavior	Democratic Behavior	Social Support Behavior	Positive Feed back Behavior
Test Results	Significant difference	Non-Significant difference	Significant difference	Significant difference	Significant difference

2. - there isnot any significant different between leadership behavioral dimensions of coaches about himself and preffered behavioral from the view dimensions of sportsmen,
at $\alpha \leq 0.05$. (Table 2 shows these results:)

Table 2. Results of difference between the undrestanding of coaches about leadership behavioral dimensions of coaches and preffered leadership bahavior from the view of sportsmen.

difference between the undrestanding of coaches about leadership behavioral dimensions of coaches and preffered leadership bahavior from the view of sportsmen					
Behavioral Dimensions	Exercise Behavior	Dictatorial Behavior	Democratic Behavior	Social Support Behavior	Positive Feed back Behavior
Test Results	Non Significant difference	Non Significant difference	Non Significant difference	Non Significant difference	Non Significant difference

3. - there is a significant different between leadership behavioral dimensions of coaches and prefferd leadership behavior from their view at $\alpha \leq 0.05$. (exept the dictatorial behavior). (Table 3 shows these results:)

Table 3. Results of difference between the leadership behavioral dimensions from the view of sportsmen and prefferd leadership bahavior in their opinion.

Difference between the view of athletics about Leadership Behavioral Dimensions Coaches and preferred Leadership Behavioral Dimensions of them					
Behavioral Dimensions	Exercise Behavior	Dictatorial Behavior	Democratic Behavior	Social Support Behavior	Positive Feed back Behavior
Test Results	Significant difference	Non-Significant difference	Significant difference	Significant difference	Significant difference

Discussions

The results of this study shows that there is a significant difference between leadership behavioral dimensions of coaches about himself and view of players about behavioral dimensions of them at $\alpha \leq 0.05$ exept the dictatorial behavior, so we can conclude that view of coaches about leader behavioral dimensions and the viwe of players of it is completely different. According to the gained results, we can express that the coaches have the better view of their bahavior, maybe this is because of the lack of undrestanding and knowledge of coaches about multidimensional leadership bahavior in team. In other word the lake of enough knowledge of coaches about relational skills causes their unability to establish a close emotional relation with players. So, there is a difference between the view of coaches about themselves and the view of players about them. The results showed that there is a difference between the players view about coaches leadership behavioral dimensions and the preffered leadership, but there isnot a significant difference between the view of dictatorial behavior and preffered and dimensions. According to the research results, the coaches behavior is an impotant factor for stimulating the players. Therefore, it is necessory that the coaches use the positive feedback behavior instead of dictatorial behavior. It is suggested that the coaches give the equal awards in equal situations, and make the players to cooprate in decisions and give the resposibilities according to their abilities (6) (7) (10). It is desirable that the managers make the coaches acquaintance to theire job by establishing the different learning periods and leadership field in sport (11) (12) (8).

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Particular Aspects of the Students' as Spectators at Handball Games

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Abstract

Introduction

The outcomes in the sport competition are influenced by few determinants. Courneya & Carron (1992) had developed a framework in which they try to include and organize these determinants, in the particular context of the home field advantage. In this idea one of the most powerful influenced is exerted by the spectators. The literature review presents few main topics developed by the researchers, and I want to mention here the motivation of being to the games, the emotions for the teams – attached or not, the aggressive behavior of the spectators, and the structure of the sport spectators. The first aim of this study is to identify the attitude of the students from the Physical Education Faculty toward the sport speciation, especially handball games, and than to compare the information with other traits presented in the literature.

Methods

The study was done by using the method of interviewing that is by applying a questionnaire with 15 items to a number of 282 students from three Physical Education and Sport Faculties from Romania, located in with well-known handball teams.

tzThe questionnaire topic represent a synthesis of the main topics on spectators in the literature of the filed, such as: the frequency reasons and the cost of participation to the games, the behavior of the students as spectator to the handball games, how do get the students get on the venue and where from do they get the information about the competition.

The information was analyzed with the statistical packages Excel and SPSS. So every item was developed together with socio-demographic aspects like age and gender. After this we compare the results from the three faculties and than with the traits of the whole population present on the venues at the handball games but not only.

Conclusions

As conclusions is interesting to mention that the student's attitude and behavior toward the handball competition is a little bit different, speaking about the level of the attachment for the own handball team, this in comparison with the population present on the venues.

Introduction

From the very beginning sport show represents, through his actors, events that focused the attention of thousands of people. As we are talking about the Olympic Games, or about the Super-Bowl from NFL, sport brings together huge masses of people organized in few categories: athletes, spectators, the athlete's staff, news men, researchers etc.

In this idea one of the most important factors of an successful sport show is the sportive public, like an "enforcement forum" Ralea, Hariton (1962). So a literature review mark out the expert concerns in this area. This despite there exist a rich array of sport psychology and sport sociology research, Wann and Hamlet (apud Wann D. L. 1995) found that only 4% of this research examined sport fans and their behavior.

The research on sport spectators and fans has been started in a multi-disciplinary approach drawing theoretically from sociology, psychology, consumer behavior and marketing. Beginning with the work of Cialdini, Borden, Thorne, Walker, Freeman, and Sloan (1976), understanding the relationship between spectators or fans and sport teams continues to be a topic of much interest (e.g., Madrigal & James, 1999; Murrell & Dietz, 1992; Wann, 1995; Wann & Branscombe, 1990, 1993;). What has emerged is a potpourri of instruments and concepts intended to evaluate this relationship. The main topic in this area has focused on demographic and environmental characteristics, attraction motives, cognitive, affective and behavioral factors, and profiled committed sport fans.

Jacobson B. (2003) in his literature review of the definition of relationship between sports spectator or fan, and the favorite team, found next term: identification (Wann & Branscombe, 1990), association (Gladden, Milne, & Sutton, 1998), attraction (Hansen & Gauthier, 1989), attachments (Funk et al. 2000), involvement (Kerstetter & Kovich 1997), importance (Funk & Pastore 2000) and loyalty (Murrell & Dietz 1992). Funk D. and James J. (2001) framed all this aspects in (The Psychological Continuum Model), which presents the next four concepts together in an continuum model, that characterize the connection between spectator or fan and sport or athletes: awareness, attraction, attachment, and allegiance. More than that this represent four moment of the evolution of the relationship between spectator and sport, where if the first two represent extrinsic traits, the last two attachments and allegiance are intrinsic.

The *„fan"* define „an enthusiastic follower of a sport or entertainment" (Wann, Branscombe 1990). A fan is more than just a mere spectator. Fans have a psychological bond to the target, a bond frequently referred to as the level of identification. Generally, the higher the level of identification with the target the more that fan's behavior is influenced by the target. In this idea we have fans with high levels of identification, and fans with low levels of identification. The two groups of fans differ in terms of: emotional involvement, underlying motives and observable behavior. In practice, the level of identification is likely to be a continuum ranging from zero to fanaticism.

One of the most developed topics is about the motivations which attract the spectator to the sport show. As the effect of the interest presented by the researchers, in the last 15 years, in this field had emerged few important psychometric instruments, such as: **Sport Fan Motivation Scale (SFMS) –** Wann D. L. (1995, 1999) with 23 items representing the most important issue from the field theory: eustress, self-esteem benefits, escape from every day life, entertainment, economic factors, aesthetic qualities, group affiliation, and family needs. **Fan Attendance Motivation (FAM) -** Kahle, Kambara, and Rose (1996) examined the "individual differences in psychological motivation for attending college football games" (p. 51). They focused on level of emotional attachment to a team, and the importance of winning and camaraderie as motives for attending games. **Motivation of the Sport Consumer (MSC)** – Milne and McDonald (1999) - suggested twelve motivation constructs (37 items) for spectators: risk-taking; stress reduction; aggression; affiliation; social facilitation; self-esteem; competition; achievement; skill mastery; aesthetics; value development; self-actualization. **Motivation Scale for Sport Consumption (MSSC)** Trail et al. (2001) hypothesized - there were nine factors representing motives for following sports: achievement, acquisition of knowledge, aesthetics, drama/eustress, escape, family, physical attractiveness of participants, the quality of the physical skill of the participants and social interaction.

An interesting aspect was evidenced from the beginning of the fandom phenomenon researches, when Cialdini et al. (1976) had focused on some affective reaction specific to sports spectating, like: Basking In Reflected Glory phenomenon (BIRG; Cialdini et al. 1976). This reflects individuals' desire to increase their association with successful others. In the opposition with BIRGing is Cutting Off Reflected Failure (CORF; Snyder, Lassegard & Ford, 1986) which manifest in a desire to distance one's self from an unattractive source.

The specialized literature (Cialdini, Richardson 1980 Cialdini et al. 1989, Finch, Cialdini 1989) presents another two self-presentation management strategy. The first technique is called "blast" which means to ignore the reality of the rivals that is after a defeat the subjects have the tendency to blast the rivals' achievement. And the last device was called "cognitive boost" or simple "boost" which expresses the tendency of people exposed accidentally with others, to accord in their mind favorable feature to person whom they are in contact with.
The four types of affective-behavioral reactions, called indirect tactics of self presentations management, have as a substratum the improvement or protection of self presentation, through to distancing by the team. These reactions are as behavioral answers, as motives that determine the spectator participation by the sports competition.
The direction of the attitude, and also of the behavior to the team is conditioned by team performance or by the expectations from this. In the same time Wann, Branscombe (1990) mentioned that the type of the perceptions and emotions that a person try during a sport competition depend by the level of identification with the team or sports, in the way that the low identified spectators have less reactions than the high identified spectators.
Social Psychology of Sport Fans' Home Page highlight few behavioral traits for an high identified fan, such: be knowledgeable, identify with their team after losses –no CORFing, do not tolerate sport fans antisocial behavior, celebrate championship responsibly, try being objective, go to away games, do not let being a sport fan interfere with more important things, involve your friends and family, be a good loser.

Aims

The first aim of this study is to identify the attitude of the students from the Physical Education Faculty toward sport spectating, especially handball games, and then to compare the information with other traits presented at the direct spectator from the venues.

Methods

The participants in this study were a number of 276 students (175 males, 101females), with ages between 18 and 39 years old (mean 21.41, mode 20). The sample as realized from three Physical Education and Sport Faculties from Romania: Baia Mare (61), Cluj Napoca (100) and consanta (115), situated in three cities with important tradition in handball, HC Minaur Baia Mare, U Transilvania Cluj Napoca şi HCM Constanţa.
To realize the study I used the sociological inquire method, for which I elaborate and apply a questionnaire with 13 items, and socio-demographic aspects like gender, age, study and occupation. The content of the questionnaire broach different topics present in the literature review, like: motives, frequency and costs of the participating to the handball competition, verbal and physical behavior of the spectator.

Results and discussion

The dates gathered beyond the applying the questionnaire to the students were centralized and processed with statistical packages Excel and SPSS. Every item was develop as independent variable together socio-demographic variable gender and ages. The dependent variable of this study was the faculty where the subjects follow the courses. The statistical indicators were: the number of cases, standard deviation, and the maximum and minimum of the ages from the responders. After this dates were introduced in a one-way analysis of variance to follow the common or the differences between the subjects perception about the handball spectating phenomenon.
First question "*How frequent do you participate at the handball competition?"* present a very diminishing participation of the students at the handball competition for only 22 students (7.9%) are going very frequent at the handball competition, most of them (42.6%) are going rare. The situation is completely different vis a vis of spectator attitude, which over 88% are going very often at the handball competition (Bogdan T. 2008:191). It's important to say that variance is not similar in the 3 groups (Levene test of homogeneity of Variance), while the groups present significant differences ($F_{2,274} = 3.53$, $p = 0.31$).About the gender topic, we see that much more females than men tend to go to the venues rarely, or very rarely, and this is not the same for the spectator.
One of the most frequently question presented in the literature review is about the reasons which bring the spectators (students) to the games. After an one-way ANOVA analyses we can say that there are important differences manifested between the faculties distribution of the answers ($F_{2,271} = 4.72$, $p=0.01$). The most frequently answer mentioned by the subjects is "I'm going to the games with my friends" 28.5%, "I'm going

to the games to relax" 21.9%, and "I'm going to the games to sustain my favorite team" 21.2%. On the other hand the answers could be framed in two classes of motives, like: intrinsic and extrinsic, with the general trend of an increased level of extrinsic motives, this even if the same importance for all subjects is to go to the games to "sustain the team". As a deeper analysis we observe that the female are different motivated as the males, especially extrinsic. So 56.7% from the female and only 44.8% from the male are motivated extrinsic, but the situation is inverse within the intrinsic motives. In comparison with the spectator options, the structures of the motives are pretty similar, but the percent of the most important choice was significantly high (63.59% - for "I'm going to sustain my favorite team") Bogdan T. (2008:195).

The third question "How attached are you on your favorite team?" present the attachment level of the physical education students by their favorite team. As I said earlier, instead "attached" in the literature we can find "identified" subjects. The students had to choose between three level of attachment, or identification: high, low and normal. So the test of homogeneity shows us that the distribution in the 3 groups of students is similar, and more than that the ANOVA reveal us that groups are very similar (F test not significant). About the gender in this topic the answers shown that female are less attached than the men, or more female (45.9%) are low identified than men (36.2%). Actually talking about the whole population the most often options choose by the students was "attached" (50.5%), and only 8.5% declare her "very attached". This is one of the most significant differences between the attitude of the students and the spectators' one which is 62.7% "very attached".

The next four items of the questionnaire presents aspects related to the availability of the subjects to spend money for sustaining their team, by purchasing season ticket, or promotional stuff, or to support the team at the away games on their own money. Actually these items evaluate in other way the affiliations level of the subject, by their team. Two of this variable "to spend money for sustaining their team" (0.40), "to purchase season ticket" (0.10) that because the values are not significant (at the level 0.05), the distribution of the subjects responses are not similar in the 3 groups. On the other side the next two items have similar distribution in the studied groups. The F test reveal not significant level of the items, this can be translate, from the statistical point of view, like the groups do have the same distribution. This fact is viewable from the descriptive statistic to where the score of the responses are very similar. So the majority answer with "no" at the four questions, with a mean of 70.4%. From this group of questions one differ more from the other, and we are talking about the disposition of purchasing season ticket. It's well known the importance of these for every team's budget, and we are talking about a particular type of spectator (the future handball trainer) who understands this importance. This is why we want to develop this item more analytical, such as: the "yes" responses have a variation interval from 27.8% at the Cluj Napoca responder, to 39.7% at those from Baia Mare. In comparison with the student's attitude, the spectators are much more open minded to spend money to sustain the team over 75%.

From this perspective it's clear that the students from Physical Education and Sport Faculty are not high identified with their handball team. This idea will be confirmed by the next item "are you agree to mark on your body the team sign?" which follow the same traits like the previous four. But the descriptive statistics reveal a percent of over 91 % of "no" respondents, a bigger part then for the previous items. The comparison with the spectators' traits evidenced similar aspects. If only 8.3% from the students agree to mark on your body the sign of their favorite team, from the spectators line almost 18% agree to do this. It's important to mention that in other culture (British, or Italian, especially in the case of soccer, but nowadays in handball too) this aspect is frequent, designing a high level of attachment to the team, but in the same time this is a behavior of identifying with there team.

With this item we entered in another well discussed issue in the literature, about the spectator behavior. Courneya & Carron (1992) in their framework highlight the influence of the spectator during a sport competition, as the most powerful influence exert on the competition outcome. In this idea I try to research to attitude related to the referees decision, and about the aggressive behavior of the handball spectator. First we tested the way in which the subject behave when the referees decision are against their favorite team. The prevalent behaviors are the verbal manifestation (33.7%), and then negative emotions (29.3%). But the Levene test indicate a significant value (p=0.047) that means that the variance is not similar in the groups and the answer are different ($F_{2,246} = 4,187$, p=0.016). This affirmation could be confirmed by the descriptive statistic, which identified the students' option. At the aforementioned question the most important answers reveal the fact that the students from Constanta behave most through verbal manifestation (booing, whistling, hurl curses), while in Cluj Napoca the students often feel stressed, negative emotions. In Baia Mare the students often internalize the emotion (26.4%), but in the same time they express verbally the emotion (24.5%). It's interesting to mention this group does not manifest sustainable behavior for their team.

The second item related to the perceived influence of the spectator on referees or referees decision had researched exactly this problem: "Do you consider that your behavior could influence the referees decision?". The answer was "no" (72.4%), this while the spectator perception is that they can influence the referees decision (48.8%). But the test of homogeneity reveal significant values (p=0.011) that means that the variations in the groups are not similar, so there are differences in variance of the responses. So despite, generally speaking, the students do not believe that their behavior can influence the referees decision the percent is different from a faculty to another, such as: Constanta 71.3%, Cluj Napoca 69.4%, and Baia Mare 79%. Reporting to the gender topic, 83.56% female believe that they can't influence the referee's decision, while only 67.03% from men do that.

The violent behavior of the spectators at the handball games is rarely happened. Only 32.2% from the subjects were witnesses at this kind of manifestation. Nor from the regular spectators haven't seen much more violence in handball (40.9%). But the inductive statistics reveal similar variance in the groups, and the F test show us the there are not significant differences between groups. So in all three universities center the subjects were witness at the violence act on handball games in a percent from 28.4% (Constanta) to 37.1% (Baia Mare).

The next item helps us to classify the spectators' aggressive behavior at the handball games, in the students' opinion, or to identify the aggressive behavior of the spectator. The answers were included in 6 classes of behavior that include verbal manifestation (53.6%), throwing with objects on the field (13.5%), physical manifestations (18.4%), and 11.1% don't know what to answer. The Levene test and ANOVA shows that the distributions of the responses in the groups are similar, and the groups look very similar too. Only the students from Baia Mare perceive less throwing with objects behavior than in the other faculties. The distribution of the results looks similar relate to the gender topic. According to the percent female responses are similar with the men's. In comparison with the opinion of the spectators about the classification of the aggressive behavior at handball games the things are very similar: 53% verbal manifestation, and throwing with different objects on the field such lighters, coins (17.4%), but less physical manifestation (9.8%).

The last item researches the area of motives which determine the spectator to behave aggressive, or violent. The inductive statistics reveal similar variance in the groups, and the F test show us the there are not significant differences between groups, so we have to analyze the descriptive data to understand exactly which are the reason that drive the spectator to aggressive behavior. 24.4% from the students believe that the failure of the education is one of the most important reasons that drive the spectator to act aggressive. Next reasons of the aggression are the referees attitude and decision 15%, and than the emotion with 12.8%. The structure of the responses is very different in the case of spectator presents at the handball game. They believe that the main reason of aggressive behavior is are the referee decision (40.5%), the failure of education (20.2%), and the emotions (17.2%). In both studies we can highlight two variables which have an unexpected position in our classification, both with low importance but different percent in the two studies, such: the team evolution is one of the les important factors that determine antisocial behavior. The second variable which was accorded les importance is alcohol consume.

Linear correlation

The data were correlate with statistical packages SPSS and Excel, after these we select the most significant correlation between the studied variable. The values of the Pearson correlation coefficient are starting with 0.228 with a significant level of p=0.00019 (p<0.001). The selected values certified not only a strong statistical relationship, but in my opinion, a real relation, a causative relation between the studied variable. In this context we have to mark out that although the values from Pearson correlation index are low, the statistical significance ("p")is very strong, designing a lot of relation occasional not at all.

Tabel I

Linear correlation Pearson coefficients between the studied variable

Nr. Crt.	Correlated variable	Correlation coefficient	Statistical significance p
1	Study – occupation	0,928	0,00000000000000
2	Frequency – attachment	0,343	0,0000000038
3	Frequency – season ticket	0,342	0,0000000041
4	attachment - season ticket	0,244	0,000036
5	attachment – away games	0,341	0,0000000047
6	spend own money – season ticket	0,339	0,00000000584
7	spend own money - away games	0,493	0,0000000000000000016

8	season ticket - away games	0,335	0,0000000094
9	season ticket– promotional stuff	0,438	0,0000000000000171
10	season ticket – tattoo	0,702	0,000000000000000000000000
11	season ticket – referee disadvantage	0,238	0,000055
12	season ticket – own influence	0,569	0,000000000000000000000027
13	promotional stuff – tattoo	0,629	0,0000000000000000000
14	promotional stuff - own influence	0,509	0,00000000000000000104
15	promotional stuff – aggressive behavior	0,228	0,000119
16	promotional stuff – motives aggressive behavior	0,239	0,000055
17	tattoo - referee disadvantage	0,244	0,000039
18	tattoo - own influence	0,814	0,000000000000000000000000000
19	tattoo – witness spectator violence	0,279	0,0000022
20	referee disadvantage - own influence	0,301	0,00000029
21	referee disadvantage - witness spectator violence	0,262	0,0000085
22	witness spectator violence - aggressive behavior	0,253	0,000019
23	witness spectator violence - motives aggressive behavior	0,345	0,0000000033
24	aggressive behavior - motives aggressive behavior	0,560	0,000000000000000000000024

Coding

For a better understanding of the studied aspects, especially for correlations, it's important to present the way in which the variable were coding: *gender*: 1 –male, 2- female; study: 1- school, 2 – lyceum, 3- college, 4 – university, 5 – master; *occupations:* 1 – retired, 2- student, 3 – engineer, 4 – administrator, 5 – teacher, 6 – worker, 7 – functionary, 8 – economist, 9 – other; *How frequent do you participate at the handball competition?*: 4 – very frequently, 3 – frequently, 2 – rare, 1 – very rarely; *Which are the motives for your participations at the handball games?*: 1- to be with my friends, to leave my home, 3 – to sustain my team, 4 – to relax, 5 – to discharge the inner tensions, 6 – other: mention; *How attached are you by your favorite team?* 3- very attached, 2 – attached, 1 – little attached; *Are you prepared to spend your money to sustain the team?* 1 – yes, 2 – no; *Are you prepared to buy season ticket for your team games?* 1 – yes, 2 – no; *Are you prepared to go on your own to the away games of your favorite team?* 1 – yes, 2 – no; *Even if the cost will be expensive would you like to by promotional stuff with the sign of your team?* 1 – yes, 2 – no; *Would you mark on your body the sign of your favorite team?* 1 – yes, 2 – no; *How do you behave when you feel that your team is disadvantaged by the referee?* 1 – negative emotions, 2 – verbal manifestation, 3 – indifference, 4 – sustainability, *Do you believe that your behavior can influence the referees decisions?* 1 – yes, 2 – no; *Have you ever been witness of spectator violence behavior at the handball games?* 1 – yes, 2 – no; *What does the aggressive behavior of the spectator consist of?* 1 – throwing with objects on the handball field, 2 – verbal manifestation, 3 - physical manifestation, 4 – interjections, rowdiness, 5 – I don't know, 6 – other; *Why do the spectators behave aggressive?* 1 – the team, 2 – the referee, 3 – the failure of education, 4 – inner emotions, 5 – alcohol, 6 – team attachments, 7 – I don't know, 8 other.

Conclusions

The study reveals few significant conclusions about the Physical Education and Sport students' attitude in relationship the handball competition. More then that we study mark out few important differences between the students and spectator behavior at the handball games.

From the very beginning we have to mention that handball spectating could be part of students professional forming, this was one of the start idea for which we research the students attitude or habit to go to the handball venues. Therefore as a general conclusion of this study we can evidence a significant difference between students and spectator behavior, but comparing the three groups of students investigated we observe similar features in the answer distribution. Although there are few particular aspects that we have to evidence, such as:

1. Over 42% are going rare to the handball games, and only 7% very frequent.
2. Female tend to go to the handball games much more rarely or very rarely then men.
3. The main reason for which the students are going to the handball competitions is "I'm going to the games with my friends" 28.5% and the spectator are going to "sustain my favorite team" 63.59%.
4. 50% from the investigated students are "attached", this while 62.7% of spectators are "very attached". And more female (45.9%) are less attached than males (36.2%).
5. The students are not inclined to spend money to sustain the team (70.4%), while the spectators want to do this (75.7%).

6. When the referee's decisions are against their favorite team the prevalent behaviors are the verbal manifestation (33.7%), and then negative emotions (29.3%). This because over 70% are conscious that they can't influence the referees decision.
7. In students opinion violent behavior is very rarely at the handball games. This is way in handball most aggressive behavior is verbal manifestation, not physical manifestation. The motives of this behavior are the failure of education and the emotions.

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Comparison Anthropometric Characteristics of Bakhtiari, Arab and Roman ethnic groups Females students of the Khuzestan Province Universities

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Abstract

Introduction

The objective of the current research is the cross- comparison of several anthropometric characteristics of non-athletic Females from the Khuzestan province selected from the Bakhtiari, Arab and Roman ethnic groups across various campuses across the city of Ahwaz and those of top-athletes from various fields.

Methods

The obtained results were then analyzed using descriptive analysis techniques in order to determine the frequency, the percentage, the means and the standard deviation of the group and inferential statistics such as multiple variances and MANOVA analysis in order to compare the study groups.

Results

There was a significant difference exists between the variables of height, extent of lower torso, and size of the hands and feet of the three groups selected.

Discussion

The obtained results indicated showed that the body suitability profile of female subjects from the Bakhtiyari tribe had a closer affinity to the profile of female swimmers and volleyball players.

Table 1. Average of Variables for Female Students in the Khuzestan Province over All Three Ethnic Groups

index			Arabs		Romans		Bakhtiyaris	
Variables		p	SD	SD	SD	Mean	SD	Mean
1	Height(cm)	0.043	5.613	159.6	4.889	158.5	5.018	160.0
2	Weight (cm)	0.070	8.566	56.63	8.703	54.35	9.384	56.53
3	Extent of Upper Torso(cm)	0.011	3.335	69.69	3.208	69.15	2.999	70.30
4	Size of hands(cm)	0.03	1.041	17.45	1.162	17.44	1.052	17.83
5	Extent of lower Torso(cm)	0.151	5.493	95.58	4.010	94.78	4.738	95.88
6	Length of foot(cm)	0.023	1.542	23.77	1.441	23.50	1.377	23.99
7	Shoulder Breadth(cm)	0.525	1.857	36.10	20.006	36.19	1.671	36.35
8	Ratio of upper torso to height	0.971	0.022	0.04	0.017	0.04	0.019	0.04
9	Body mass index(kg/m)	0.274	2.964	22.21	2.882	21.60	3.240	22.03

Introduction

The rapid advancing of science and technology which in itself permits fast and easy access to results has resulted into it being utilized by Sports specialists and trainers in order to use the aptitude inherent in people thus minimizing time and costs. Aptitude in sports is defined as the ability to determine whether a person has the propensity for participating in structured specialist sports training programs in order to build up their professional capacities as athletes in order to ultimately introduce them to various sport federations or clubs for the honing of their professional athletic skills.(1) Nowadays many countries throughout the world use specific programs for the identifying of potential athletes and evidence shows that over the past five decades trainers and coaches have used such methods on a rule of thumb basis for determining potential aptitude and evaluating the physical and mental potential of candidates. Czech, Slovenia and more recently China have initiated systematic sports aptitude identification programs which greatly assisted them in the obtaining of Olympic medals during the decade spanning 1970 to 1980.(2)

Methods

The methodology applied in this research is descriptive and comparative. The survey group consists of three ethnic groups, i.e. Bakhtiyari, Arab and Roman residing in the Khuzistan Province during the period spanning 2005-2006. The survey group was randomly selected from various campuses across the city of Ahwaz and in total consisted of 400 subjects from all three ethnic groups of whom the various anthropometric characteristics were elicited.

Results

The obtained results showed that the among the variables of average height, average extent of upper torso, and average size of hands and feet among the non-athletic females of the three ethnic groups of the Bakhtiyari, Arab and Romans a difference of $\alpha = 0.05$ exists, whereas for the variables of weight, extent of lower torso, shoulder breath, ratio of torso to height and the body mass index a significant difference of $\alpha = 0.05$ does not exist (Table1).

Table 1. Average of Variables for Female Students in the Khuzestan Province over All Three Ethnic Groups

Statistical index / Variables			Arabs		Romans		Bakhtiyaris	
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9	Body mass index (kg/m)	0.274	2.964	22.21	2.882	21.60	3.240	22.03

Figure 1. Shows the comparison of body profiles for the three ethnic groups of Bakhtiyari, Arab and Roman female non-athletes with those of professional female swimmers in Iran in which it can be seen that the height of the female swimmers is taller than those of all three ethnic groups. In terms of weight only the Roman group was lighter than the swimmers, and the other groups were heavier than the female swimmers. The extent of the upper torso, the extent of the lower torso, shoulder breadth and the ratio of the upper torso to height in the swimmers was greater than all three ethnic groups, whereas the size of hands and feet and the body mass index of the swimmers was less than all three groups. The size of the Bakhtiyari females' hands was larger than those of the swimmers while the other two ethnic groups had smaller hands.

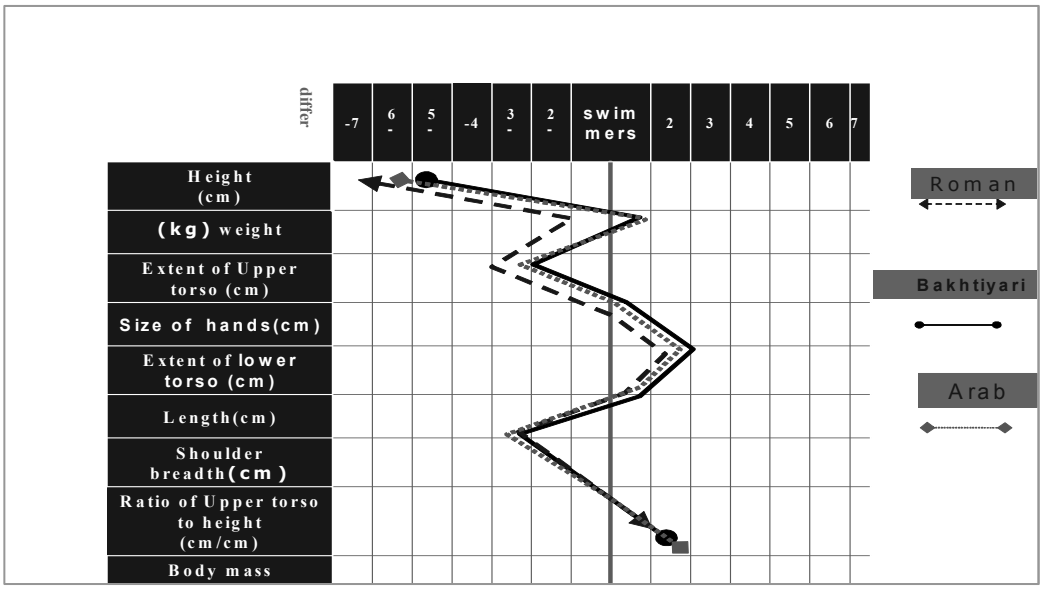

Figure1. Carves of Comparison of body profiles for the ethnic groups of Bakhtiyari, Arab and Roman female non-athletes with those of professional female swimmers in Iran.

Table 2. Average of Variables for Professional Female Athletes across Various Sports in Iran/Khuzestan

	Groups / Variables	Swimmers IRAN	Swimmers Iran/Khuzestan	Volleyball players
1	Samples	10	15	14
2	Height Average (cm)	166.17	164.83	170.19
3	Weight Average (kg)	65.67	55.83	62
4	Extent of Upper torso Average (cm)	72.33	71.5	73.19
5	Size of hands Average (cm)	17.5	17.71	18.87
6	Extent of lower Torso Average(cm)	94.5	94.91	102.37
7	Length of foot Average (cm)	23	24.91	25.56
8	Shoulder Breath Average	39.80	40.79	38.9
9	Ratio of upper torso to Height Average (cm)/(cm)	0.43	0.42	0.34
10	Body mass index ($kg/m^{\wedge 2}$)	20.37	20.54	21.4

Figures 2.3 . shows the comparison of the body profile for the three ethnic groups of Bakhtiyari, Arab, and Roman female non-athletes with those of professional female volleyball players in the Khuzestan province in which it can be seen that the height of the female volleyball players is taller than those of all three ethnic groups. In terms of weight only the Roman group was lighter than the volleyball players and the other groups were heavier than the female swimmers. In terms of other variables and the body mass index, a balance existed among all the various groups.

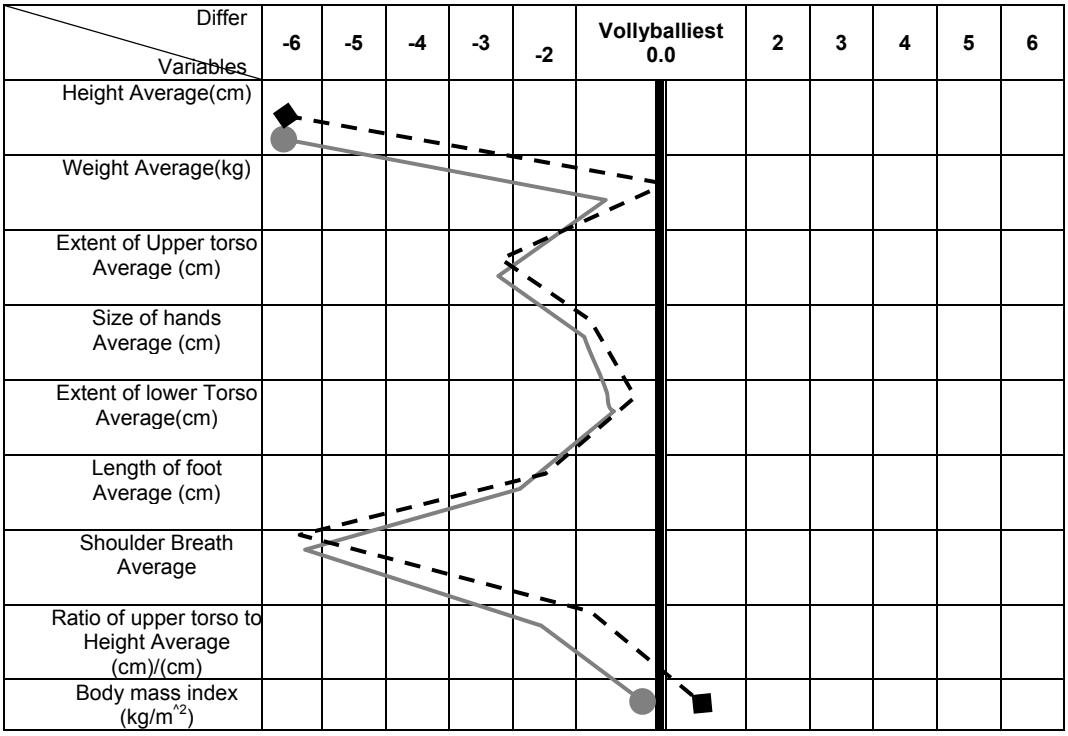

Figure 2. Carves of comparison of the body profile for the three ethnic groups of Bakhtiyari, Arab, and Roman female non-athletes with those of professional female volleyball players in the Khuzestan province.

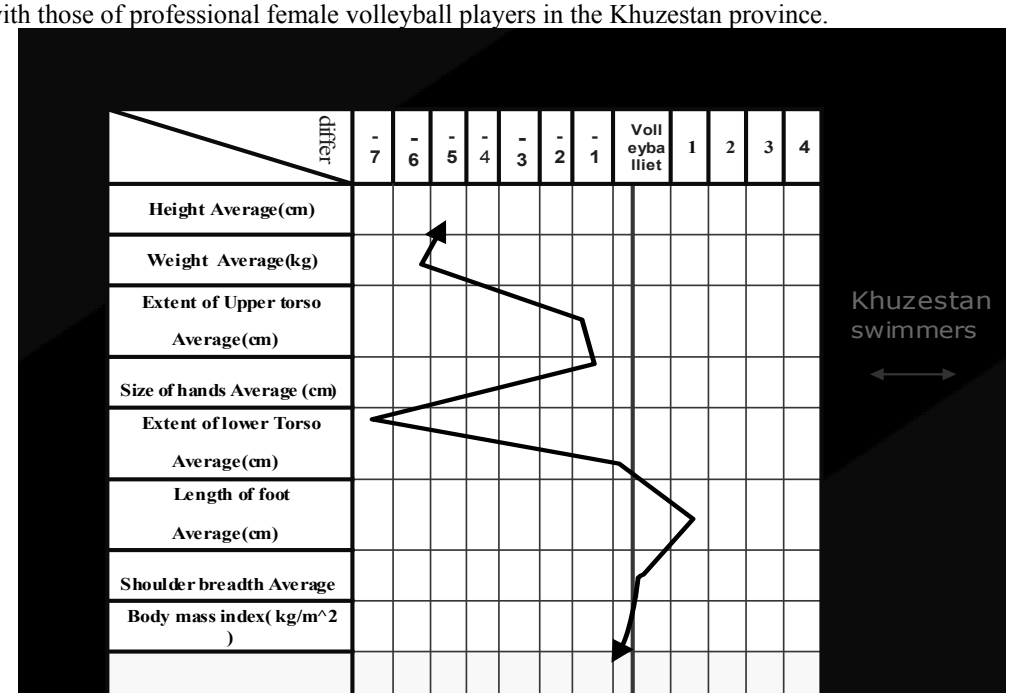

Figure 3. Carves of comparison of the body profile khuzestan swimmers with those of professional female volleyball player.

Discussion

The results for the variable of height obtained through the study closely paralleled those carried out by Matney (3) upon the European and African races, Sampei et al. (4) upon the Japanese and Caucasians, Hanel (2004) (5) upon the Hungarians and Rumanians, Freedman et al (6) upon the Caucasian , Afro-American and Mexican- Americans and Padilla and Heirani (7) (10) (11) upon the African races in the Caribbean and Asia in as such that all the aforementioned studies showed a significant difference regarding the variable of height for various races. In terms of genetics, height is a multiple integrated characteristic, that is to say both environmental and genetic factors influence it therefore it is plausible to state that the difference in height among various races in addition to being genetically influenced, is also affected by the growth curve of various races and their lifestyle during the said period. According to Sampie et al (4). the extent of the sample and the age range can also influence the study. The females from the Bakhtiyari tribe were in general taller in terms of their upper torso, thus the results of the study carried out were compatible with the results obtained by Matney (3) upon the European and African races, Taner (8) upon Asian and Europeans, Corton (9) upon the Chinese, Japanese, North Americans and British, and Hanel (5) upon the Hungarians and Rumanians.

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Students' Motivation For Participation In Physical Exercise And Sport Activities

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Abstract

Introduction
The fundamental changes that have occurred in the social and political life of our country have influenced generally our educational system, and particularly the physical education and sport at the higher schools. The purpose of this research was to analyze the students' motives to attend the classes in physical education and sport.

Methods
Pleven and the University of Architecture, Civil Engineering and Geodesy in Sofia. They participated in an Object of the research were 180 students (120 women and 60 men) at the Medical University in inquiry which included two sets of questions whose aim was to find out what the students' requests and motives to participate in physical exercise and sport activities are.

Results
In the first group the question "Would you like to take up sports and physical exercises?" was answered positively by 95.55% of the students and negatively only by 4.44% of the students predominantly women. When asked about their preferences for practicing sports, 54.44% of the students show interest in fitness, 47.77% - in swimming, 31.66% - in tennis and 24.44% - in sports games. In the second set of questions concerning the students' motivation for sport, the most highly rates the motive for preservation and strengthening of health, followed by development of physical qualities, relief from academic pressure, and avoiding the harmful consequences of immobility.

Discussion/Conclusion
On the whole the students want to attend the classes in physical education and sport, preferring fitness, swimming, tennis and the sports games such as basketball, volleyball and football . From the general motives the most highly rated are those for preservation of health, development of physical qualities, relief from academic pressure and having fun and pleasure during the classes in physical education and sport.

Introduction

The fundamental changes that have occurred in the social and political life of our country have influenced generally our educational system, and particularly the physical education and sport at the higher schools. Significant changes have occurred in the attitude of students towards the content of the teaching process, the form of organisation and the preference for a particular sport. Students' motivation for participation in physical exercise and sport activities have also changed to a great extent.

The purpose of this research is to analyse the students' motives to attend the classes in physical education and sport**.**

Methods

The basic working method was the survey. Object of the survey were 180 students (120 women and 60 men) at the Medical University in Pleven and the University of Architecture, Civil Engineering and Geodesy in Sofia. The survey was anonymous and contained alternative and scaled answers and included the following three basic questions:
I. Would you like to take up physical exercises and sport?
II.What sport would you like to attend?
III. What are your motives for participating in physical exercise and sport activities?

For the third question the following answers were suggested:
- Preservation and strengthening of health.
- Increasing the physical development level.
- Training and improving the technique of the sport chosen.
- Improvement of the overall physical ability.
- Development of certain physical qualities.
- Individual athletic performance or definite sport results.
- Superiority over their colleagues.
- Relief from academic pressure.
- Avoiding the harmful consequences of immobility.
- Practising of preferred and desired sport.
- Having fun and pleasure during the classes in physical education and sport.
- Professional - applied preparation by means of physical education and sport activities.
- Acquiring knowledge of individual exercises in physical education and sport.
- Others.

For the mathematical processing of the data obtained we used alternative analysis.

Result analisys

At analysing the results of the research we divided the questions of the survey into two main sets. The aim of the first set was to establish students' wishes and preferences towards the physical exercise and sport activities. The question "Would you like to take up physical exercises and sport ?" was answered positively by 95.55% of the students and negatively only by 4.44%, due to the predominantly negative attitude of women 6,66% (fig.1).

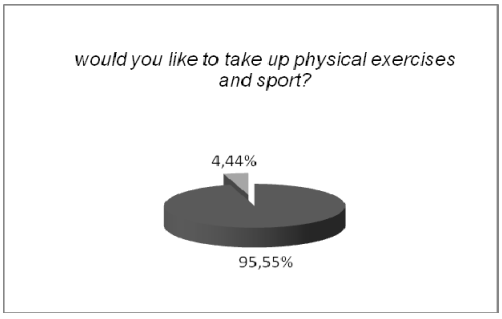

Figure 1

When asked "What sport would you like to attend?", 54.44% of the students have pointed out fitness and 47.77% - swimming. Highly rated are also the preferences for tennis - 31.66%, aerobics - 26.11% and the sports games basketball and volleyball - respectively 20.55% and 24.44%. Between 16 and 18% have shown interest in skiing, table tennis and eastern martial arts. (fig.2)

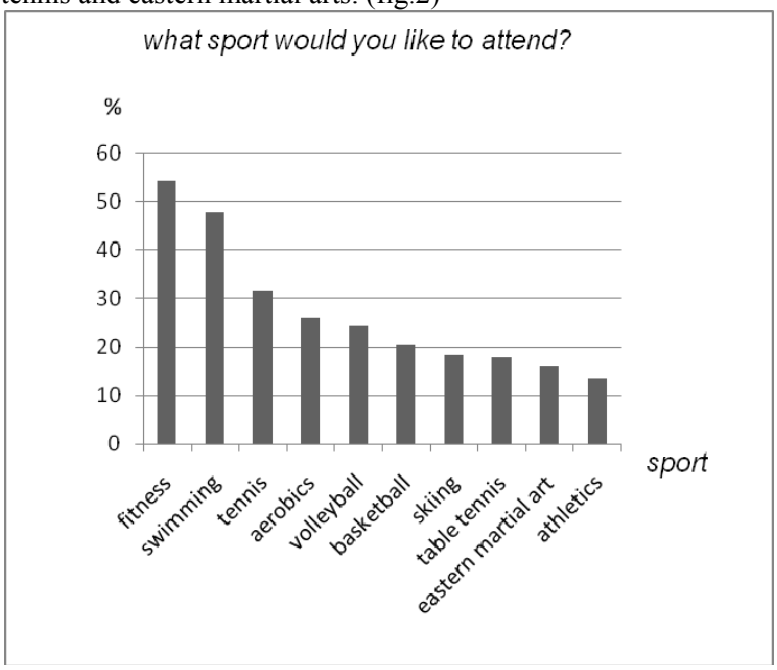

Figure 2

In the second set, the question "What are your motives for participating in physical exercise and sport?" strikes that for the men and the women most highly rates the motive for preservation and strengthening of health - respectively 80% and 75,83%. On the second place - 72,77% the students put development of certain physical qualities, for the men prevailing the development of the strength - 56,66%, whereas for the women endurance - 51,66%, but as a whole there is a tendency to develop enduarance in both sexes - 52,22%.

For 68,88% of the inquired students the physical exercise and sport activities are a means of relief from academic pressure as well as avoiding the harmful consequences of immobility through physical exercise and sport as part of the education process, and there are no significant differences in the specified motive for men and women - respectively 68,33% and 69,16%.

The pursuit of improvement of the overall physical ability as a motive is pointed out by 50,83% of the women and 43,33% of the men regardless of its significance as an integral indicator of their physical abilities. Considerable number of students - 46,11% , of both sexes, take part in physical exercise and sport activities for fun and pleasure, while 45,55% for practising preferred and desired sport. Lower is the percentage of the specified motives concerning

the individual athletic performance and sport results, superiority over their colleagues, professional - applied preparation and acquiring knowledge of individual exercises in physical education and sport.

Discussion

1. On the whole the students want to attend the classes in physical education and sport, preferring fitness, swimming, tennis, aerobics and the sports games such as basketball, volleyball and football for the men.
2. From the general motives the most highly rated are those for preservation of health, development of physical qualities, relief from academic pressure and having fun and pleasure during the classes in physical education and sport.

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Team Building - importance and application in the education of students as future managers

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Abstract

Introduction

In this time and age, physical activity is reduced to a minimum and, yet, it is well-known that insufficient amount of physical activity has been declared as a risk factor. (Mitić D. 2001). Students present a great risk group, as they are to enter the world of workforce. There is an increase in the so-called sedentary work habits, the monitor has become everything. In these stressful times, the contemporary man in this contemporary world has less and less time for himself and people around him. People are under the risk of becoming machines themselves. The life-style is such that physical activities have been reduced to the minimum, while some mental and psychological abilities are often abused to their maximum. There are various forms of student recreation which can lessen or annul the influence of negative factors the student population encounters on daily basis. In his work, Mitić D. (2001) defines the student recreation as a complex process capable of reducing the influence of negative life factors. Further, in practical work, it has several organizational forms, such as recreation over the semester (sports organizations, manifestations, field trips), summer holidays, winter holidays, camping, popular sport competitions... Various forms of TEAM BUILDING as a special form of student recreation are appearing more and more. Its primary goal is to develop team spirit, the feeling of belonging to a team and to bring communication to a higher level. At the same time, team bulding programmes prepare students as future experts to function in a team at their future work place. Content analysis of team building programmes indicates that each expert team should have an expert in physical education included in their programme (animators, fitness trainers, instructors of various activities). Physical culture experts are promoting healthy life styles, creating habits of excersising actively and regularly. In addition, as they are actively realising team building programmes, they must be acquainted with general and specific characteristics of the population they work with (age average, sex, the characteristics of work habits, the effects of team building programmes...).

Methods

Since there are various forms of team building programmes, there are also additional terms that provide a more accurate description of the programme content, for example FAMILY AND FRIENDS DAY, STAFF PARTY, TEAM BUILDING BRAKE, HAPPY HOUR. Characteristics and content of team building programmes were analysed.

Disscusion

Hence, it is possible to choose a programme for a suitable group of students, depending on the desired outcome of the programme. Based on the characteristics of the target group, there are programmes on water, programmes for increasing adrenaline level, competitive programmes, evening theme programmes.

THE TERM TEAM BUILDING (Morton Benson dictionary)

TEAM - team, crew, competing team
TO TEAM - to associate together, to join forces
BUILDING - construction, building
BUILD UP - to build, expand, strengthen, reinforce

1. Team building – a range of educational-recreational activities used in the aim of achieving a team's (group's) reliability and efficiency. The boosting of team spirit, development of communication between team members, developing the cohesion of the team, the strength of the team, the boosting and exchange of positive energy are the main tasks of the building programme. Team building is a process by which a group of people is trained in achieving a certain goal, the team members motivated and efforts made on developing skills necessary for achieving a set goal.

The team building programme represents a series of interesting and relaxing activities which reveal a person's character. By taking an active part in team building, every individual unconsciously reveals all the traits of his/her personality, which had not been visible up till then or were not as pronounced during the course of daily or habitual activities.

The main reason for organising a team building programme on the part of a future employer is the furthering of his/her workers' productivity, their communication, the raising of cooperation to a higher level, a bigger success in the work place, increasing motivation and interest for the work. With the help of team building, the employer has the possibility of testing, verifying the ability to function of his/her employees in newly occurred situations (under-pressure work), the speed and efficiency of adjusting, cooperation with the rest of the team. Seeing that at team is as strong as the strength of its weakest link, an employer can estimate which worker is more agile and ready for new challenges, and who is more of a stereotype, or rather of whom he/she can expect to succeed, and on whom he/she can rely in future projects.

All the other members of the team (group) enjoy multiple benefits from a team building programme. In the first place, the possibility of communication and socializing with colleagues outside the work place and cooperation in areas which are not directly related to daily activities and stereotype obligations. In this way, team members can get to know each other much better and what is most important, besides being colleagues (associates) they also become friends. Colleagues can also see amongst themselves how each individual manages a new situation (problem), his/her way of reacting, and approaching a problem. This is an excellent opportunity for the group members to get to know each other better, overcome obstacles in daily communication, recognise and make use of the up-till-then unknown talents and abilities of their colleagues, to join creativity and innovations in resolving problems and tasks at the team building itself as well as in their future work place. It also serves to detect faults and weaknesses of one's own as well as those of colleagues and work on their removal at team level, creating a feeling of belonging to the team and responsibility towards it. Naturally, the final goal is to build a strong and capable team which does not have weak links.

Team building is not only an activity which is carried out, worked through, this is primarily a way of thinking directed in only one direction, the daily building of TEAM SPIRIT at the work place during working hours, as well as during all other freely chosen activities. The main starting point of team spirit is the attitude which should be taken by each individual in the team NONE OF US IS AS GOOD AS ALL OF US TOGETHER.

The implementation of the team building programme in the process of educating students, signifies a direct participation in the process of forming and equipping future experts for certain fields, through revealing their qualities and at the same time removing their weaknesses. By an active participation in the programmes, each team member (student) gets his/her own space and possibility of demonstrating their qualities in resolving a task.

2. Team building programmes

There are various forms of team building programmes and their division has been made based on several criteria. According to the length of duration they can be one-day (half-hour, several hours) or several-day programmes. According to the place of their organising, at the work place (during or outside working hours), outside the work place at locations determined in advance, or rather locations to which organised trips have to be made. The most important division is according to the contents of team building programmes and the goal which should be achieved with a certain programme. The programme's contents is directly related to the characteristics of the future field of work, the description of the work place, but it is also related to other divisions. Meaning that the other characteristics of the programme (duration, location of its organising, number of participants) influence the content of the programme. The form of the team building programme which will be organised directly depends on the number of participants, the characteristics of the group, financial possibilities, the existence of an expert personnel for this area. When we have all the necessary data on the organisation of the programme for the creation of the contents of the programme, the only limit is imagination. The programmes are, therefore, adjusted to the needs and goals of the team, depending on whether the team is under stress, whether the desire is to improve communications, mutual trust and cooperation so that the team would be more productive and more efficient or organise a quality leisure time in a relaxing and fun atmosphere. Through these building programmes it is possible to organise contents and activities which will be related to the descriptive characteristics of the future work place. With the help of these programmes, it is possible to carry out an evaluation (estimate the degree and quality of training) of the students, and these indicators (parameters, evaluations of success) can be used as a form of qualification (recommendation) when applying for a job.

Just as there are different forms of team building programmes there are also additional names which more closely determine the contents of the programme itself such as FAMILY DAY, STAFF PARTY, TEAM BUILDING BRAKE, HAPPY HOUR....

3. Contents of a team building programme

The content of these programmes has a wide range from an active break during the working day where the goal is to raise positive energy and atmosphere for that working day, to organised educative seminars on work and functioning in the team, to organising different sports-recreational events, creative workshops... Notwithstanding which kind of programme it is, the most important thing is for the final result of the whole team to depend on each individual member, since it is the team work and mutual cooperation that are one of the basic terms of team building. Activities should be planned in such a way so as to develop and underline the qualities of an individual in the team, and for all his/her shortcomings to be made up for the team as a whole. Even though, for the needs of organising a programme, we require information about daily work, most activities should in fact be different from the daily work environment. Especially if these are sedentary work places where it is more than necessary to introduce a little action and increase the adrenaline level. Programmes stimulate people for action in previously planned programmes, events with the aim of relaxing during physical activities.

The team of experts who organise team building programmes is comprised of people who are usually engaged by the boss or manager of a company, from whom the experts receive basic information on the employees' status, the kind and characteristics of work, the company policy and what is most important on the mood among the employees, and social atmosphere among the employees. The expert team is comprised of experts from different areas: psychologist, andragogy expert, experts in the area of physical culture (animator, fitness instructor), sociologist, doctors specialists, nutritionists...

The implementation of team building programmes is so important that many companies develop complete team building strategies on a long-term scale. Also, today there are companies and expert associations for team building who deal exclusively in packages and offers of team building programmes. There are a great number of different TEAM BUILDING programme packages, and the best results have been shown by programmes which contain several features such as:

- **programmes on water:** sailing (regattas), kayak, rafting, deep-water diving and fishing courses, fishing.
- **programmes for raising the adrenaline level:** paint ball, carting, off-road driving in jeeps (safari), shooting, paragliding, hot air ballooning, skiing, speleo-adventure...
- **competitive programmes:** tournaments in team sports, treasure hunt (by the sea, in the town, at the work place), golf, orienteering...

- other programmes: wellness programmes, hiking tours, bicycle adventures, truffle search, treatments (massages), organised nature trips (camping, bird watching), dance classes, classes of self-defence.....
- **theme evening entertainment programmes:** dance night, karaoke show, masked ball, playback and talent show, tasting of old wines and good food (general knowledge quiz)....
- creative workshops: a problem is set before the team, a task which can only be resolved through team work (possible tasks have to be closely related to the tasks usually dealt by, in the profession of a certain group of students). Workshops can also be competitive, when several teams have the same task which has to be resolved as soon and as efficiently as possible.

4. Conclusion

In the world in which the modern man lives and works, he is daily exposed to large quantities of stress, especially in the workplace. The implementation of team building programmes lowers the tension at the work place, transmits positive energy, strengthens the team spirit and motivates employees and also increases their work efficiency. Creating a positive atmosphere at the work place also contributes to a better functioning of the employee's whole family, since he no longer carries his/her daily frustrations with him/her to the family environment. Taking part in team building programmes creates positive memories and impressions which bring work colleagues together and they first of all become close friends, and only after that close associates. The team building programmes should primarily be used as preventive action (activity), and only then as a means of removing undesired effects of the work place. The importance of the team building programme in the process of educating students is manifold, since the implementation of the programme actively influences the forming and preparation of future experts. By an analysis of the contents of team building programmes it can also be concluded that in the team of experts for team building programmes the position of a physical culture expert (animator, fitness trainer, instructor in various activities) is absolutely necessary.

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Sub Themes 4.

University Sports: a Foundation for Education and Academic Achievement

Strengthening PE Curriculum Reform, Promoting "Sunshine Sport Movement" The PE Curriculum Reform Theory and Practice of Harbin Engineering University

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Abstract

Introduction

In order to carry out the Acts--- The Decision of Developing Sunshine Sport Movement for Millions of Students Nationwide(Act1) and The Suggestion of Strengthening the Work for Youth P.E. and Promoting Youth Health(Act2) , all types of schools in China has carried out "Sunshine Sport Movement". This paper is speaking of the experiences of Harbin Engineering University (HEU) to promote the "Sunshine Sport Movement".

The History of PE Curriculum Reform and the Ideas of PE Curriculum of HEU

In 1978, HEU has carried out the Optional Courses for students to choose their favorite sport events. In 1998 and 2000, the first two rounds reforms have been carried out, focusing on which students should master one or two sport skills basically. In 2003, the third round reform has been carried out, exploring the "Curricular and Extra-Curricular Teaching Model" and "On and Off Campus Teaching Model" . In 2007, in order to carry out the Act 1 and Act 2, Club Teaching Model has been carried out to deepen the reform of P.E. curriculum in HEU.

The Practice of Harbin Engineering University

It cannot take effect without considering the actual situation and geographical characteristics of HEU to implement the "Sunshine Sport Movement". In the process of Sunshine Sport Movement", HEU complies with the ideas of which Sunshine Sport Movement" should synchronize teaching reform and should synchronize on and off campus sports activities.

To set up "Integration PE Courses" by implementing curricular teaching and extra-curricular teaching

Curricular teaching is that students according to their preferences and specialties to choose sports clubs where they have the rights to select teachers and class time. Extra-curricular teaching has different contents, such as rules learning, competitions, performances, skills improving. Students need to learn by themselves according to their preferences by using "Physical Education Electronic Learning System"

To set up teaching station for extra-curricular activities

To instruct students' learning, exercises and competitions by relying on teaching club and student's instructors.

To carry out on and off campus competitions in different levels

The PE department will guide sports associations and students organizations to carry out some small and diversified competitions in which a large number of students in different levels can involve.

To set up the outdoor club for students

By taking full advantage of the geographical and climatic characteristics of Harbin City, the PE department has set up canoe, mountain climbing, paintball, skating, skiing and other outdoor activities so that students may have the possibility to fully enjoy the nature and meet the needs of students' personality development.

To set up sport festival for students

Every year, HEU will celebrate a sport festival. Apart from common sports like football, basketball, swim, some Chinese recreational games will be held such as flying kite and campus orienteering. The festival will reach a climax when the HEU Sports Games takes place. In addition, sports science seminars, sports salon, sports photography show are also be held to enrich the cultural life for students.

Conclusion

In this paper, HEU would like to share the experiences of promoting „Sunshine Sport Movement" with FISU family members, international PE teachers and experts with the aim of creating a foundation for healthy lifestyle of students.

1. The History of PE Curriculum Reform of HEU

HEU carried out the Optional Courses Model in 1978. In 1992, the Ministry of Education of China mandated the "Teaching Guidelines for PE Curriculum" across the country to implement optional courses teaching. Since 1992, HEU has carried out a total of four rounds of physical education reform.

First round: In 1998, PE Department conducted the first round of teaching reform, which is the continuation of optional courses, aiming at cultivating student to develop one or two basic sport skills and form a life-long habit of exercise.

Second round: Based on the first round reform, we started the second round of teaching reform in 2000, a comprehensive reform of the curriculum objectives, content, teaching methods, curriculum resources, curriculum evaluation, etc. The research of second round reform has been rewarded for the second prize in Teaching Achievement of Heilongjiang Province.

Third round: In 2003, focusing on implementation of the spirit of “Teaching Guidelines for PE Curriculum", the third round reform has been carried out, exploring the “On and Off Campus Integration Teaching Model” which is based on second round of teaching reform. The research of the third round reform gained the first prize in Teaching Achievement of Heilongjiang Province.

Fourth round: In 2005, HEU carried out the teaching reform for undergraduates, setting up "the Assurance System for Teaching", and other “Projects" for teaching quality. In 2007, in response to “The Decision of Developing Sunshine Sport Movement for Millions of Students Nationwide” issued by Ministry of Education of China, a new round of reform has been carried out.

2. The Idea of PE Curriculum in HEU

The physical education curriculum of HEU is for all students, with the principle of people-oriented and the purpose of harmoniously developing students’ physical, psychological, social adaptation, promoting the students to learn vividly and lively. In order to achieve the objectives of physical education, all the PE teaching activities should be included in the PE curriculum with the purpose of teaching programs in a planned, organized system. It is not just PE courses, but an all-round development of educational curriculum.

3. Strengthening PE Curriculum Reform, Promoting “Sunshine Sport Movement”

In order to fully mobilize the students to participate in sports exercise and ensure the smooth implementation of the “Sunshine Sport Movement”, HEU carried out the reform of PE curriculum, which is based on the original Optional Courses Model. Taking advantage of constructing the "Campus All in One Card" and the Digital Sports Information Platform as a security, we endeavored in creating a sunshine sport classes and promoting the Sunshine Sport Movement.

Practicing the integration teaching of “On and Off PE Curriculum”, centering on the development of students, emphasizing the principle position of students, we take “Club Teaching Model” in curricular class. As for extra-curricular class, we independently implement specific activities plans according the program of extra-curricular sports clubs. HEU set up varied sports clubs for students, which are geographical features and traditional characteristics. The planned teaching mode was replaced by outline-guiding teaching mode, which changed the traditional teaching form and fixed the new form of unit instruction in PE classes. Relying on the Digital Sports Information Platform, we carry out multimedia auxiliary teaching for PE teaching, such as extra-curriculum multimedia self-study learning and practicing, network self-learning and interactive learning and exchanges.

Breaking away from traditional PE teaching mode, the students now have more autonomy. Aiming at the realistic situation of HEU, “Sunshine Curriculum" has been developed which is divided into one curricular class, one extra-curricular class, one extra-curricular exercise and one morning exercise in each week.

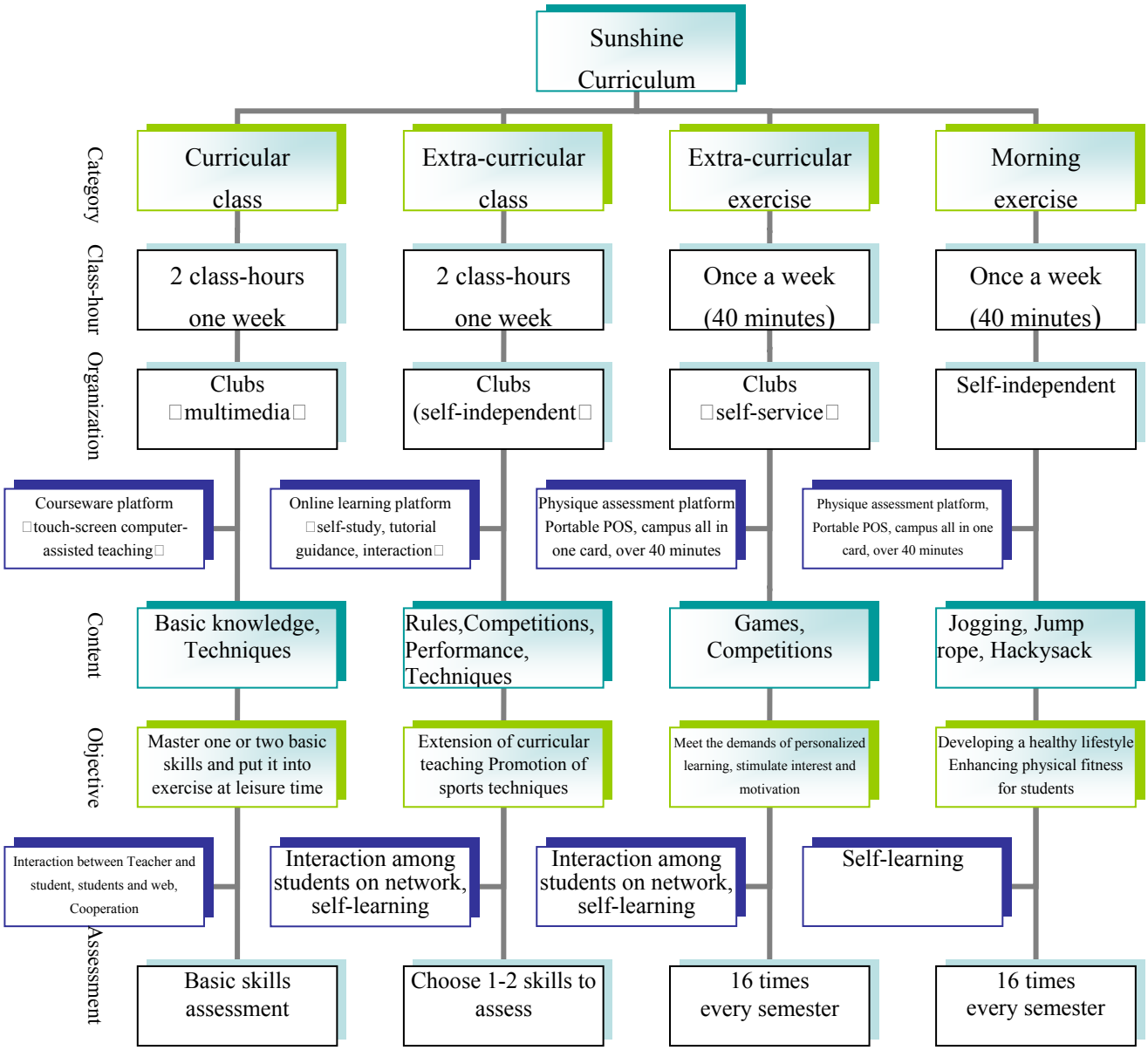

Figure 1. Sunshine Curriculum

3.1 Implementing curricular and extra-curricular classes, creating the "integration" of sunshine PE curriculum.

It enables students to master one sports skill, know the knowledge and method of keeping fit, and actively be involved in campus sports activities and competitions. Students could choose their favorite sports clubs, teachers and the class time according to their preference and specialties. In the first 8 weeks, students will learn the basic knowledge and basic techniques in the form of unit instruction, to reach a level of mastering the basic skills of certain sports. Courseware Platform is used in curriculum class with touch-screen computer assisting and self-service learning method. In extra-curriculum class, rules, competitions, performance and techniques will be taught. Students could choose different sport events according to their various needs. Extra-curricular class enables students to study all by themselves through Courseware Platform and online Learning Platform.

3.1.1 Teaching content

According to students' interests, sports facilities and the resources of teachers, HEU set 28 sports clubs for teaching, not only popular sports but also some traditional sports. In addition, we newly set clubs for tap dance, roller-skating, women's self defense techniques, taekwondo, figure skating and recreational sports. All the carefully selected content highly focus on cultivating the awareness of physical exercises.

HEU revised “the Guideline for Sports Club Teaching of Harbin Engineering University ", changing the teaching mode from traditional and fixed content teaching to unit instruction. For curriculum assessment, HEU implemented a combination of the credit system and the "Three Assessments"; while the curriculum assessment is progressively relying on the computer automation.

3.1.2 The methods of selection

PE curriculum guideline will be distributed on the home page of PE department of HEU, and it enables students to know the teaching organization, activities and information about teachers of certain sport events. Every semester, online selection for curriculum will be implemented and it starts on the 1st week of each semester. The capacity of each class is around 30 persons, (25-35). If there are less than 25 people in class, in principle, it will be cancelled.

3.1.3 Assessment system

Sunshine curriculum changes credit system of semester to credit system of class hour. As a compulsory course, a total of 6 credit points are distributed by PE curriculum. Students may get credits with required class hours and passing the examination. Students who do not pass the examination need retake the programs which they do not pass. Sunshine curriculum creates the assessment system with the objectives of increasing physique and improving health, which has the special feature of diluting the screening and selecting functions, deepening the incentive, developing functions, emphasizing the process and playing down the results. Sunshine curriculum adopts the assessment with the "Student Self-evaluation, Peer Evaluation, Teacher Evaluation" three evaluations. In order to improve the objectivity and scientific of the evaluation, all the course scores are managed by computers. Students’ Self-evaluation will be scanned into the system by card reader, Peers’ Evaluation and Teachers’ Evaluations are inputted directly into computers, thus, the final performance evaluation can be calculated by computer automatically.

3.2 Setting up teaching auxiliary stations for extra-curricular activities, developing sunshine sport activities.

Sunshine curriculum set up auxiliary stations for extra-curricular activities with help of the students’ leadership and teachers in the sports clubs, guiding students in extra-curriculum exercises and competitions. Students should arrive at the pointed venue at 4:00 p.m. to credit card every day and be involved in technical learning, referee learning, and some competitions. With the help of Sports Courseware Platform, the auxiliary stations could not only provide exercises guidance, but also provide exercise class for student leadership. Those who have passed the examination can gain the certificate of Fitness Instructor of Harbin Engineering University and Certificate of National Level Referee. Extra-curricular exercise and morning exercise require students to credit card twice in different sports venues, recording their effective exercise time. The content of morning exercise is jogging, hackysack, jump rope and etc, which stimulate students’ initiative.

3.3 Branching out on and off campus competitions in different levels establishing the sunshine sport stage.

Sunshine curriculum insists the principle of holding activities each week, holding competition each month. The PE department will guide sports associations and students organizations to carry out some small and diversified competitions in which a large number of students in different levels can be involved. In the activities held by student organization and sports associations, PE department will guarantee exercise venues and provide technical guidance, fulfilling the function of autonomy activities and self-govern organization, actively carrying out the diversified activities, such as Collegiate Games, basketball game between students’ dorms. Sports clubs also hold competitions every semester and enable students in different levels to have the same opportunity to participate.

3.4 Setting up outdoor & leisure sports clubs, expanding off-campus sunshine sport activities.

Harbin, location of HEU, has a continental monsoon climate, which four seasons are distinctive. It is long and cold in winter, and snow and ice are abundant. This provides good opportunities to develop winter sports. Taking advantages of the geographical, climatic features and local conditions, HEU carried out some off-campus activities, such as drift, mountain climbing, paintball, skating, skiing to enable students to enjoy nature, particularly enjoy the entertainment of winter sports, to fill the needs of development of students’ personality, to lay the foundation for their life-long participation in sport.

3.5 Setting up sports festivals, enriching the sunshine sport culture.

HEU will hold sports festival throughout the whole academic year. Besides popular sports events like football, basketball, swimming, long-distance running, kite flying, campus orientation, skating, and some other campus fitness activities will be held. The number of participants can be more than ten thousand. The festival will reach a climax when the HEU Sports Games takes place. The games fully reflect the combination of competitive sports and sport for all, with some entertaining, cooperative, all aged suited events, such as tug-of-war, kite flying, curling on land, etc. The total number of participants of recreational sports exceeds that of competitive sports. In addition, Sports Festival also periodically holds lectures, sports salon, sports performance, sports photography show, sports appreciation and many other activities to enrich the sports and cultural life on campus.

4. Conclusion

Based on the experience of many years of curriculum reform, HEU has constructed a Sports Information Platform including Students Information Management Platform, Sports Courseware Platform, and On-line Learning Platform. Relying on theses platforms, we create the on and off campus "integration" Sunshine Sport Curriculum to promote the Sunshine Sport Movement. In this paper, HEU would like to share the experiences of promoting Sunshine Sport Movement with FISU family members, international PE teachers and experts with the aim of creating a foundation for healthy lifestyle of students.

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Speed Running in the Athletic Event of 100 M Flat to Students Faculty of Physical Education and Sport

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Abstract

Introduction
In this research, we try to demonstrate of principal indicators in the 100m flat event, for to optimize the results in the sprint events. We believe that the evidence in the 100m flat girls' students, one of the indicators is the running speed 60m. The aim of this study was to examine, if there is a correlation between running the 100 meters for girls run by students and 7 seconds.

Methods
In the study we will see if the principals indicator's volume from the girls students from the Faculty of Physical Education and Sport sprint event, with an intensity of 95-100% influences or not the running speed on 7 seconds, in the preparatory period (autumn, 2008). The experiment was making on the group of 6 girls students in athletics, from Constanța, who has practice the athletics from 5-8 years ago from our faculty.

Results
The disperse of the values for the distance covered in maximal speed in 7 seconds and for the volume of the principal indicators from the sprint event realized on 30m., 40m, 50m, 60m and 80m, are normal (X±DS). In what CV is concern, we can notice that for the distance covered in maximal speed, the population of the values is homogenous and for the volume of the principal indicators in the sprint event, the population of the values is inhomogeneous; this can be due to the small number of the subjects which have been tested.

Table No. 1 Volumes in key indicators of the athletic event 100 m flat

Subjects	Age (yrs)	The distance covered in maximal speed on 7 seconds (m.)	The volume 30m (m.)	The volume 40m (m.)	The volume 50m (m.)	The volume 60m (m.)	The volume 80m (m)
A	18	58	2040	320	1500	1440	960
B	19	51	2040	320	1500	1440	960
C	19	48	1860	640	1200	960	960
D	20	49	600	160	1000	480	640
E	19	47	600	160	800	360	480
F	21	49	600	160	1000	480	640
$\bar{X}$±DS	19,3±1,03	50,3±3,98	1290±758,7 (*)	293,3±187,04 (*)	1166,6±287,51 (*)	860±494,2 (**)	773,3±212,66 (*)
CV		7,91%	58,8%	63,7%	24,6%	57,4%	27,5%

*) insignificant correlate with the distance covered in maximal speed on 7 seconds, $p>0,05$;
**) significant correlate with the distance covered in maximal speed on 7 seconds, $p<0,05$;

Discussion/Conclusions

In conclusion, we can say that the volume of the principal indicators from the sprint event 100m split (girl students), it's not sufficient in order to make the distance covered by the subjects in maximal speed in 7 seconds, longer; the 60m volume it's the only one that influence significant the speed on 7 seconds.

Introduction

The ability of making quick movements, is one of the most important qualities of an athlete including those of who this quality is not considerate as principal.

The movement's speed of an athlete is determinated mostly by the nervous activity to the cortex, which provocates the contractions and the relaxations of the muscles, conducts and coordinates the movements. It depends mostly by the athlete resistance.

The speed can by improved by developing in principal the muscular force; on account of increasing the capacity of make very strong efforts in very short lapses of time.

The energy for the maximal speed is obtained on the anaerobic-alactacide way. The anaerob-alactacid system is best drawn, when the athlete realiyes maximal speeds (intensities between 95% and 100%).

In V. Gambetta's vision, 2001, the components of the anaerob-alactacid metabolism, which correspond to the maximal speed, are lasting approximatevly 6 seconds, and they should be trained when the muscular tiredness is not present (after 24-36 hours of resting). Other authors considers that the anaerob-alactacid metabolism which corresponds to the maximal speed, lasts only for 4 seconds.

The german specialist T. Nett, 2001, considers that the uncorresponding administration of the distances (and of course of the time in which the maximal speed can be developed successfully) during practice, determinates the apparition of a phenomenon called "the false dynamic stereotypy", through which, the athlete becomes slow, instead of fast.

In conclusion, we will enumerate the factors which conditionates the speed: the reaction time, the speed of the nervous impulses, the explosive force, speed in regime of force, the speed of muscles contractions, the technique of the movement, the efficiency of the anaerobic-alactacid process.

The fundamental principles are that the speed has to be improved as a "whole", by improving all the factors which conditionates the speed, and also by developing the methods of the multilateral training, especially of those which develop the speed in regime of force and the elastic force (C. Gevat, A. Larion, 2001).

Hypothesis

We believe that the evidence in the 100m flat girls students, one of the indicators is the running speed 60m.

Research Methods and Procedures

Participants

In the study we will see if the principals indicator's volume from the girls students from the Faculty of Physical Education and Sport sprint event, with an intensity of 95-100% influences or not the running speed on 7 seconds, in the preparatory period (autumn, 2008).

The experimment was make on the group of 6 girls students in athletics, from Constanța, who has practice the athletics from 5-8 years ago from our faculty.

Table No. 1
Volumes in key indicators of the athletic event 100 m flat

Subjects	Age (yrs)	The distance covered in maximal speed on 7 seconds (m.)	The volum 30m (m.)	The volum 40m (m.)	The volum 50m (m.)	The volum 60m (m.)	The volum 80m (m)
A	18	58	2040	320	1500	1440	960
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_ X±DS	50,3±3,98	1290±785,7 (*)	293,3±187,04 (*)	1166,6±287,51(*)	860±494,2 (**)	773,3± 212,66 (*)
CV	7,91%	58,8%	63,7%	24,6%	57,4%	27,5%

*) insignificant correlate with the distance covered in maximal speed on 7 seconds, p>0,05;
**) significant correlate with the distance covered in maximal speed on 7 seconds, p<0,05;

The test analysis

The testing of girls students was done at the end of the month and the volume of the principal indicators from the spirit event (divided on distances between 30m. and 80 m.- meaning the volume of the 30m., 40m., 80m., splits runner at 95-100% intensity) was calculated on a period of a month (the month in which the testing was done) from the preparatory period.
The subjects were well prepared (they achieved a maximal speed at 95-100% intensity – during 7 seconds) and the testing conditions were ideal (most propitious temperature, no wind, synthetic track "regupol" type, suitable instruments).
The disperse of the values for the distance covered in maximal speed in 7 seconds and for the volume of the principal indicators from the sprint event realized on 30m., 40m., 50m., 60m. and 80m., are normal (X±DS).
In what CV is concern, we can notice that for the distance covered in maximal speed, the population of the values is homogenous and for the volume of the principal indicators in the sprint event, the population of the values is unhomogenous; this can be due to the small number of the subjects which have been tested.
As we can see in table, from all 5 correlations done between the distance covered in maximal speed in 7 seconds and the volume of the principal indicators from the sprint event, respectivelly (30m., 40m., 50m., 60m., 80m.), four of them were insignificant (p>0,05 between the distance covered in maximal speed in 7 seconds and the volume of the splits on 30m., 40m., 50m. and 80m.) and only one of them was significant (p<0,05 between the distance covered in maximal speed and the 60m. splits volume).
All correlations were positive, so the parameter of the significant correlation evolve in the same direction, while the parameters of the insignificant correlations tend to evolve in the same direction.

Conclusion

In conclusion, we can say that the volume of the principal indicators from the sprint event 100m. split (girl students), it's not sufficient in order to make the distance covered by the subjects in maximal speed in 7 seconds, longer; the 60m volume it's the only one that influence significant the speed on 7 seconds.

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Psychological training and informational adjustment in sport

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Abstract

Introduction

During competitions, sportsmen might feel an emotional and intellectual mood that threatens all behaviors learned before. The aim of this kind of training is to prepare the sportsmen to competitive situations, by making them assimilate a number of operational and regulator techniques.

The theoretical and practical aspects concerning the psychological training and informational adaptation in sport are applicable to both sportsmen and students of the Faculty of Physical Education and Sport, which are at the same time components of University teams.

Objective

A new concept introduced in sports is the informational adaptation (F. Paraschiv, 2005, 2006).

Method

We often hear, especially during competitions, expressions like «over passed by the situation», «surprised», «speechless» etc. What do all this mean? That the competitor is physically unable to do it – maybe; that he is technically and tactically inferior to his opponent – that is possible too, although high performance sports it is quite unusual. But what do we do when the sportsman ends the competitions with resources of energy still available and with enough knowledge that would have permitted him to win?

We must find out the causes! One of them might be that sportsmen are unable to adapt to new and unknown situations, atypical in competitions.

Too much information kills information; while some reactions to unpredictable situations are involuntary, others are due to conscious thoughts. Those ones are influenced by one's capacity to receive, understand, evaluate and use the information given. That's why the rational and efficient behavior depends on the continuous flow of information and on the sportsman's capacity to predict the consequences of his own actions.

Discussion and Conclusions

The adaptation to this new situation is possible only if we know one's limits to assimilate information; if it's about the sportsman's informational adaptation; we have to be aware of certain parameters:

The quantity of information necessary in order to make a decision;

The speed of understanding information (information understood / time unit);

The exactitude of the information (the number of possible actions as a result of the treatment of information);

Accuracy (the quality of the decision made in connection with the objectives).

Introduction

During competitions, the sportsman can face a subjective situation of emotional and intellectual troubles that can influence his behavior. The first aim of the psychological training is to develop a certain number of optional and operational attitudes and behaviors that sustain the sportsman's adjustment in competitions.

Objective

A new concept appeared in sportive training, the ***informational adjustment in sports*** (F. PARASCHIV, 2006).

Method

We usually hear during trainings expressions as in "unable to face the situation", "surprised by the situation", "speechless" and so on.

What do they really mean? That the sportsman is physically unable to face the situation – it is possible; that he's technically inferior to his competitor – that could be possible too, even though in high-performance this is often imperceptible.

But what do we do when the sportsman ends the competition with reserves of energy, although his knowledge would have permitted him to face the challenge?

We have to find the reasons. One possible explanation would be the fact that sportsmen are unable to adapt to unusual and unexpected situations they encounter during competitions. The huge mass of information they receive leads to an incapacity to think for their own. While some reactions to new elements are involuntary, others come from conscious thoughts. This depends on one's ability to receive, analyze, evaluate, assimilate and use information.

Discussion and Conclusions

The adjustment to this all new situation can be done only by knowing the extreme limits of an individual concerning his capacity to receive information at a certain moment. When talking about a sportsman's informational adjustment, we must respect some criterions:

- The amount of information necessary to make a decision
- The speed one uses to analyze information
- The precision of the information analyze (the number of possible actions after having analyzed the information)
- The exactness (the quality of the decisions taken)

Premises and Hypothesis

The research we developed started from the following hypothesis and premises:

- in biathlon, superior results are determined by high skills in running, but also by the precise and fast shoot in the polygon, all that sustained by an irreproachable psychological training
- in biathlon, the training methodology for competitions is continually dynamical and supposes, from sportsmen and trainers, a permanent adjustment to its demands
- an increasing performance is obtained by a structured training developed in an environment that is similar to a competition

The research's hypothesis is based on the suppositions:

- ***When the psychological training of sportsmen is adapted and oriented through the training model of high-performance sportsmen, the chances to reach maximal results in competitions increase significantly***
- ***Specialized psychological support in competitions increases the chances to render valuable the sportsmen capacities for performance***

Methods

In February 2009, Canada held the World's Biathlon Championship for women; at this occasion, I made a few observations directly and thanks to some videos and official documents; I also prepared a questionnaire that allowed me to highlight some aspects concerning the psychological training of the Romanian team.

Questionnaire no. 1

This questionnaire is centered on the experience in high-performance and concerned 8 subjects (2 trainers and 6 sportswomen).

The results give a general perspective on the sportswomen's level of spiritual intelligence and allow defining a way to develop it.

Developing the spiritual intelligence begins by supporting authenticity and self-conscience, as well as a certain care for all beings. Some personal qualities as in sincerity, humility and kindness are usually associated with the spiritual intelligence.

The following qualities are associated with your capacity to resist in conditions of high-performance experiences (very important competitions):

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

1. You are flexible and ready to face the necessities.
2. When I face new situations, I act spontaneously.
3. I have a high self-conscience.
4. I am able to go beyond physical and psychical pain.
5. I'm trying to give a meaning to my life.
6. I always cross obstacles during my training, but I can pass them.
7. People often notice my playful and childish nature.
8. When I try to understand something, I try to watch it from a general perspective.
9. I can face on my own people around me when their behavior menaces my work.
10. I sacrifice my personal needs to do what is best for the team.
11. My conceptions about good and evil are more complex than the others.
12. When I try to solve a problem, I start by analyzing its causes.
13. I join people who share my points of view.
14. I act reasonably in order to sustain my community.
15. I find myself time to help the others.

Results

- ***between 5 and 30 pts:*** the harmony between you and the others is quite low, but that can improve by studying and a more open-minded attitude
- ***between 30 and 55 pts:*** you're pretty well prepared, life thought you many things and you're on the right way, but you're still fighting to be the best
- ***more than 55 pts:*** you are able to make the right decisions, a separation between you and the society is unconceivable. Be careful, the higher you are, the more dangerous temptations are!

Subject	Points	Observations
1	68	Good capacity to make decisions, satisfying experience, cooperative
2	67	Good capacity to make decisions, satisfying experience, cooperative
3	54	Ready to face life, good capacity to make decisions, at the superior limit of the medium level
4	49	Unstable, insufficient experience but usually good results
5	47	Unstable, insufficient experience but usually good results

6	39	Selfish, uncooperative, disturbs the group's activity, difficult social integration, puts his interest on the first place
7	32	Despite the lack of training and life experience, still has chances to develop in the future; for the moment, he's not enough prepared.
8	30	Despite the lack of training and life experience, still has chances to develop in the future; for the moment, he's not enough prepared.

Questionnaire no. 2

This questionnaire concerns the sportsman's "physical condition". (Orlick & Herrz, in "Psyching for Sport").

Indicate the level of your emotional condition before the competition.

- 10	**- 5**	**0**	**+ 5**	**+ 10**
Bored Sleepy Very relaxed		**NORMAL**		***Extremely excited Aggressively-furious***

What are the chances to take a place in the first 10 today?

0	1	2	3	4	5	6	7	8	9	10

0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
nicio şansă				**şansă 50%**					**se poate**	
2				**1**					**3**	

The results are represented in percents; we proceed to a quality analysis of the results that will be used in order to improve the activity. This questionnaire has been answered by 6 sportswomen (including juniors) before the Balcan Championships in Bulgaria, a training-competition before the World's Championship.

This questionnaire concerns the sportsman's capacity of self-control before and during important competitions.

Indicate the level of your emotional condition before the competition.

- 10	**- 5**	**0**	**+ 5**	**+ 10**
Bored Sleepy Very relaxed		**NORMAL**		***Extremelly excited Aggressive and furious***
Bored Sleepy = 1 Very relaxed = 1		**NORMAL =3**		**Extremelly excited = 1 Aggressive and furious**

What are the chances to take a place in the first 10 today?

0	1	2	3	4	5	6	7	8	9	10
No chance				***Chance 50%***					***To be possible***	
2				**1**					**3**	

The results of this questionnaire show a significant correlation between the expectations and the performance obtained (3 sportswomen where in the first 10, 2 found that they had made a very good competition, one thought she had made a good competition).
The sportswomen's capacity to auto-evaluate is well developed, which shows a possible progress in their training and an implicit chance to increase the performances.

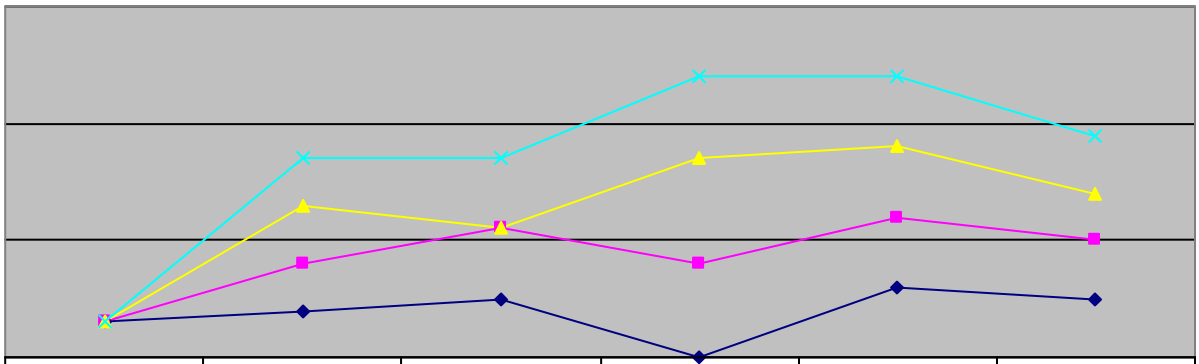
Questionnaire no. 3

This POMS (Profile of Mood States) (developed by McNair and Morgan) is composed of 65 items and focuses on essential data about the sportsmen's personalities; it has been used by prof. Pierre de Hillerin and his research team. Based on this data, I made a graphical representation of the sportswomen's profiles (they were members of the biathlon Olympic team):

Sportswomen's personality profiles

SPORTSWOMAN	***INDICATORY***					
	tension	depresion	anger	vigour	tiredness	confusion
A	**3**	**4**	**4**	**7,5**	**7**	**6**
B	**2,5**	**4**	**4,5**	**8**	**6**	**5**
C	**3,5**	**5**	**5,5**	**9**	**6**	**6**
D	**2,5**	**4**	**4,5**	**7**	**7**	**5**

Graphical representation of the mood states for the members of the Romanian Olympic biathlon team



	T	*D*	*A*	*V*	*T*	*C*
D	*2,5*	*4*	*6*	*7*	*6*	*5*
C	*3,5*	*5*	*6,5*	*9*	*6*	*4*
B	*2,5*	*4*	*6*	*8*	*6*	*5*
A	*3*	*4*	*5*	*7,5*	*6*	*5*

A *B* *C* *D*

By analyzing these profiles we conclude that there is a strong connection between the results obtained and the sportswomen's personality.
The B sportswoman (who had score 8 in *strength* and lower scores in *tension* and depression - 2.5 and 4) confirmed the expectations during the competitions by ending 19th in the 7.5km contest.

The C sportswoman (with a good score in *strength* – 9 – and lower scores in *tension* and *depression* – 3.5 and 5 – had a great evolution in the 15km contest (she didn't miss any shoot and during the relay race she overtook two teams), managing to class the Romanian team on the 14th place.
The two other sportswomen had modest scores in *strength* (7 and 7.5), which was confirmed by their modest results in the competition (they took places beyond the 60th place at the individual contest and have massively failed in the relay race).
This information has been used by the Romanian trainers in order to prepare their teams during the Olympic year, aiming to a correct hierarchy of the sportswomen in comparison with the world's best teams.

Conclusions

I appreciate that the initial premises have been proved by this study and that their results will positively influence the training of the Romanian team for the next competitions and particularly for the Olympic Games in Canada 2010.

The main aspects to follow are:

- Nowadays, high-performance supposes an exceptional behavior in both dimensions of biathlon
- In order to obtain objective results it is necessary to follow a controlled training that respects the international model and the personality details of the subjects.
- By analyzing the results of this research we concluded that, in comparison with the international model, the Romanian subjects:

- had problems with team working
- there is a certain difficulty in introducing the international training model because of the technical stuff's inert attitude as well as the lack of recent information and the insufficient material support
- the psychological assistance during competitions is totally inadequate
- because the physical and technical training is similar for all the high-performance sportswomen, the difference is made by their psychological profile and attitude.

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Comparative Study of Efficiency Evaluation in Physical Education and Sport Science Faculty with Other Human Science Faculties in Shahid Chamran University via Data Envelopment Analysis

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Abstract

Introduction
Main purpose of this research was efficiency evaluation of human science faculties in Shahid Chamran University via data envelopment analysis.

Methods
Methodology of this research was analytical descriptive, which was Performed field study. Five human science faculties of Shahid Chamran University including (physical education, economic, psychology, literature and theology) in a four years period were studied. The required quantitative data were collected from these units, after heightening were divided into input indices including "staff, budget" and three output indices including "education, research and services". By performing the model in four different states, expected efficiency was calculated for each faculty.

Results
Results indicated that in the first state with two inputs and one output (education) was 100% efficient only for economic faculty, while for other four faculties this percentages was theology 82%, literature 78%, psychology 58% and physical education 50% respectively. In second state with two inputs and one output (research) was 100% efficient only for psychology faculty, while for other four faculties this percentages was economic 46%, theology 42%, literature 41% and physical education 20% respectively. In third state with two inputs and one output (services) was 100% efficient only for physical education faculty, while for other four faculties this percentages was literature 44%, economic 12%, theology 6/2% and psychology 4/3% respectively. In fourth state with two inputs and three outputs (education, research and service), all of five faculties including psychology, physical education, economic, literature and theology were efficient respectively.

Discussion
In spite of some limitation inherent in our physical education faculty, services presented to other section of university are much higher in comparison to above mentioned human faculties. This means significant role and social function of sport and physical education in university which can promote sport and physical activity in society and leading to development of public sport. Moreover, results of performing model in four different ways, indicated that this mathematical model (DEA) is capable of evaluating the performance of higher education correctly.

Introduction

Universities and higher education institutes provide expert manpower and new knowledge for the societies, so they have great role in social, cultural and economical development of the countries and regarding with this important duty must be considered especially. World wide studies indicates quality promotion and dynamisim of universities and higher education institues is necessity so, for this means performance measurement and evaluation quality system for accreditation and ranking of universities is very important. In recent years attention to performance evaluation of higher education to be intensified throughout the world. In iran in three last decades transition of higher education about number of students and organizational structre in all of academic disipline generally, and about humanities disipline especially, is observed. Then, in addition expansion of quantity, attension to quality is very necessary. Among these universities, physical education faculties have emphasized missions, due to industrialized societies, spread machinism and sedentary life; so sport and physical activity is been introduced as a essential demands of modern society. Regarding quantitative and qualitative development of PE faculties and departments, especially in last three decades, indeed with increasing society's demands for receiving a better service from these units, it seems the lack of academic performance evaluation system for efficiency and productivity measurement is quite evident.

Field studies and existing documents shows several indicators have been determined as a simple separated forms about education and research functions in universities up to now. While, these institutes have multi functions and different audience, so these indicators can not show efficiency and productivity properly (especially about PE faculties which service function is very important). Today, in higher education, one of the most common mathematical and statistical models in operation research system are used for efficiency evaluation is data envelopment analysis. DEA is a nonparametric approach which straightly works with observed data and can measure efficiency of decision make units which have similiar inputs and outputs. Generally, in this model for efficiency evaluation in a single DMU must determine input and output indices firstly, then model calculates efficiency in the form fraction by sum of weighted outputs to sum of weighted inputs (Equation 1).

Litreture review in iran shows many researches is done with using Data Envelopment Analysis for efficiency evaluation and performance measurement in universities and faculties, such as (Saljughi, 2007) for performance evaluation in 15 higher education in Sistan & Baluchestan in Iran, (Heydari nejad, 2006) for 25 PE faculties around the Iran, (Azar, 2005) for ranking of educational departments of human science faculty in the Tarbiat Modares University, and (Shahriari, 2003) for performance evaluation of 6 human science faculty in tehran University. Moreover (Kao et al, 2008) in chang kong university in taiwan, (Babeth, 2007) in saint thomas university, (Caroline et al, 2007) philipine university, and (Lopez et al, 2002) in berezilian university has been evaluated efficiency and productivity via DEA model.

Main purpose of this research was efficiency evaluation of PE faculty and comparison with other human science faculties in Shahid Chamran University via data envelopment analysis. so author would like answere this essential question: a) is there any difference between rate of efficiency in PE faculty with other human science faculty in shahid chamran university? b) how much is the contribution of each educational, research and service index in efficiency of these faculties? Finding of this research can show strenght and weakness point in human science faculty and cause fairly competition among them. futhermore, this finding can help to improvement quality of graduate and development discipline and profession especially for sport and physical education.

Methods

Methodology of this research was analytical descriptive, which was Performed field study. Five human science faculties of Shahid Chamran University including physical education faculty with 3 department, economic faculty with 5 department, psychology faculty with 4 department, literature faculty with 5 department and theology faculty with 3 department which were studied in a four years period (table 1).Instrument for gathering raw data was a checklist about educational activities, research activities and service activities in 4 years period, which was completed by directors of faculties or department managers. In this study each of 5 faculties were considered as a decision maker units - system - which have many inputs like human resources, funding resources and many outputs like graduates in different levels, researches performed by faculty members and service functions that present to other faculties or university. In this research all of these activities were studied as variables. In addition, regarding with importance and influence

of every variables fuzzycation and weighting was done. Then, required quantitative data were divided into input indices including “staff, budget” and three output indices including “education, research and services” (Figure 1, 2). Ultimately for statistical analysis DEA model (BCC output oriented) was executed in four different states and expected efficiency for each faculty was calculated.

$$\textit{(Equation 1)} \qquad \textbf{Efficiency} = \frac{sum\ of\ weighted\ outputs}{sum\ of\ weighted\ inputs}$$

Table 1. Faculties with organizational structure and level of student admission

No	Faculties	Number of departments	Graduate level	Master level	Ph.d level
1	Physical education	3	✠	✠	-----
2	Literature	5	✠	✠	✠
3	Economic	5	✠	✠	✠
4	Teology	3	✠	✠	✠
5	Psychology	4	✠	✠	✠

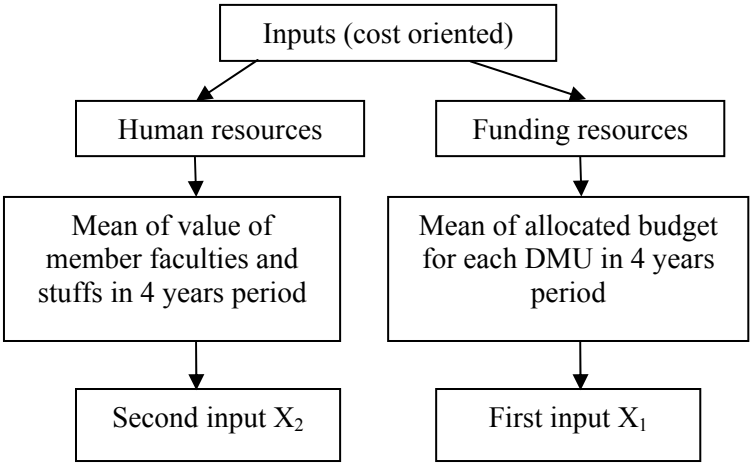

Figure 1. Determination and explanation input indices

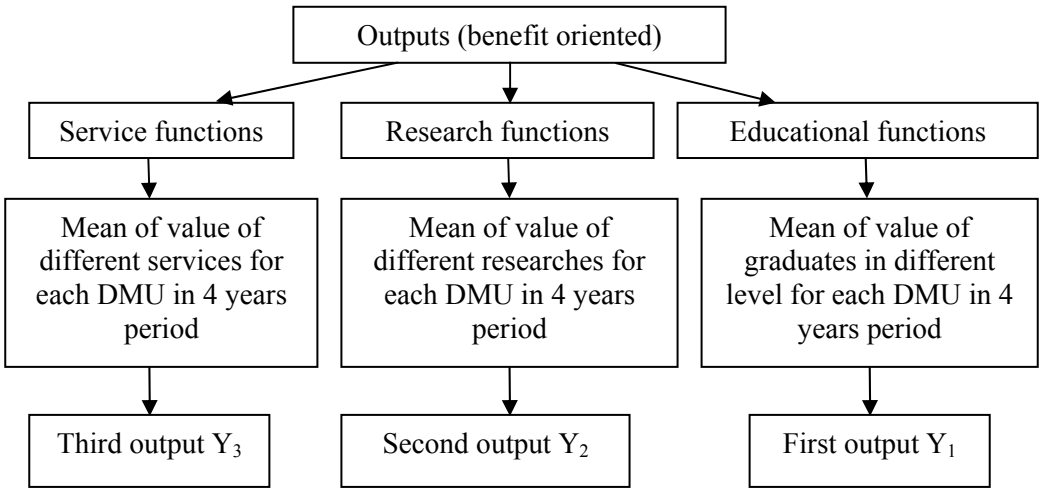

Figure 2. Determination and explanation output indices

Results

Table 2 showes final data gathered from five human faculties, after fuzzycation and weighting of each input and output.

Table 2. Final data when preparing for using in data envelopment analysis

No	Faculties	Input 1 (Finanace Resource)	Input 2 (human Resource)	Output 1 (Education)	Output 2 (Research)	Output 3 (Services)
1	Physical education	4,155,101	80	1064	43	271
2	Litrature	7,189,817	136	3011	156	205
3	Economic	6,275,885	134	3475	152	50
4	Teology	4,591,400	78	1815	101	16
5	Psychology	7,349,943	126	2041	384	18

- Results indicated that in the first state with two inputs (budget and human resource) and one output (education) only economic faculty was 100% efficient - that means regarding their inputs, this faculty had proper outputs and is set of reference - ,while for other four faculties this percentages was theology 82%, literature 78%, psychology 58% and physical education 50% respectively, therefore they must increase their outputs until reach to the border of efficiency (Diagram,1).

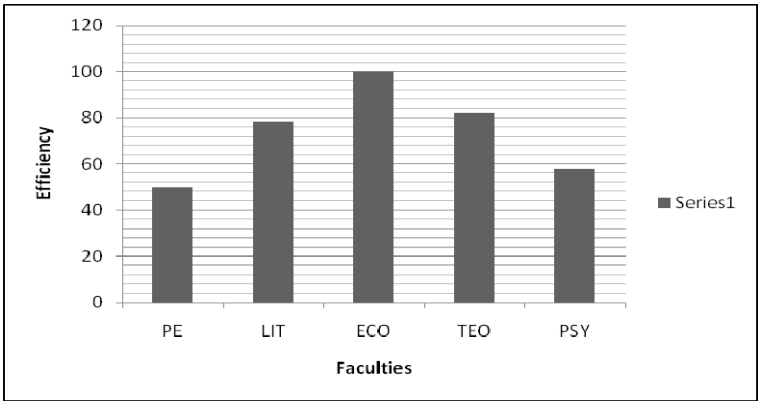

Diagram 1. Expected efficiency in first state (2 input & 1 output - education)

- In second state with two inputs (budget and human resource) and one output (research) only psychology faculty was 100% efficient - that means regarding their inputs, this faculty had proper outputs and is set of reference - while for other four while for other four faculties this percentages was economic 46%, theology 42%, literature 41% and physical education 20% respectively, therefore they must increase their outputs until reach to the border of efficiency (Diagram,2).

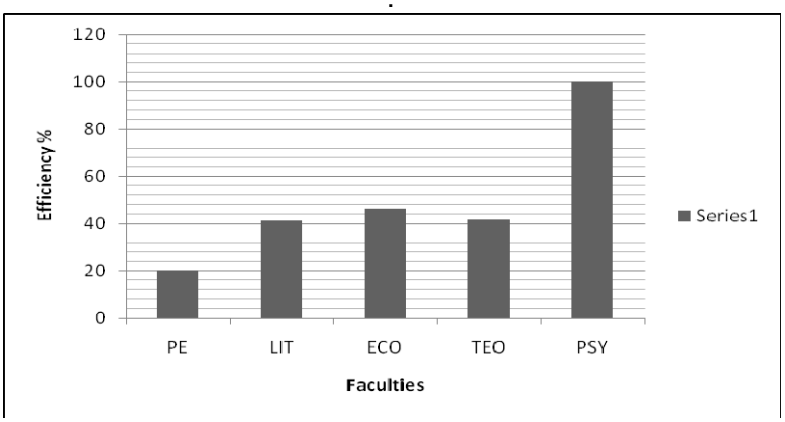

Diagram 2. Expected efficiency in second state (2 input & 1 output - research)

- In third state with two inputs (budget and human resource) and one output (services) only physical education faculty was 100% efficient - that means regarding their inputs, this faculty had proper outputs and is set of reference - while for other four faculties this percentages was literature 44%, economic 12%, theology 6/2% and psychology 4/3% respectively, therefore they must increase their outputs until reach to the border of efficiency (Diagram,3).

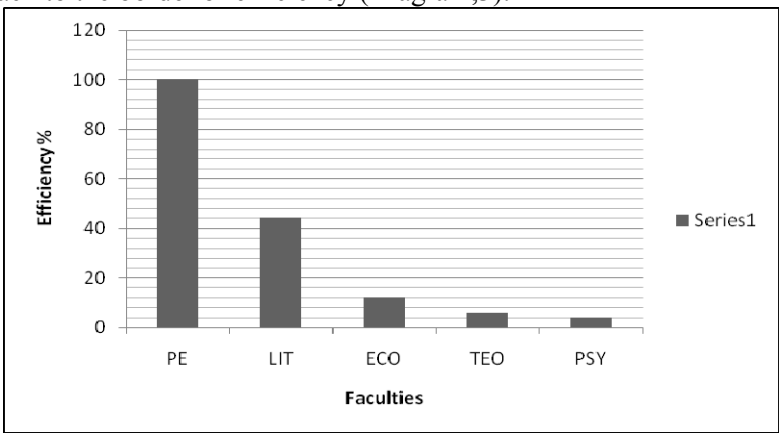

Diagram 3. Expected efficiency in thrid state (2 input & 1 output - services)

- In fourth state – combination state - with two inputs (budget and human resource) and three outputs (education, research and service), all of five faculties including psychology 0/235, physical education 0/229, economic 0/142, literature 0/116 and theology 0/107 were efficient respectively - that means generally, regarding their inputs, these faculty had proper outputs and all of them are set of reference (Diagram,4).

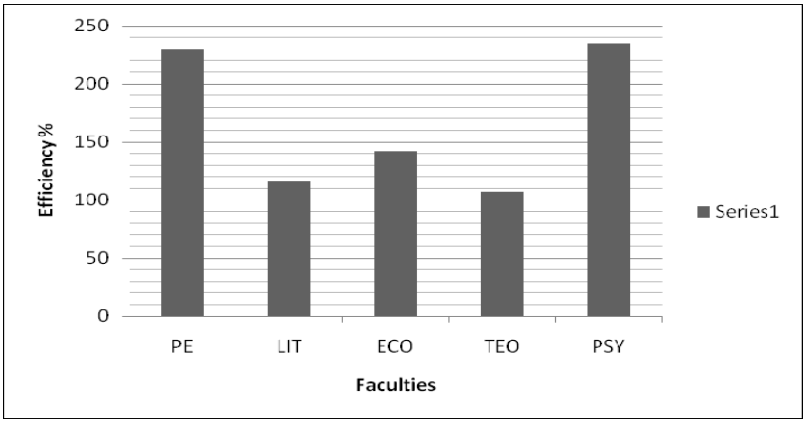

Diagram 4. Expected efficiency in fourth state (2 input & combination of 3 output)

Discussion

Execution of different states of DEA model showed different efficiency for each one of five human science faculties. These finding indicates influence and importance each one of input and output indices which acting on the performance faculties. In other words, contribution of each one of educational, research and service index when acting separately has been showen in the three primary state, and influence of all indices when acting in combination state, which occured in fourth state. Although, In spite of some limitation and shortages inherent in finanace resource and human resource in our physical education faculty (Table 1), but generally showed optimal efficiency especially in section of services which presented to other section of university are much higher in comparison to above mentioned human faculties (diagram 3, 4). This means significant role and social function of sport and physical education in university which can promote sport and physical activity in society and leading to development of public sport. Implementation of different state of DEA model in this study not only showed efficiency of education and research function in the internal of PE faculty, but also showed effectiveness of services function of this PE faculy on external environment including university and society

Moreover, results of performing model in four different ways, indicated that this mathematical model (DEA) is capable of evaluating the performance of higher education correctly, which this results was gained by other researcher like as indicated in litrature review.

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Anthropo-morphological characteristics of students of the swimming specialization faculty of Physical Education and Sports Sciences of the Kapodistrian University with and without training or competitive experience

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Abstract

Introduction

Apart from the other characteristics such as: physical ability, energy potential, swimming technique and tactics and so on, the morphological abilities constitute an important factor of success in swimming (Carter & Ackland, 1994; Thanopoulos et al., 2006). According to the studies planning and programming of the physical education and sports faculty of the Kapodistrian University of Athens, no previous training or competitive experience is required for the entry in the swimming specialization of the faculty. As the program of specialization of students is completed in two semesters with a total of 208 courses the success of this course depends also on other relative anthropo-morphological ($A_{nth}M_{orph}$) and functional parameters of the candidates. The purpose of this study is to establish the differences of the $A_{nth}M_{orph}$ characteristics of students of swimming specialization who had training and competitive experience in swimming (with experience) and those who had not (without experience).

Methods

The total sample of the research consisted of 67 students of the swimming specialization (males and females with and without experience). The structure of the sample was: 34 males (18 active male swimmers and 16 students without experience) and 33 females (11 active female swimmers and 22 female students without experience). The following variables were examined: Body Height (BH in cm), Body Mass (BM in kg), Body Mass Index (BMI in kg/m^2), Sitting Height (SH in cm), Arm Span (AS in cm), SH/BH and AS/BH Index (in Index Number). The candidates were measured in aquatic sports Laboratory using standardized anthropometrical procedures. Descriptive statistics, ANOVA and Student's t test were used for the statistic analysis.

Results and discussion

Referring to the male students, the results generally show that there is no statistically significant difference between groups at the measured variables because Wilks' Lambde value were = 0.667, at F_{value} = 0.785, and p = 0.135. But at partial level (level at single variable) difference was found in BH - F_{value} = 9.277, p = 0.005, and in Arm Span - F_{value} = 10.667, p = 0.003. The condition is the same in female swimmers where no statistically significant difference was found between the active female swimmers of the specialization and those without training - competitive experience, because Wilks' Lambde value were = 0.600, at F_{value} = 2.285, and p = 0.062. But at partial level also was found difference in BH - F_{value} = 4.177, p = 0.049, and Arm Span - F_{value} = 4.427, p = 0.044.

Conclusion

The results showed that between students of the swimming specialization of Physical Education and Sports Faculty of Kapodistrian University of Athens who were active swimmers and those who had no training and competitive experience, there is a statistically significant difference only in relation to Body Height and Arm Span. No difference was found concerning other analyzed variables. For the measured sample, those results showed that Body Height and Arm Span overbear and make general $A_{nth}M_{orph}$ characteristics advantage at students swimmers considering the other body characteristics.

Introduction

The elite results in swimming depend on a number of factors such as physical ability, energy potential, swimming technique and tactics, the level of training accomplishment, various functional and metabolic characteristics including anthropological characteristics (Sprague, 1976; Grimston and Hay 1986; Thanopoulos et al., 2006) that contribute to the evaluation of swimming performance and can determine their adaptability to several trainning programs. In general, besides an efficient swimming technique, that is the way swimmers move in the water, the body shape and /or the body size of a swimmer may help him to obtain a better position for a more efficient swim from the hydrodynamics standpoint. In this way, the body shape or the body size, i.e. the anthropo-morphological characteristics, may contribute significantly to achieving better results (Araujo, 1979; Thanopoulos et al., 2006).

The physique of an athlete may have a strong influence on performance due to the specific demands of the sport involved (Carter,1970; De Garay et al, 1974; Hebbelinck and Ross, 1974; Grimston and Hay 1986). Reasons that may play an important role to performance may be the better nutrition, better living conditions, improved social and environmental influences and more attention on swimmers health. Some examples indicate the fast evolution of boys of this generation in accordance to past generations (Beunen et al., 1998; Malina and Bouchard, 1991; Kondric and Stihec 1999).

The real effects of regular training on morphological status are difficult to evaluate (Bailey et al., 1979; Bloomfield et al, 1986; Sobolova et al, 1971). This may be due to the fact that changes and spontaneous physical activity, which are complex and interwoven factors, are difficult to differentiate (Sunnegardh and Bratteby, 1987; Benefice et al. 1990).

The anthropometric variables of elite swimmers underline the importance of those factors, despite the fact that no much importance was given till now in the relationship between morphological characteristics and performance.

It is concluded that differences in the body structure, that is the body shape and size, may have a different impact on the results achieved. In other words, it can play a negative role or provide an advantage in achieving a higher level of performance. (Thanopolos et al., 2006).

The purpose of this study is to establish the differences of the Anthropomorphological characteristics of students of the swimming specialization of physical education and sports faculty of the Kapodistrian University of Athens who had training and competitive experience in swimming and those who had not training or competitive experience.

The results of the present study will help us understand the importance of anthropological profile of active swimmers of the swimming specialization in relation to the students of swimming specialization without training and competitive experience.

Methods

The total sample of the research consisted of 67 students of the swimming specialization of Kapodistrian University of Athens (males and females with and without experience). The structure of the sample was: 34 males (18 active male swimmers and 16 students of swimming specialization without experience) and 33 females (11 active female swimmers and 22 female students of swimming specialization without experience). The following variables were examined: Body Height (BH in cm) , Body Mass (BM in kg), Body Mass Index (BMI in Kg/m^2), Sitting Height (SH in cm), Arm Span (AS in cm), SH/BH Index and AS/BH Index (in Index Number). The candidates were measured in aquatics sports Laboratory using by standardized anthropometrical procedures. For the statistic analysis were used the descriptive statistic, ANOVA – method of the establishment of difference and correlated t test.

Procedure

In order to ensure the reliability of this research so that each candidate can express himself in the environment where he regularly trains, the study took place in places and buildings of severals swimming clubs, as far as it concern swimmers , and the aquatic sports laboratory concerning the students of physical education and sports faculty of the Kapodistrian University of Athens. The measurements were executed from the professors of swimming specialization after completing the details of the candidates (last name, first name, sport club that each swimmer belonged, training experience, e.t.c.)

The spaces where the anthropological characteristics were measured were luminous and the temperature allowed the participant to feel comfortable by wearing their swimsuits.

For the measurement of morphological variables, the method of International Biological Program 1975 was used. According to this method measurements were accomplished in the morning from nine to twelve, with standard equipment. The equipments were calibrated every day before the measurement and after ten measurements.
All measurements were made from 2002 – 2003 to 2008 – 2009, by the same research fellow pearsons.

Results

Applying the anthropometric measurements and the appropriate statistical analysis of the results, we can determine the relationship of anthropological characteristics between students of the swimming specialization of physical education and sports faculty of the Kapodistrian University of Athens who had training and competitive experience in swimming and those who had not training or competitive experience.
In accordance to the students the results show generally that there is no statistically significant difference between the measured variables because Wilks Lambde value were = 0.667, at F value = 0.785 and p = 0.135.

Table 1. General results for Students swimmers and students non swimmers

Males	Wilks' Lambde	F	p
Students - Swimmers n = 18	0.667	0.785	0.135
Students (non swimmers) n = 16			
Females			
Students - Swimmers n = 11	0.600	2.285	0.062
Students (non swimmers) n = 22			

Table 2. In individual case, results for Students swimmers and students non swimmers

	Body Height		Arm Span	
Males	F	p	F	p
Students - Swimmers n = 18	9.277	0.005	10.667	0.003
Students (non swimmers) n = 16				
Females				
Students - Swimmers n = 11	4.177	0.049	4.427	0.044
Students (non swimmers) n = 22				

This results agree with the unpublished review of Albrecht, referred by Grimston and Hay in 1984 that found statistically significant difference in body height, body weight and armspan. But in individual case difference was found in BH – F value =9.277, p = 0.005 and in Arm Span – F value = 10.667, p = 0.003 , as confirmed in some studies in elite swimmers with long feet and long hands (Bloomfield and Sigerseth 1965; Carter 1970). Ideal is the condition of female that no statistically significant difference was found between the active female swimmers of the specialization and those without training - competitive experience, because Wilks Lambde value = 0.600, F value = 2.285, p = 0.062. But in individual case also was found difference in BH - F value =4.177, p = 0.049 and Arm Span F value =4.427, p = 0.04.

Table 3. Measured Variables of the sample

Male Active n= 18 Active swimmers n = 16	M.O	F value	p
Body Height	**333.965**	**9.277**	**.005**
Body Mass	90.546	1.484	.232
Body Mass Index	2.966	.845	.365
Sitting Height	132.002	2.329	.137

Female Active n=11 Active swimmers n =22	M.O	F value	p
Body Height	**221.472**	**4.177**	**.049**
Body Mass	2.404	.028	.868
Body Mass Index	21.475	2.602	.117
Sitting Height	17.290	1.118	.299

SH/BH	.000	.074	.787
ArmSpan	**426.111**	**10.667**	**.003**
AS/BH	.000	.249	.621

SH/BH	.000	3.133	.087
ArmSpan	**305.602**	**4.427**	**.044**
AS/BH	.000	.336	.056

Discussion

According to the results of the study, statistically significant difference was found between the anthropological characteristics of students of the swimming specialization of physical education and sports faculty of the Kapodistrian University of Athens who were active swimmers and those who had not training or competitive experience. Statistically significant difference was observed in morphological characteristics only in relation to body height and armspan in both samples. The organized training in swimming, as well as physical development of swimmers have an important impact on the evolution of basic abilities. The present study refers to the morphological characteristics of students of specialization of physical education and sports faculty of the Kapodistrian University of Athens that were active swimmers and those who had not training or competitive experience. The results of this research show that body height and armspan overbear the other characteristics of the body.

Benefice and partners concluded that there is no statistically significant difference in body height between swimmers and non swimmers (Benefice et al., 1990). Another review showed that physical activity has no real influence in the development of morphological characteristics (Bailey et al., 1979). Swimmers obtained higher values in body mass, body height (Doude et al., 2000).The results showed that between students of swimming specialization of physical education and sports faculty of Kapodistrian University of Athens who were active swimmers and those who had no training and competitive experience, there is statistically significant difference only in relation to Body Height and Arm Span. Concerning Sitting Height and feet no difference was found. These results showed that for the measured sample in order to achieve successful swimming, Body Height and Arm Span overbear in accordance to the other characteristics of the body.

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Technical – Tactical Structure of Competitive Activity at Universiade 2007 in Thailand, Serbian Female National Volleyball Team

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Abstract

Introduction
The object of the research in this paper is technical – tactical structure of competitive activity of Serbian female volleyball players at the University games in 2007 in Thailand. The basic aim of the paper was descriptive display of the structure of competitive activity of Serbian female handball players, i.e. defining of efficiency of the manifested elements of volleyball game at the aforesaid competition, while the secondary one was their comparison to other teams which played with them at the tournament.

Methods
The sample of the subjects in this paper includes 16 female volleyball players who were members of the university national team of Serbia, at Universiade 2007 in Thailand, observed on a total of six matches. The following six variables were observed: coefficient of service efficiency (KE_S), coefficient of reception efficiency (KE_R), coefficient of efficiency of setting for attack (KE_Se), coefficient of attack efficiency (KE_A), coefficient of block efficiency (KE_B) and coefficient of defence efficiency (KE_D). The stated variables were analysed by application of software – "Data Volley – professional 2.0.2", i.e. official FIVB software.

Results
The results indicated that descriptive values of the observed variables are: the average value, on the level of the overall sample, of variable KE_S is 50.98±6, 58, while the average value for variable KE_B is 51,48±5,88. For variable KE_D, average value, on the level of the overall sample is 57, 00±10, 36, and for variable KE_R is 78,90±9,93. The average value of KE_Se variable is 83,46±9,51; contrary to this the average value for variable KE_A is 55,60±7,25.

Discussion/Conclusion
Comparative analysis of the observed elements of volleyball game compared to their opponents showed that Serbian national team is differentiated by only three variables: coefficient of service efficiency (t=-2.904; df=46; p=.006), coefficient of block efficiency (t=-2.166; df=46; p=.036) and coefficient of attack efficiency (t=-3.703; df=46; p=.001). In the remaining variables there was no statistical significance in the difference between the mentioned teams.

Introduction

Sports activity is a system made of a sequence of learnt movements and activities derived from natural forms of movements. Activities in sport represent a defined system of substances and appearances, processes and events, so it would be normal to expect that a certain system of knowledge corresponds to that system. Because of that scientific researches in sport should reveal knowledge that adds to knowledge system in sport. These pieces of knowledge are necessary so that a subject's sports activities of could be understood and monitored aiming to make sports achievements true.

For achieving top sports results it is necessary for a coach to take care of the following three factors: being informed, applying of scientific achievements in the process of training and modeling of an athlete's condition, training process and competitive activity (Milisic, 2003).

Nowadays, taking into account that among the best teams the level of technical and tactical skills, physical and psychological preparation of top volleyball players is most often balanced, the role of factors of appropriately prepared information about the structure of activities of the opponent team and knowledge of one's own possibilities is rising, and these very pieces of information often become the key factor of sports success (Nesic, 2000).

The analysis of competitive activity makes it possible to choose the factors that both efficiency and result in chosen sports activity depends on, and to estimate fairly precisely what level they are. It is very important to determine the level of efficiency that provides reaching a certain result. Besides, this analysis can make it possible to determine the quantity of work that should be done in a competition, and what this work comprises of. In such a way we come to the knowledge what athletes should be prepared for. Without the detailed research of sports activity the question of successful management in preparation of top athletes cannot be solved, since only in this case it becomes possible to make adequate model characteristics. The importance of this method lies in the fact that, no matter how often the athletes are measured and tested in laboratory conditions or in another way, it is not possible to say quite precisely, based on results of these measuring, whether the athlete is ready to achieve a good result or not. Finally, the result is made where an athlete trains and competes, and not in laboratories. On the basis of laboratory measuring it is possible only to determine what the level of overall physical preparation an athlete is and to estimate whether the level is satisfactory. If it is, then athletes have sufficient physical grounds for successful work on further efficiency development.

By taking into account the available literature, the theory of sport and the theory of sports training for volleyball, it can be concluded that there is few, i.e. insufficient number of professional and scientific works in which there is immediate and overall research of the structure of players' activities in competitive conditions. Sports games in general, as well as volleyball, have a complex structure of competitive activities of different quantity and quality, activities with and without a ball, attack and defense, activities of individual and group character in different conditions of play, etc. Therefore, the reason that no factors have been found in literature that treat this problem in all aspects, probably lies in the fact that sports games, and volleyball in particular, have a very complex structure which is not simple to determine, or, if they exist, they are kept far from potential opponents. Volleyball comprises of the play, and contemporary scientific researches have not examined appropriate methods for game research that dominates in sport.

Jankovic and Marelic (1995) divide the structure of the game, taking into account only technical expression of the players, into complex 1 and complex 2 (complex 1, a part of the game that comprises all actions after the opponent's service, that is all connected to the reception, setting the ball for attack, and the attack itself, and complex 2, a part of the game that comprises all the actions in the play of one team that has the service, that is, all that is connected to the service, blocks, defense of the field, setting the ball for attack, and the attack itself).

Osmankac (2000) says that the topic of all the analyses and monitoring female volleyball players, i.e. their technical expression during the game. According to him, the key factor in success of one team is the efficiency, which is estimated thanks to evaluation of these elements (service, block, field defense, reception, setting the ball for the attack and the attack). The structure of volleyball play is efficient and inefficient expression of the volleyball players during the match.

The basic task of apprehension of volleyball players' competitive activities is to provide answers about what, how and how much, says Nesic (2001), in order to raise the players' efficiency to as high a level as possible, in order to win the match.

The aim of research of this work is technical – tactical structure of competitive activity of female volleyball players of Serbia at Universiade 2007 in Thailand. The primary aim of the research is a descriptive account of the structure of competitive activity of female volleyball players of Serbia, as well as defining the efficiency of shown elements of volleyball game in the mentioned competition, while the secondary one is the comparison of the above mentioned with the rest of the teams with which it was played during the tournament.

Methods

The sample researched in this work is 6 matches that the university representation of Serbia played at Universiade 2007 in Thailand. Six variables have been monitored in the research, and these are: the quotient of service efficiency (KE_S) – the game starts with this element of technique. A service is a hit, striking the ball with one hand from the given space, behind the end line of a volleyball court. It used to have the aim to "serve" the players on the other side of the net in order to start the game. Nowadays service is considered to be the first attack, i.e. the means of a team that enables the further play easier; the quotient of service reception efficiency (KE_R) – while performing this element of the game there are several demands to be fulfilled – the body posture, arms position, legs position, and with their fulfillment there is the opportunity for good attack organization and therefore scoring a point; the quotient of setting the ball for the attack efficiency (KE_Se) – the basic function of setting the ball for the attack, to enable the attacker to score a point, is the precision in hitting the ball, but the tactical justification is not to be ignored as well, the quotient of attack efficiency (KE_A) – means the passing the ball on the opponent's part of the field. Variations of the attack are: spiking, cross-court shot and "kill" and each of the expressed forms of the attack has its advantages; the quotient of block efficiency (KE_B) – if the attack is the best defense, among the defenses, the best one is the one that represents the attack as well. To block means to place the hands immediately in front of the ball in the moment of its contact with the hands of the players who spikes and the ball and not to allow the ball to pass to the half of the field of the team which is defending and the quotient of defense efficiency (KE_D) – by the system of the play the formation of the players in certain situations is determined. That formation should be taken before the opponent's attack. The posture in which the attack is blocked, i.e. the contact with the ball, should be done in the way to enable quick acting in all the directions. Body center is somewhat lower than usual.

After collecting data by observing and making notes and with the help of especially made observing list, the data processing has continued with calculating the efficiency quotient (KE) for each technical – tactical variable, i.e. the element of the technique.

General formula for calculating efficiency quotient (KE) is (Godik, 1976):

$$KE = \frac{\text{Number of successfully done elements of the game}}{\text{Total number of played elements of the game}}$$

The variables mentioned have been analyzed by the application of the software – "Data Volley – professional 2.0.2.", i.e. the official FIVB software.

Results

The results have shown that the descriptive values of monitored variables are the following: the average value, on the level of the whole sample, of the variable KE_S is 50.98±6.58, while the average value of the variable KE_B is 51.48±5.88. The average value, on the level of the whole sample, of the variable KE_D is 57.00±10.36, and for the variable KE_R is 78.90±9.93. The average value of the variable KE_Se is 83.46±9.51; to the contrast of it, the average value of the variable KE_A is 55.60±7.25.

Table 1. Descriptive statistics of examined variables for the whole sample

Variable	N	X	SD	Min.	Max.	Range	Skew.	Kurt.
KE_S	6	50.98	6,58	35	64	29	-,114	-,286
KE_B	6	51.48	5,88	42	69	27	,869	1,567
KE_D	6	57.00	10,36	41	77	36	,280	-1,150
KE_R	6	78.90	9,93	53	95	42	-,554	-,467
KE_Se	6	83.46	9,51	52	96	44	-,957	1,735
KE_A	6	55.60	7,25	42	67	25	-,501	-,817

Table 1. Descriptive and comparative statistics, according to the success of examined variables for the whole sample

Variable	Success	N	X	SD	Skew.	Kurt.	T	df	p
KE_S	1	6	48.42	6.65	-,053	-,619	-2.904	46	.006
	2	6	53.54	5.52	,365	-,895			
KE_B	1	6	49.71	5.06	1,631	5,011	-2.166	46	.036
	2	6	53.25	6.21	,928	,675			
KE_D	1	6	57.33	11.00	,219	-1,500	.221	46	.826
	2	6	56.67	9.91	,359	-,654			
KE_R	1	6	80.42	9.01	-,269	-1,050	1.063	46	.294
	2	6	77.38	10.75	-,639	-,547			
KE_Se	1	6	83.33	9.95	-1,497	3,151	-.090	46	.929
	2	6	83.58	9.27	-1,047	,566			
KE_A	1	6	52.17	8.21	,296	-1,465	-3.703	46	.001

Discussion and Conclusion

Descriptive statistics of examined variables for the whole sample (table 1) shows the average values, standard deviations, minimal and maximal values, as well as symmetry and flatness of the distribution of results on the whole sample.

The average value, on the level of the whole sample, of the variable KE_S is 50.98±6.58, while the average value of the variable KE_B is 51.48±5.88. The average value, on the level of the whole sample, of the variable KE_O is 57.00±10.36, and for the variable KE_P is 78.90±9.93. The average value, on the level of the sample N=6 of the variable KE_D is 83.46±9.51; to the contrast of it, the average value of the variable KE_N is 55.60±7.25.

In the range from minimal **(Min.)** to maximal **(Max.)** values there are fewer than 6 standard deviations **(SD)**, on the basis of which/so that we can conclude that there is a reduced sensibility, i.e. discrimination of applied variables.

For the values of symmetry **(Skew.)** and flatness **(Kurt.)** the distribution of the results of all the variables are in the range of normal distribution, so that we can continue through to further statistical raw data processing, both in the comparative statistic analysis and the analysis of the structure of competitive activity of female volleyball players at Universiade in Thailand in 2007.

Comparative analysis of monitored elements of volleyball game compared to their opponents' results has shown that the national Serbian team has different values in three variables only, and these are: the quotient of service efficiency **KE_S** (t=-2.904; df=46; p=.006), the quotient of block efficiency **KE_B** (t=-2.166; df=46; p=.036), and the quotient of attack efficiency, **KE_A** (t=-3.703; df=46; p=.001) (Table 2.). In other variables there is no significant statistical importance in the difference among the mentioned teams (**KE_R -** t=1.063, df=46, p=.294; **KE_Se –** t=-0.90, df=46, p=.929 i **KE_D –** t=.221, df=46, p=.826).

In the discussion about these results we can conclude that the efficiency of attack, service and block are the crucial factor for general efficiency of the team and for the success in scoring points and the final success of senior female national team on the mentioned tournament. The efficiency of the remain technical-tactical elements, as based on this the research, do not play a significant part in the discrimination of the success, but it should also be emphasized that the efficiency of previously mentioned variables could not be possible without the so-called factor of situational precision, in which **KE_R, KE_Se i KE_D** belong.

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Significance of University Sport in Evaluation of Students' Physical Status

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Abstract

Introduction

University sport pertains to those persons who committed to education and affirmation of social groups of intellectuals. Knowledge acquired at the University is improved, completed and directed by professional structures.

The standards determining modern life quality of a contemporary man are linked to sporting activities. Regardless of being professional, recreational or therapeutic exercising, this kind of activity is conditioned by standards of society development. University sport indicates the defects in development of standards, comfort, and life stile of the students. General significance is being more analyzed than readiness and achieved measurable quality. By analyzing the obtained results of the group of students who used sport, we acquired the data which are very significant as a starting point to determine which sports activities can be applied and in which way. Impossibility to go in for sports activities is mostly the reason of inactivity and of non using sports contents. Since the top sport at university is conditioned and determined by general level of sports culture, the obtained results are indices of how sport, as life phenomenon of modern man, is presented in the mission of healthy life as prevention.

Methods

In the research we used a questionnaire for assessment of educative level that determines quality of choice of sports contents and continuity of practicing of sports activities. A battery of tests, in the form of initial, control and final measurement was used for assessment of physical status. The sample of subjects included the students who frequent fitness centers on their own initiative, who used sports contents in an organized way as sports recreation, and those students who use organized exercise program as a compulsory school program.

Results

Based on the conducted poll in evaluation of knowledge level, the obtained results indicate that: the knowledge level is not satisfactory, the knowledge level indicates to a low criterion in selection of sports activities and that improvisation is present.

The stressed motive in exercising is esthetic appearance, weight reduction and pain. It is expectant that life comfort, life style and health promotion are motives. The lack of knowledge conditions the choice as a consequence and not as a cause.

When evaluating physical status, by applying a battery of tests, the index is clear that the values obtained in the function of cardiovascular system are not satisfactory and show chronic fatigue. The research result indicate a deficit which in a short time will become a serious factor of health deterioration. Deficits are measured by motor tests in both values of working field of the muscular group and in strength and endurance. This shortage is closely related to morphological, functional and postural status. The results obtained at the control and final measurements indicate to high degree of differences in quality of groups between those which have a compulsory subject and those who have a free choice of sports activities. The final tests give significant contribution to development of training technologies which can lead to attaining of the desired goal, i.e. adequate physical status of students.

Discussion

The significance of university sport is reflected in all sports dimensions in general. The results obtained in this research indicate that values that can be achieved through physical culture primarily have great importance in prevention.

The basic message of the University games is not the result in top sport, but is reflected in the life quality.

Introduction

University sport pertains to those persons who committed to education and affirmation of social groups of intellectuals. Knowledge acquired at the University is improved, completed and directed by professional structures.

The standards determining modern life quality of a contemporary man are linked to sporting activities. Regardless of being professional, recreational or therapeutic exercising, this kind of activity is conditioned by standards of society development. University sport indicates the defects in development of standards, comfort, and life stile of the students. General significance is being more analyzed than readiness and achieved measurable quality. By analyzing the obtained results of the group of students who used sport, we acquired the data which are very significant as a starting point to determine which sports activities can be applied and in which way. Impossibility to go in for sports activities is mostly the reason of inactivity and of non using sports contents. Since the top sport at university is conditioned and determined by general level of sports culture, the obtained results are indices of how sport, as life phenomenon of modern man, is presented in the mission of healthy life as prevention. Modern tendency worldwide is to improve the level of life comfort and style as well as health promotion which implies developed awareness, educational level and well defined life needs and likings. It is not easy to reach this level and these features can be seen in developed environments. For a quality life it is necessary to have elementary conditions of life standard and free time which is more and more reduced. The attitude of World Health Organization is exactly the prevention because health has become very expensive. The consequences of bad health condition are reflected also in deficit of financial means. Having in mind students health condition and impossibility to go in for sport it is necessary to indicate the problem which in upcoming period shall become alarming.

Groups of subjects

The sample of subjects included the students who attend fitness centers on their own initiative (GSF) 30 students; those who use sports contents in an organized way as sports recreation GSF) 30 subjects, and those students who use organized exercise program as a compulsory school program (GSŠ) 30 subjects. The groups were mixed.

Methods

In the research we used a questionnaire for assessment of educative level that determines quality of choice of sports contents and continuity of practicing of sports activities. The questionnaire consisted of ten questions.
A battery of tests, in the form of initial, control and final measurement was used for assessment of physical status.
For assessment of pulse values (HR) at rest and at strain we applied a standard loading test at treadmill – bike. The loading was on the third level. We used Polar equipment for pulse measurement.
For evaluation of motor status we used a battery of tests for shoulders, chest and legs. For shoulders we used 6 exercises without loading, with 20 repetitions; four exercises were used for chest (incline bench press, incline stretching, flat bench press and straight stretching), the loading was one kilo bar and 2 kilos for extension, number of repetitions was twenty; for legs 6 boxes and 3 exercises (6 boxes of different height, semi-squats, deep squat and back leg muscles), for five steps are executed on boxes with each leg and the remaining exercises for twenty repetitions.

Results

Based on the conducted poll in evaluation of knowledge level, the obtained results indicate that: the knowledge level is not satisfactory, the knowledge level indicates to a low criterion in selection of sports activities and that improvisation is present. The stressed motive in exercising is esthetic appearance, weight reduction and pain. It is expectant that life comfort, life style and health promotion are motives. The lack of knowledge conditions the choice as a consequence and not as a cause.

Interpretation of the results of the questionnaire

The pool was elaborated by percentage calculation and HI-square test, per groups. The analysis was done by the sequence of made questions.

QUESTION No. 1 I would like to use one or few programs:

General recreation program □ Corrective exercises □
Sports recreation □ Sports program □
Program for weight reduction □
Other programs (state your choice) _____

The greatest number of GSF opted for general program (73,33%), followed by the program for weight reduction (30%), corrective program (26,67%), sports recreation (20%) and sports program (6,67%).
In GSS the greatest number of subjects opted for sports recreation (43,33%), than for general program (33,33%), program weight reduction (30%), and corrective program (20%).
In GSŠ the greatest percentage selected general program (53,33%), than corrective program (36,67%), weight reduction (30 %), sports recreation (20 %), and sports programs (6,67%).
The results of χ^2-test indicate a significant difference in answers depending on the group of subjects. Since the calculated χ^2 is higher from both tabular values (and on the threshold of significance 0,05 and 0,01) , it can be concluded that the differences are highly statistically significant.
General program is mostly selected due to ignorance. General program covers the need for movement and non-defined relation towards real needs and possibilities. In GSS group, sport recreation was mostly chosen because that is the dominant form of physical activity, but as in all groups, the risk factor is high due to frequent injuries.

QUESTION No 2 I want to use the program for….

Health □ Recreation □ Body weight reduction □
Healing of injuries □ Esthetic look □

The greatest number of subjects (76,67%) among the GSF states health aspect as the reason for involvement in physical activity, 43,33 % esthetic motives, 33,33% recreation, 30 % body mass reduction, while 10 % of the testees states healing of injuries as the main reason for physical activity.
In GSS 73,33% of them stated health-related reasons, and the same percentage (73,33%) has recreation as its aim. 50% of the professionals chose esthetic motives and 23,33% body mass reduction.
As for the GSŠ, 70 % of them stated health aspect, followed by recreation (50%), reduction of body mass (23,33%), esthetic motives (20 %) and injury healing (13,33 %).
To compare the differences between certain groups, the χ^2-test was used. As the calculated χ^2 is lower than both tabular values, the hypothesis on inexistence of difference in answers of certain groups is accepted.

When it comes to tiredness and chronic fatigue the consequences affecting health are evident. Chronic fatigue cannot be regulated with passive resting any more therefore the need for movement, exercising is more and more expressed.

QUESTION No. 3 I practice recreation

Regularly □ From time to time □ I do not □

The greatest percentage of answers related to regular physical activities is recorded in GSŠ (70 %), than in GSF (43,33%), and the lowest in GSS (33,33%).
43,33% of professionals practice recreation from time to, 30 % of the beginners and 20 % of recreativists.

The results of χ^2 point out to statistically significant difference in answers provided by certain groups, for the threshold of significance of 0,05, while at the threshold of significance of 0,02 and 0,01 no significant differences appeared.
The status of a receativist implies continuous exercising at least twice a weak so that this result is logical. In professional groups sorts recreation disguises the problem of regularity and increases the problem of injury. In professional groups sports recreation very often can be in the zone of contradiction because the body is not in continuous, dozed loading.

QUESTION No. 4 I go in for sport (state which):

1. _____ 2. _____ 3. _____
Regularly □ From time to time □ I do not □

As for the frequency of practice, 76% in GSF answered *I do not,* and the same12 % replied that they go in for sport regularly i.e. from time to time.
In GSS the greatest percentage are those who opted for *from time to time* (57,14 %), then followed by *I do not* (28,57 %) , while the smallest percentage replied that they regularly go in for sport (14,29%).
In GSŠ the convincingly highest percentage are those who answered *I do not (*83,33%), while for *from time to time* was chosen by 10 %, and only (6,67%) for *regularly.*.

The reply to this question indicates that there is a great need for physical activity, but laziness and comfort of modern way of life are dominant factor and cause that continuity vanishes in time. This question, i.e. the answers demonstrate the existence of hypokinetic syndrome.

QUESTION No. 5 I would use the program

On working days □ at weekend □ in the morning □ in the afternoon □ per choice □

As for the choice of terms for recreation the greatest percentage of testees in all three groups opted for a working day – in GSF and GSŠ 76,67%, and in GSS even 80%, while the weekend was chosen by 16,67 % in GSŠ, 13,33 % in GSS, and 6,67 % in GSF.
It was found out that the percentage of those who want to go in for sport in the morning is much higher in GSF (26,67%) and in GSŠ (16,67%), when compared to GSS (3,33%).
The highest percentage of those who want to go in for sport in the afternoon (33,33%) was noticed in GSS, while that percentage was lower in GSŠ and GSF (each 20 %).

Physical activity is considered obligatory, and not necessity so that the choice of active weekend appears in a very small percentage. In order to form a need for movement it is necessary to exercise continuously for a longer period of time (from 3 to 5 years).

QUESTION No. 6 Health restrictions:

Chronic □ Temporary □ No restrictions □

As for health restrictions, the highest percentage of those who stated that there are no health restrictions, the highest percentage of those who stated that there are no health restrictions was established in GSS (96,67 %), then in GSF (60%) and finally in GSŠ (56,67 %).
Temporary restrictions in GSŠ appeared in 36,67 %, in GSF 30 %, and in GSS 6,67 %. While there are no one in GSS who indicated chronic restrictions, in GSŠ that percentage amounts to 13,33%, and in GSŠ is slightly lower and amounts to 10 %.

In GSS groups who dominantly go in for sports recreation, frequent injuries are not considered changes in health status but temporary restrictions. At check ups they fulfill general criteria of health condition which cannot estimate chronic changes, degenerative processes and physical status.

QUESTION No.7 Restrictions in exercises:

Injuries □ Temporary restrictions □ Chronic restrictions □
No restrictions □ I do not know □

In GSF 40 % declared that there are no restrictions in exercising, followed by those with restrictions (33,33 %), who answered *I do not know* (13,33 %), and those who stated injuries and chronic restrictions (6,67% each).
In GSS the percentage of those who said that there were no restrictions, is expectantly much higher that in the previous group and amounts to 83,33 %, with temporary restrictions 10 %, injuries 6,67 %, and *I don not know* was replied by 3,33% of them.
In GSŠ the highest percentage are those who stated that there were no limitations (46,67 %), followed by those who stated injuries and temporary restrictions (20 % each), chronic restrictions (10%), and 6,67 % of them answered *I do not know.*

Chronic fatigue as subjective evaluation is mostly a state which does not restrictions, but needs. In assessment of physical status real states are detected and diagnosed which endanger vitality of the body, but if timely identified, they have great chances to be improved and eliminated as risk factors.

QUESTION No. 8 Do you know what hypokinesis is

yes □ no □
Hypokinesis is _____

While in GSF more testees replied to this question negatively (62,07 % of them), the situation in other two groups is opposite, in GSS 60 % of them answered affirmatively and in GSŠ 55,17 % replied *yes.*

The answer to this question is in compliances with the researches so far, indicating that permanent education is necessary. The treated groups gave positive answers because through practical program they acquired theoretical explanations about the importance of continuous exercising and hypokinesis as risk factor number one. The importance of the reply to this question is closely related to the choice of program in fighting chronic fatigue..

QUESTION No. 9 Can you recognize fatigue?

yes □ no □
The symptoms of fatigue are _____

From the overall number of subjects 73,33 % declared that they know how to recognize symptoms of fatigue while 26,67% said that they did not know how to recognize the symptoms of fatigue.
The greatest percentage of those who do not know to recognize the symptoms was established in GSF (13,33 %), in GSŠ that percentage is slightly lower (10%), and the lowest percentage was noticed in GSS (3,3%).
As the symptoms of fatigue GSF most frequently recognize heavy eyelids and insomnia (46,67% subjects), followed by apathy (23,33%) and increased appetite (16,67%).
In GSS even 63,33% of subjects considers the feeling of heavy eyelids is a typical symptom of tiredness, 43,33 % increased appetite, followed by apathy and insomnia (40 % of subjects).
GSŠ consider insomnia and heavy eyelids for a typical syndrome of fatigue (40 %), and equal percentage is noticed also in the symptom of increased appetite (36,67%) and apathy (33,33%).
χ^2 test indicates that there are no significant differences between certain groups as for the differences of syndromes.

The question of fatigue and recognition of the symptoms is mostly related to subjective assessment. Insufficient education causes improvisations and subjective feeling is presented as a relevant factor, so that fighting fatigue cannot give the desired result. The desired result can only be acheved by application of professional programs.

QUESTION No. 10 Do you use literature:

- Popular □ - Internet □
- Professional □ - I do not use it □

Even 70 % of GSS declared that they used the Internet in order to acquire new knowledge, while that percentage in GSŠ and GSF is almost twice lower (36,67%).
53,33% in GSS, 46,67 % in GSŠ and 36,67% in GSF reads popular literature.
The highest percentage of the subjects who use professional literature showed up in GSF (23,33 %), then in GSŠ (20 %), while that percentage is much lower in GSS (6,67%).
The highest percentage of those who do not use literature was found in GSF (26,67%), while in the other two groups this percentage is equal (13,33%).
According to the results of χ^2 test there is no significant difference between certain groups in answers to this question.

In the assessment of physical status, by application of battery of tests, clear index that the values obtained in function of cardiovascular system are not satisfactory and show chronic fatigue.

The loading that we applied in testing was from the standard level of loading for recreational groups ranging from 1 to 6 on a bicycle. The third level is applied in testing as the most appropriate for fast assessment of physical status. Physical status mean optimal development of functional and motor abilities. In assessment of the intensity of loading we cha say that the level is from 20-30% lower in comparison to the level which gives assessment of adequate physical status, which is a starting point for any other recreational form of exercises. The achieved results indicate that preparation is necessary as adaptation to strain in order to use any other program of sports recreation. The contraindications that we noticed in students who go in for sports recreation refer to a non-prepared body so the injuries appear.

The value of the training technology reflects right in the analysis of the results of all three groups. The group of students who have an obligation, in which the training technology (GSŠ) of diagnostics, adaptation to strain, schools of recreations and recreation is applied show significant differences when compared to the previous two groups. Initiative work of students in fitness centers (GSF) gives results which are stereotypes, insufficiently trained and which in the short period shall stagnate in the process and the possibility of injuries is great. Improvised work gives improvised results where progress in longer time interval is impossible.

The research result indicate a deficit which in a short time will become a serious factor of health deterioration. Deficits are measured by motor tests in both values of working field of the muscular group and in strength and endurance. This shortage is closely related to morphological, functional and postural status. The results obtained at the control and final measurements indicate to high degree of differences in quality of groups between those which have a compulsory subject and those who have a free choice of sports activities. The final tests give significant contribution to development of training technologies which can lead to attaining of the desired goal, i.e. adequate physical status of students.

Discussion

The significance of university sport is reflected in all sports dimensions in general. The results obtained in this research indicate that values that can be achieved through physical culture primarily have great importance in prevention
The achievements in sport do not result from the training technologies at universities but thanks to the representatives of sport of the academic citizens. The main message of the Universiade is not the result in elite sport but the quality of life.
Tendency of sport development as a phenomenon of modern way of life indicates that a serious and professional approach is necessary. Excluding of students from immediate participation at the University Games demonstrates more that sport entered the Universiade than that the Universiade achieves sports results. If we use the obtained results in evaluation of the upcoming time it is sure that exercising will be more therapeutic than preventive. A good student may not be a recorder but in any case he can be healthy and active in sport. Modern technology enables efficient personal diagnostics and a concrete exercising treatment for each person individually. With small investments and application of knowledge, it is possible

in short interval, to achieve significant results. This way we presented concrete training technology and the achieved results.

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Sub Themes 5.

University Sports: a foundation for sustainable universal development

Organizational Model of Orienteering as University Sport and its Functional Significance at the Academy of Criminalistics and Police Studies in Belgrade

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Abstract

Introduction
Orienteering as a university sport presents a constituent in extracurricular activities in the Academy of Criminalistics and Police. The Orienteering Club was founded in 1997 and has so far had 436 members. During the 2005/06 school year, it had 85 members. Newly accepted members (first year students) finished the Initial Course in orienteering at the beginning of the summer term. The curriculum for this course was made by the national association of orienteering, based on the principles defined by Peter Palmer, a renowned orienteering expert in England. After qualifying on the Academy competition and other control competitions, they took part in the system of official O-competitions in compliance with IOF rules. Students of the last year of studies had a prominent role during the initial training course, since they acted as instructors, each in charge of 4 trainees, under supervision of the Police Topography professor. For practical exercise in orienteering techniques a number of maps of wider geo-space of Belgrade were used. Associates of the Special Physical Education Department also took part, to a certain extent, in designing the tactical performance.

Methods
The Academy students who are members of the Orienteering Club have, despite the complicated and demanding curriculum, projecting to up to 10 or 12 hours of training, both in the morning and in the afternoon, achieved results far surpassing those of a dozen other clubs active in the Academy. Among other things, as a team, they have won 7 second places at eight Belgrade University championships in M 21A (male students) and a second and third place in Z 21A category (female students). They have also won a first and three second places in M 21A category in the competitions for Belgrade University League.

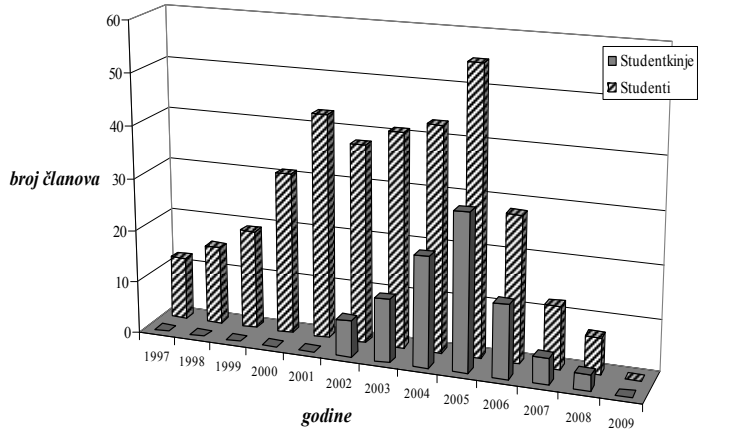
Results
Preliminary results of the research performed by the author have established educational efficiency of orienteering in the educational process of the subject of Police Topography in the Academy and they also prove the co-relation between solving specific police topography tasks and motor abilities of Academy students, members of the Orienteering Club. Besides, certain orienteering techniques have been used for predicting successfulness in the training of Academy students and special police troops for performing police work in the field.

Discussion
It is important to point out the significance of orienteering skills for performing managerial tasks by graduated Academy students, especially in the preparation and carrying out of police actions and interventions in complex geo-space, time and security conditions. It was much easier for the Orienteering Club members who graduated from the Academy to acquire competence in the use of contemporary geo-topographic materials with UTM coordinate network and GPS devices, which was necessary for compatibility within the international policing framework, i.e. in the cooperation with civilian, police and military missions.
The overall achievement of Academy students - members of the Orienteering Club confirms the thesis that university sports present a foundation for education and academic success.

1. Introduction

The Academy of Criminalistics and Police Studies (KPA) in Belgrade has ever since its foundation in 1993 worked on both organizing educational activities and forming sport clubs as forms of extracurricular activity. In addition to traditional sports, the Academy has successfully cherished marksmanship and orienteering as sports of particular significance for army and police (Milojkovic 56; 2003). The sport clubs have always been managed by members of the KPA teaching staff (athletics, swimming, basketball, rowing, marksmanship and orienteering) and (senior) police officers – squad commanders (football, handball, volleyball, table tennis, judo and karate). The Academy vice dean in charge of education and the class superintendant were responsible for coordinating the work of all these clubs. Students of the KPA have so far taken part in numerous championships on the national level, as well as in competitions organized by the Ministry of Interior and, most importantly, in the competitions within university championships and leagues.

The KPA Orienteering Club (KPA OC) was founded in 1997 and had 436 members until 2008. Following its formation and its initial successes, the club attracted an ever increasing number of members over the years, so that in the school year of 2005/06 it had 85 members (Graph 1).[1] Namely, at the beginning of each school year, the club was presented within the subject Police Topography, and then the newly accepted members (first year students) finished the Initial Course in orienteering at the beginning of the summer term. The curriculum for this course was made by the national association of orienteering, based on the principles defined by Peter Palmer, a renowned orienteering expert in England. After qualifying on the Academy competition and other control competitions, they took part in the system of official O-competitions in compliance with IOF rules. Students of the last year of studies had a prominent role during the initial training course, since they acted as instructors, each in charge of 4 trainees, under supervision of the Police Topography professor. For practical exercise in orienteering techniques a number of maps of wider geo-space of Belgrade were used. Associates of the Special Physical Education Department also took part, to a certain extent, in designing the tactical performance.



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Studentkinje	0	0	0	0	0	7	12	21	30	14	5	3	0
Studenti	12	15	19	31	43	38	41	43	55	28	12	7	0

Graph 1 – Number of the Orienteering Club members among students of the Academy of Criminalsistics and Police Studies in the 1997 – 2008 period

The Academy students who were members of the Orienteering Club have, despite the complicated and demanding curriculum, projecting to up to 10 or 12 hours of training, both in the morning and in the afternoon, achieved results far surpassing those of a dozen other clubs active in the Academy at the time. Among other things, as a team, they have won 7 second places at eight Belgrade University championships, to which they were invited, in M 21A (male students) and two second and one third place in Z 21A category

[1] Due to a new organizational scheme and circumstances regarding both personnel and finance, all KPA clubs stopped working in 2008. The students have, however, continued practicing these sports in numerous civilian clubs. Further research will show whether this loss of organized extracurricular work at the KPA will influence the overall achievements in the realization of teaching subjects and what effects it may eventually have.

(female students) – Table 1. They have also won one first and three second places when competing individually in M 21A category within the Belgrade University League Championship.

Table 1 – Achievement of Orienteering Club student - members of the Academy of Criminalsistics and Police Studies at University championships

No. of championship	Year in which the chanpionship took place	No. Of students per category University/KPA				No. of universities, academies and colleges compteting	Team placement of KPA students	
		M21A		F21A			M21A	F21A
III	2000	61	11	14	-	14	2nd	-
IV	2001	47	13	6	-	18	2nd	-
V	2002	48	16	8	-	18	2nd	-
VI	2003	41	18	11	5	18	2nd	-
VII	2004	62	23	15	6	22	2nd	-
VIII	2005	76	25	21	8	20	2nd	2nd
IX	2006	88	10	19	7	20	2nd	3rd
XI	2007	72	8	17	4	23	-	2nd
XII	2008	43	7	19	3	24	-	-

Preliminary results of the research performed by the author have established educational efficiency of orienteering in the educational process of the subject of Police Topography in the Academy.

The students – subjects of this research, who had taken part in various orienteering competitions during their course in Police Topography, achieved statistically more significant successes in tackling practical tasks within the said subject than those who had not participated in orienteering competitions (Milojkovic, 56; 2003).

Furthermore, the findings proved a co-relation between solving specific police topography tasks and motor abilities of Academy students, members of the Orienteering Club on the level of explanation variant of 52 % (MIlojkovic, Dopsaj, Bacnar, 183;2004). A separate complex of predictors included variants (variables) describing the capacity of the organism to ensure adequate support of running movement from aerobic energy sources, to realize more efficient movement both with respect to energy and mechanics while enduring the strain of running in both aerobic and anaerobic conditions, and to ensure the greatest possible absolutely maximal speed in the running movement by the individual.

Besides, certain orienteering techniques (such as situational tests) have been used for predicting successfulness in the training of Academy students and special police troops for performing police work in the field (Milojkovic, Dopsaj, 154;206). The obtained results showed that the situational tests in orienteering were functional as predictors of success of police officers in their field training in police topography, i.e. the research established that the subjects involved in the orienteering activities achieved statistically more significant results in resolving the situational tests than the subjects who were not involved in orienteering.

However, beside the above mentioned reasons, it was necessary to conduct research regarding a broader functional significance of orienteering as a university sport for the overall achievements in the realization of curricula. Namely, for the purpose of this paper a research was conducted with an aim to establish the ratio of interconnectedness between the achievements of 50 subjects taking exams in Police Topography who had competed for at least two seasons and taken part in at least 8 orienteering competitions and their achievements in the academic subjects the preparation of which requires a certain amount of knowledge from the sphere of police topography (Police Tactics, Police Management, and Special Physical Education 1 and 2).

2. Materials and methods

2.1 Subject Sample

The research was carried out on a sample of 50 subjects. The subjects were chosen by the method of proportional stratified sample from the population of male members of the KPA Orienteering Club. Namely, the subpopulation – the stratum comprised male students (200 subjects), who had competed in at least two

competition seasons and taken part in at least 8 orienteering competitions. An independent 25 % sample was randomly chosen from the stratum defined in this way.

Female members of the KPA OC were not taken into consideration in this research because they do not sufficiently meet the requirements of sampling, that is, it was not possible to obtain an objective value of multiple co-relation coefficient in their population because the size of the sample does not exceed the number of prediction variants by at least 20 to 30 times (Tenjovic, 157;2002). This certainly does not imply that they will not be subject of future research.

2.2 Measuring methods

In order to draw relevant conclusions concerning the functional significance of orienteering as a university sport on the basis of KPA students' achievements in adopting teaching subjects, relevant data were obtained for all KPA OC members from the student administration department and the club manager.

2.3 Variant sample

The quantitative predicting variant was the achievement of students – members of the KPA OC in the subject of Police Topography, and the quantitative criterion variant was the success of these students in the teaching subjects in the adoption of which knowledge and skills acquired in Police Topography may contribute to some extent.

2.4 Methods of data processing

For the purpose of statistical data processing, a program package SPSS 10.0 for Windows was used. In order to establish the existence of statistically significant connection (interaction) between Police Topography and the subjects for the adoption of which knowledge and skills related to police topography are necessary, we used the General Linear Model (GLM) as a combination of the method of multiple regression analysis and single factor Univariate Analysis of Variance (the analysis of variance with repeated values). To present the GLM procedure graphically, we used the skater-diagram (Tenjovic, 106;2002).

3. Results and discussion

Table 2 shows the results of *Multiple regression analysis*. The coefficient of multiple corelation, *Multiple R* of 0.45 and 0.270 is statistically significant, whereas the other two coefficients are not statistically significant. Thus we can conclude that between Police Topography as *independent of variable* on the one hand and Police Tactics and SPE 1 as *dependent of variable* on the other hand, there is linear connection in the population, explained by 20.7 % and 7.3 % *variance* respectively.

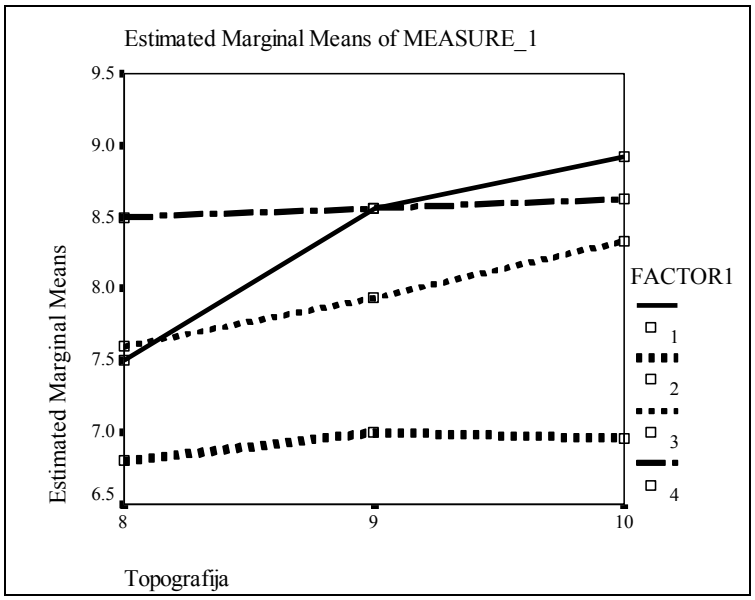
There is a statistically important connection on the level $p < 0.001$ between Police Tactics and Police Topography ($F = 12.523$) and between SPE 1 and Police Topography on the level of significance $p < 0,05$.

If we observe partial standardized regression coefficients (Beta column) we can draw a conclusion that there is the strongest partial bond between achievements in the subject of Police Topography as independant variable and the ahievements in the subjects of Police Tactics and SPE 1. There is no significant relation to Police Management and SPE 2.

Table 2 – The results of the multiple regression analysis

Variables	R	R^2	R^2_A	F	Sig.	Beta	t	Sig.
Topography – Tactics	0,455	0,207	0,190	12.523	0,001	0,455	3,539	0,001
Topography – Management	0,046	0,020	-0,019	0,103	0,750	0,046	0,320	0,750
Topography – SPE 1	0,270	0,073	0,054	3,773	0.054	0,270	1,942	0,054
Topography – SPE 2	0,047	0,002	-0,019	0,104	0,748	0,047	0,323	0,748

The graphic presentation resulting from General Linear Model (option Plots) procedure facilitates interpretation of statistically significant interaction. Graph 2 *(Profil Plots)* shows a more substantial corelation between marks in Police Topography, on the one hand, and Police Tactics and SPE1 on the other (the greater slants indicate greater effect of interaction), whereas this is not the case with marks in Management and SPE 2.

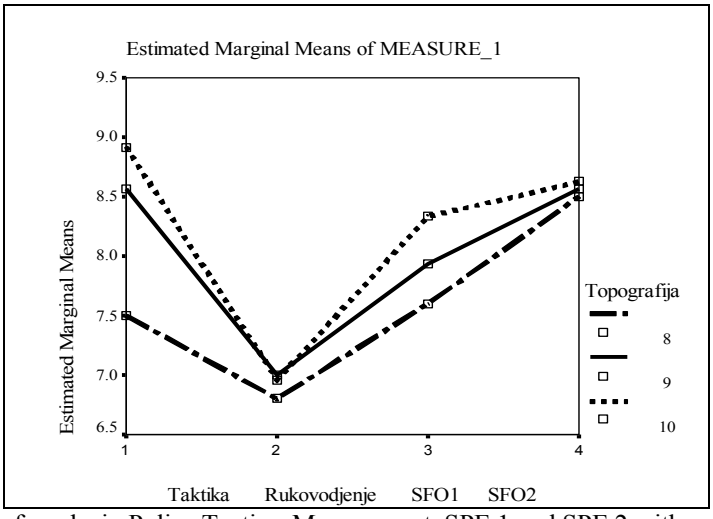


Graph 2. – The effects of interaction between marks in Police Topography and achievements in the subjects of Police Tactics and SPE 1 among students of KPA members of the Orienteering Section.

An explanation for the above mentioned interaction can be foumd in the fact KPA students take practical exams in Police Tactics and SPE 1 (practical conduct as a group or team leader in different police actions and interventions in complex security, climate and geo-space conditions, testing performace and basic motoric abilities, Cooper test, etc.).

Namely, the subjects – members of the OS KPA, beside basic knowledge and skills in Police Topography, have also acquired additional technical competence in applying advanced topographic – orienteering techniques, enviable psycho-physical preparation achieved in the training and competition processes, experience of instruction work assisted by the subject professor, who was at the same time the chief of the OS KPA), which all contributed to their easier and more successful solving program tasks within the metioned subjects.

However, this was not the case with Police Management, in which the students take only oral exam and which unjustifiably excludes a practical task that would be related to geo-topographic support of managing police units in the execution of complex security tasks, or SPE 2, which lacks testing ranges (polygons) for hands-on training and examination, but requires the tranfer of skills and knowledge acquired within the subject of SPE 1 in problem situations. With reference to this, Graph 3 indicates an absence of the interaction effect in all groups of marks in Police Topography, especially of grades 9 and 10 as compared to marks in Police Management. High grades in Police Topography, namely, do not accompany high grades in Police Management.



Graph 3 – The distibution of marks in Police Tactics, Management, SPE 1 and SPE 2 with respect to grades 8, 9 and 10 in Police Topography among the KPA OC members

3. Conclusion

On the basis of obtained results, a conclusion can be drawn that orienteering as university sport, but also as a sport of particular importance for army and police, can functionally contribute to more efficient and more effective realization of educational tasks of the KPA curricula. This is supported by the findidng that the KPA OC members achieved statistically more significant results in the subjects requiring, to some extent, the use of fundamental knowledge of police topography (Police Tactics and Special Physical Education 1).

It is important to point out the significance of orienteering skills for performing managerial tasks by graduated Academy students, especially in the preparation and carrying out of police actions and interventions in complex geo-space, time and security conditions. It was much easier for the Orienteering Club members who graduated from the Academy to acquire competence in the use of contemporary geo-topographic materials with UTM coordinate network and GPS devices, which was necessary for compatibility within the international policing framework, i.e. in the cooperation with civilian, police and military missions.

The overall achievement of Academy students - members of the Orienteering Club confirms the thesis that university sports present a foundation for education and academic success.

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High Performance Sports and Creativity

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Abstract

Introduction
Any human subject has a creative potential, meaning a certain quantity of information and a number of operational structures, working procedures and skills.
Objective
Assuming that all creative actions are built on the creative potential, it means that it is essential to activate and develop this potential.
Among the most important creative attitudes, we count: the trust in its own forces, persistence, courage and valuable attitude. Concerning the question: can we teach creativity?
Theoretical considerations
Sports in general and sportive games in particular always confront players with new and unknown situations that demand quick and efficient solutions that have never been practiced in trainings before.
The sportive training has to be focused on developing a great number of aptitudes, procedures and skills based on creativity and supposed to give an answer to atypical problems.
The education of the students from The Faculty of Physical Education and Sport has the aim to transform momentary creativity into a form of induced creativity (more large and useful in exercises); this procedure is meant to reveal all latent creative behaviors, including group creativity.
B. Schwartz's answer is certain: yes, creativity can be learned. Though, some fetters might appear while teaching creativity during sportive trainings:
-traditionalism, that promotes outdated contents and actions
-trainers' old mentalities and their incapacity to change
-the refuse to do more efforts in order to conceive and organize training lessons which aim at the learning of creativity
-solutions that already exist are far more easy to use than creative ones that change permanently and request flexibility and capacity to adapt
Discussion and Conclusions
As a conclusion and at the same time as an argument for the need to develop the creativity of the students from The Faculty of Physical Education and Sport, we will say that a creative student has much more issues for atypical situations, his actions are considerably more difficult to predict by his opponents, he makes the game more spectacular and his chances to win increase.

Introduction

Every human subject has a creativity potential which represents a quantity of information, operative structures, working methods and habits.

Objective

Starting from the idea that all creative actions are determined by the *creative potential*, it results that the aim is to **activate** and to **render it valuable**.
Among the main creative attitudes are: *self-confidence, perseverance, boldness and the sense of value*.

Theoretical considerations

Sport in general and particularly sportive games permanently confront sportsmen with new and atypical situations that require immediate and efficient reactions; these reactions haven't been practiced during trainings and aren't based on any kind of learned methods. That's why we should train sportsmen so that they can be able to react to this kind of situations on their own, using their creative potential.
The education of the sportsmen's creativity must focus not on the general creativity (too large), but on the spontaneous creativity and turn it into group creativity.
Concerning the dilemma **"can we learn creativity?"** B. Schwartz answered in 1976 "definitely, yes!".

In reality, when we introduce creativity in the sportive training, we encounter a number of **obstacles** (more or less justified); some of them are:

- the inertness in keeping contents and actions that have once been useful
- old mentalities and the trainers incapacity to adapt to new conditions
- refuse to make extra efforts in order to introduce the education of creativity in the sportive training
- it's far more easy to provide sportsmen with standard solutions instead of teaching them how to judge the situations and adapt themselves by using their creativity
- sportsmen's individual particularities and their various types of behaviors
- - the wrong impression that by developing creativity, the group's cohesion and homogeneity lowers
- material and financial difficulties

Discussion and Conclusions

As a conclusion and as an argument at the same time, we should not forget that *a creative sportsman is better trained to face atypical situations, his actions are hardly predicted by the competitors and thanks to his actions the competitions become more interesting. The last but not the least, he has a lot more chances to win.*

This concept is submissive to an important contribution of the educational and environmental elements. In psychology, creativity has **3 components:** *behavior, personality structure* and *group creativity*.
In sports, being creative doesn't necessary mean to create something new; the most important is to "answer" the competitors with unpredictable actions and proceedings. In this situation, the traditional training became insufficient because it only thought sportsmen how to memorize certain "answers" that he adapted after that to his own personality; we need to change this model and transform the sportive training into a complex action of creativity and force liberation, where the sportsman can mobilize his own *motivation, interests* and *attitudes*. The result of this action will allow forming a new kind of sportsman, free, creative and successful, based on his self-confidence and his sense of initiative.

In order to make that possible, the selection must start at early ages because it is known that children have a great capacity to assimilate information, but also thanks to their need to discover, to be original and unconventional.

Bertram M. Gross (quoted by A. Toffler) used to think that "The rational behavior always involves a joining of routine and creativity. Routine is essential because it delivers creative energies that will determine a number of unexpected situations that need creativity in order to be resolved."

* * *

The sportive training doesn't aim to develop al personality elements, but only those who are considered a priority. Concerning biathlon, some of the Romanian experts focus on developing the physical aptitudes, they judge sufficient. Unfortunately, they forget that personality is essential in biathlon, discipline with two kinds of effort (a physical one, for the running and a psychical one for shooting).

The system of attitudes and personality plays an important role because it determines the sportswomen's evolution by its functions of orientation, preparation and dynamics. Trainers should form and establish the sportswomen's positive attitude regarding things, beings and activity.

An essential element of this progress is "success", a continuous evolution during the training, performance and behavior that Call Botterill represented in 1980 (quoted by M. Epuran in 2005):

Persuasion →Training →Trust → Performance

Attitudes last for a quite long time, but they can be changed with a persuasive communication; in this case, a source emits a message towards a target-receptor who has no conception or contrary opinion about the subject.

Another aspect that we keep forgetting is the development of aggressiveness. We consider that the main goal of sport is to allow individuals to outstrip themselves; who says sports says race, fight for victory, raising against limits and obstacles (internal/personal or external). We must understand that by obtaining certain results, the sportsman automatically tries to have better ones, to improve his actions, his social position and his superiority in a certain domain.

There are problems concerning the sportsmen's motivation, and I'm not talking about the most current motivation nowadays – money, gain – but about that *something* that makes the difference between good performers and the others. This *something* is the need to make high-performance, the *"need of achievement"*.

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Human Resources in Sports Organizations in The Transition Process in Serbia

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Abstract

Introduction
Management is defined as a process of planning, organizing, commanding, coordinating and controlling human, material, financial, informational and other resources needed to achieve its goals on the optimum conditions. Each mountaineering expedition is an event that required special planning and organizing, and when a disabled woman is a part of such a mountaineering expedition importance of this process is even more significant. Successful project accomplishment of the „Elbus 2008“ expedition organized by Federation of Disability Sport and Recreation from Belgrade and Extreme Sports Club „Pozitiv“ from Kucevo is a classic example of Disability Sports Event Management.

Methods
Main goal of this project is to demonstrate all aspects of preparation and accomplishment of the mountaineering expedition on one of the highest peaks in Europe – Elbrus in Russia. Therefore, detailed description of all activities from: organization of the expedition, methods of sharing the information through the media, sponsorship, and advertisement, press conferences before and after expedition are given. Direct performers of these activities are mostly students from University of Belgrade, first of all students from Faculty of Sport and Physical Education.
Particular attention was focused on direct physical preparation program of expedition members, among whom was Danijela Jovanovic, who was born disabled (without both hands and feet).Duration of direct physical preparation was three months . Cooper run test and Sit-up test for measuring abdominal muscle endurance were carried out before and after preparation period due to determine the level of Danijela`s fitness.

Results
Organization and preparation of the „Elbrus“ expedition required great number of activities and procedures needed to provide necessary conditions for its realization and the reports sent regularly by Danijela and her trainer Slobodan Stokic give the best picture of the realization. Apart of that test results of fitness abilities which Danijela took at the beginning and the end of the preparation for this event approved that her physical preparation was perfectly designed and realized.

Conclusions
One great mountaineering venture as the „Elbrus“expedition was, required detailed preparation and organization within the way of financing, public relation and conditional preparation. Specificity of this venture presents the fact that among the expedition members was a disabled woman.
A large number of people was needed for accomplishment of this project and dominate position among them was taken by students from University of Belgrade. Synchronized activities of the certain institutions which implied good organization and planning, successful marketing and great public relation work during the realization of the project as well as an expert approach to direct conditional preparation of the participants provided postulate for successfully accomplished expedition.

Introduction

Accelerated development and dominance of sport encompassed the whole world, regardless of the existence of the sociological, economic or political differences between nations. Extension of its role is so significant that no other aspect of culture did not attract so much attention, as sport. Such phenomenology resulted from interactivity of the best structured social network on a global level, whose identity can be recognized in continuity of changes. The evidence of such a huge sociological sports impact is shown by the fact that every third European is actively involved in sports activities of some of more than 500,000 registered sport clubs. That sport continues its rapid growth in economic relations is proved by its share of about 3% of the world market. Materialization aspects of sports results, as newly created human values, are the basis of modern sport and the consequence of correlated relations of sports and business function of sports organizations.

The fact is that the efforts in the field of sport in the past hundred years have been directed towards the harmonization process of both functions of sports organizations and adjusted to the challenges from political and economic and sociological spheres.

Changes from the early '80s of the last century in the external environment of organizations, equally at all levels of socio-political[1] and socio-economic areas, were actually the challenges of creating different relationships and design of organizational processes[2] and new institutionalized framework of sport in Europe. Particular problems have arisen in the concept of transitional sports reforms of the former communist regimes as it also happened with the Republic of Serbia. With its specificities of the transition process, unfinished institutionalized framework of sport and especially the unfinished legislation, as burden of the process of finding solutions for the strategic development of sport and setting of sports-business processes of organization.

According Gilbrait[3] global changes of modern society are associated with:

1. third technological revolution,
2. Extension of market economic model,
3. Rising of global scale environmental problems.

In these conditions, according to S. Huntington[4], global changes take place with a background of uneven distribution of natural resources and economic power as well as inequality of the world resulting in creation of socio political communities from the center to the periphery.

Since Serbia entered the transition in the late eighties from a totalitarian regime that lasted almost five decades, its impacts on different areas of social activity were certainly great. In the segment of the social superstructure, specifically in sport and management systems of sports organizations, the reflection of such policy was obvious.

The phase of post-socialist management in sport in the period 1989-2000 is characterized by:

1. Searching for new sports management system.
2. Market introduction in sport.
3. Indications of new property relations.
4. Changed conditions for the development of management in sport.
5. Reduced selective basis.
6. Economic collapse.

Civil approach gives an explanation that transition in Serbia, establishes its specificity by the following known issues:

1. Stateness problem or the problem of statehood, which is reflected in:
    a) the duality status of Serbia, both of its citizens living in Serbia, and those living in former republics.
    b) The territorial integrity i.e. legality of the territorial units within it.

[1] Eastern bloc disappeared and thus the restrictions for many attractions in sport. Europe has gained an undivided market.

[2] M.Tomic: Elements of Sports Organization, Zavod za udzbenike i nastavna sredstva, Beograd 2006. Appearance of theories of organizational processes or process thory "indicating that organization lies on a series of targeted, directed and interconnected processes."

[3] J.K.Gilbrait: The Great Transition: Social Reality as a Guide, Bruxelles, 1990

[4] Samuel P. Huntington: The Clash of Civilizations and Remaking of World Order, Simon & Schuster, New York, 1996

c) The crisis of national identity.

The problem of statehood in Serbia opens the problem of statehood in sport with clearly expressed problem of the crisis of national identity.
2. Xenophobic nationalism.
3. Political culture with the following problems:
   a) National identity
   b) Social trust
   c) Civil cooperation
4. Civil culture
5. Economic position of the state i.e. economic development.

This approach does not fully reflect the essence of the transition process and that means that we still encounter:

1. Unfinished process of creation of national institutional framework for reform: social, political, economic, legal.
2. Unfinished process of society democratization.
3. Unfinished process of creation of democratic institutions.
4. Unfinished state (statehood, national identity, territory).

Exactly the above constellations talk about the need for management as scientific management, in compliance with the validities of market economy and deviation from intuitive management as one of the characteristics of former social political system.
The need for management speaks more about the importance1 of management in its applicative implementation.

Research methods

Methodological nature of this research belongs to the group of systemic non-experimental research. According to the time orientation it belongs to the group longitudinal researches. These longitudinal studies are based on application of a dependent sample, which was treated twice with the same measuring instrument, the questionnaire.
The research was based on different methods. General methods: analysis and synthesis. The method of analysis was applied through three types of scientific analysis, depending on the stage and the research needs: structural analysis, analysis of examples and comparative analysis. The method of induction and deduction was used. The induction method is applied mostly as method correlative variations. Deduction method is used in the general setting of this study, i.e. a typical hypothetical deduction of general knowledge to individual cases. It was used during the entire study in all its phases.
Explanatory methods: speculative bibliographic methods. It includes a general system of explication of the research problem in which the relevant data were collected, analyzed and interpreted primarily by theoretical, contemplative way.
Specific research methods: statistical method. Application of statistical methods enabled the identification of not only the general characteristics of variable appearance, but the discovery of regularities in the trends of their manifestation.

Subjects

The research of the state of human rears in sports organizations, in a process of transition conducted a survey 17 sports organizations of competitive nature, i.e. clubs and 4 sports societies in two periods. The firs period research refers to the period between 1990 and 1993, while the second period results were obtained in the interval from September 2007 to September 2008.
The aim of the research was, by using scientifically known, recognized and applied methods, techniques, procedures and actions, to establish correlation of management development in sports organizations with

[1] For more details on management importance see D. Eric: Introduction to Management, Faculty of Economics and Advanced school for Coaches, Cigoja, Belgrade, 2000

social, political and economic changes in the transition process in Serbia and material basis as well as possible implications for the future development of this area.
The research used a representative sample of subjects, divided into three groups.
The first group consists of top class entities that either achieved international success or realized individual high quality of the same rank, in prime reputation sports such as basketball, soccer, water polo, handball, in which Serbia participate anyway in the international distribution of sports results. The second group also included top class entities of the highest international level but which, pursuant objective quality cannot be in the first group. The third group encompassed the clubs with various sports achievements and positions in several sports with different starting point in material, financial and organizational terms, but with great ambition and improvement of sports results and position.
By comparing the results with non-parametric discriminative statistical procedure given the size of the sub-sample (N <30) and the absence of normal distribution of results, a H ²-test was used in determining the difference between certain modalities of the defined variables, according to various criteria. The following results were obtained:

Table1. Crosstab Professional team in sports organization
(Count)

		Professional team						total
		Without professional human resources	Coach	Doctor	Psychology	Physiotherapy	Other	
period	From1990 to 2000	3	14	6	2	6	0	31
	From 2000 to 2007	7	13	7	1	6	2	36
Сума		10	27	13	3	12	2	67

Table 2. Results of Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3,695(a)	5	,594
Likelihood Ratio	4,499	5	,480
Linear-by-Linear Aassociation	,007	1	,934
N of Valid Cases	67		

a 5 cells (41,7%) have expected count less than 5. The minimum expected count is, 93.

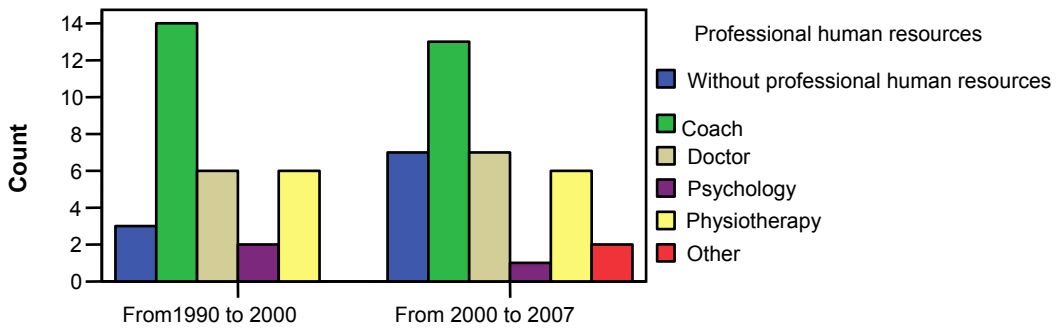

Figure 1. Professional teams in sports organization

The research has show that calculated X^2 value amount 3,695 and is lower than the table value which is 11,07 there is no statistically significant difference between the compared variables.

Discussion:

Professional teams in sports organizations are the main holders of sports functions, of creation of a core product in sport and that is the sports results. The basic issue dealt with in the research is not a question of current existence of international distribution of results, but what the international results redistribution would be with complete professional teams.

Part of the answer lies in the preparation and organization of the Elbrus Expedition, i.e. conquest of one of the highest peaks of Europe.

Each mountain expedition1 is an event that requires special attention in planning and organization, and when the alpine expedition includes also a woman with disabilities, the importance of these processes is at even greater level. Expedition "Elbrus 2008", was organized by the expert team of Belgrade Association for sport and recreation of the disabled and Club of extreme sports Positive from Kucevo. The aim of the expedition, which consisted of the coach Slobodan Stokic and Daniela Jovanovic, was conquering the highest peak in Europe, Elbrus (5642m) in the Caucasus massif in Russia, which would make Daniela the first woman with a disability in the world, who conquered the mentioned peak. In the organization of this important mountain expedition, as well as in direct fitness preparation of the expedition members, very significant role was played by the students of the University of Belgrade, particularly, the Faculty of Sport and Physical Education. The manner in which the whole venture was planned, organized and conducted, and the publicity that this event attracted throughout the world, represent a very interesting example of the management of a sports event, whose participant was a person with a disability.

The second part of the problem relates to the question of who cares about athletes' health during and after their sports career. Therefore an issue rises about the way to take care of both male and female athletes.

Given that Serbia has been in transitional period for over thirty years, part of the problem of systematic approach is included in the quantity and quality (educational level) human resources in the sector of sport at all levels and through both functions of sports organizations, business and sports one. Both problems consequently open the issue of ways of managing sports organizations and the presence of scientific management in the practice of sports organizations as contrary to intuitive management which was present in former social, political and economic system.

That modalities of the defined variables, according to various criteria. The following results were obtained:

Conclusion

If the main resource in sport is a man, and if the main resource in management is a man, then we have to emphasize that sports organizations in Serbia have a very large problem, deeply connected with the image resulting from the results distribution on the national and international sports scene. From such obtained data an ancient question of the profession in sport, basic and complementary, and of experts in sport, the level of their education and its connection with the legal regulations of the existing Law on Sport (1996) and draft laws, and their harmonization with the Law on Education.

Serbia has been in the transition process for thirty years, which means in the period of changes or transitions from one socio-political and economic system to another. However there is an issue of inexistence of key legal regulations (laws), which among other things are associated with the segment of human resources in sport, as the basic resources, i.e. inexistence of a new Law on sport harmonized with the new social, political and economic system.

Based on a theoretical approach to the problem, research results, their interpretation and discussion, in accordance with the basic goals and tasks, the following general and specific conclusions can be drawn:

A) large systems, with a few hierarchy levels are easier to manage if we set the system that can adequately formulate, monitor and analyze all components of those complex systems, which have several aspects: planning, organizational, control etc.;

B) Since such systems are susceptible to environmental influences, such as economic policy measures, legislation, etc., then it is clear that a systematic approach may be the answer to these changes, in terms of adjustment of input data, and obtaining of a corresponding output.

[1] www.mounteverest.net

It is also evident that since the state of sport, i.e. sports organizations and sports societies, is generally low and unsatisfactory, as well as related to the situation of human resources - then it requires a scientific approach and the model which must contain in itself the necessary measures and suggestions of long term solution of this problem.

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Application of the sophisticted technologies in the training process of the representatives (students) of the Republic of Serbia in biathlon

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Abstract

As in the sphere of the highest sport achievements exists the desire to achieve as optimal efficiency as possible as soon as possible, the same has happened recently in the training technology by using in integral, complex, interdisciplinary way all disposable known and unknown resources, in order to achieve the optimalization of the training process. Applying GARMIN sophisticated devices we managed to meet high standards requested in structuring and functioning of the training technologies for the representatives students from the Military Academy in the discipline – biathlon!

Introduction

Owing to the heart rate monitors (MHR), the control of trainig effects reached very high level. In Januarry/February 2009, on the mountain of Kopaonik was organized the training camp for the students representatives, who went there to train for the Balkans Championship and Euro Cup in the biathlon event.

Heart rate monitoring and determination of the aerobic threshold

The experience showed that most of athletes do not know very well their bodies in a way to know how they should exercise. By the regular unaerobic exercise, the lactic threshold can be increased at a higher level, whereby are established the conditions for top-level results achievement.

Training in the heart rate zones for biathlon athletes

Owing to the heart rate monitors, nowadays is possible to plan the appropriate programmes by using the concept of the heart rate target zone. The key of success is to find target zone that corresponds to the needs and tasks and to follow the designed training programme in order to increase capabilities to the maximum personal level.

Methods

In the applied training process the athletes trained as follows:
Aerobic zone 70-80% of the maximum heart rate, in order to achieve better overall condition,
Zone of the unaerobic threshold 80-90% of the maximum heart rate, and
Training in the red zone 90-100% of the maximum heart rate.

Results

The parameters we have got by using MHR are certainly valid and reliable indicators of directed planning, good programming and carrying out trainings for biathlon athletes. Since athletes realized their training with discipline and very correctly, tiredness and pains in muscles, breathing with difficulty and general fatigue, were appearing later and later, and they were capable to train longer with lower heart rate readings.

Discussion

Certainly it can be claimed with a great reliability that the future of programming, supervising and control of trainings and improvment of athletes (in individual sports), lies in the application of the sophisticated technologies, and that in the future will be imopssible to make some significant results without using these or some similar instruments. We think, above all, to the altitude differences and possibility to perform very hard in very difficult conditions. In this experiment was applied the main postulate of a good acclimatization: „train in altitude and sleep (rest) in plain“.

Introduction

Owing to the heart rate monitors (MHR), the control of trainig effects reached very high level. Also, the education of the athletes itself resulted in the fact that applied sport science of training technology is not untouchable „privilege“ of the professionals – coaches any more, but it is accessible to everybody. In Januarry/February 2009, on the mountain of Kopaonik was organized the training camp for the students representatives, who went there to train for the Balkans Championship and Euro Cup in the biathlon event. There were five athletes, selected by the elemination procedures. They had trainings three times per day in the period of one month, with the adequate recovery and rest treatments.

Nowdays, everybody knows that training itself is not enough, but it is necessary to determine its intensity, that is to dose the physical load. To beginner who have not had physical activities for a long time, heart rate monitor can help to achieve graduatelly the desired condition and results. Owing to it, well trained athletes can easily mantain the achieved condition, dose their trainings and prevent overtraining.

The heart rate gives information about many changes that happen in the body during the exercise: how hard you train, does the body dehydrates rapidly, do you recover enough, or how fast you lose energy. These information are simply the key of the biological informational system.

Heart rate monitoring and determination of the aerobic threshold

The experience showed that most of athletes do not know very well their bodies in a way to know how they should exercise. In order to assess the needed level of intensity, it is necessary to be familiar to the energy system of the organism. The physical performance, first of all, depends on the blood flow, that is on the supply of oxygen and nutrients. As it is known an organism use two different energy supply systems: aerobic – carbon hydrates and fats are used with oxygen and burn out to the carbon dioxide and water, and unaerobic – glucose is used as a source of energy without oxigen and burns out to the lactic acid. By the regular unaerobic exercise, the lactic threshold can be increased at a higher level, whereby are established the conditions for top-level results achievement.

Training in the heart rate zones for biathlon athletes

Owing to the heart rate monitors, nowadays is possible to plan the appropriate programmes by using the concept of the heart rate target zone. As it is known for a fact, training in the target zone is a condition for achieving the optimal target training effects. Currently are used five or ten target zones which include different levels of training intensity. Each zone corresponds to different metabolic and cardiorespiratory mechanism in the organism. The key of success is to find target zone that corresponds to the needs and tasks and to follow the designed training programme in order to increase capabilities to the maximum personal level.

Methods

In the applied training process the athletes trained as follows:

1. Aerobic zone 70-80% of the maximum heart rate, in order to achieve better overall condition,
2. Zone of the unaerobic threshold 80-90% of the maximum heart rate, and
3. Training in the red zone 90-100% of the maximum heart rate.

The expected effects by using these selected procedures are as follows: increase the overall endurance, train with major intensity, maintain the reached intensity without increasing the lactate level, increase the muscles tolerance for a lactic acid, increase the enzyme quantity in the muscles responsible for the aerobic processes, enable better sprinting and tolerance for the high intensity training in a short time period.

The main elements of the training programme that are treated: conditioning, specific technical traning and psychological (mental) preparation. In order to achieve the optimal training effects it was necessary to use specific knowledge and apply the main training principles: principles of individuality, specific progressive overloading and nonutilization.

Safe keeping of the training data is very important, because without that it is impossible to make any analysis. The key point is to know what information we need. And in the end, the good organization implicitly includes a few minutes long analysis. When the good plan is made and usefull information are collected, then we are ready to analyze the response to the planned training. In the whole analysis the key service is informational support - computer. Most of the producers provide excellent softwares for the training analysis. The good software provides planning, simply feeding data into a comuter, data analysis and

graphic representation. It is important to emphasize that the use of statistics is necessary, because that is the only way to analyse the achieved results in objective and numerical way, and to correct errors.

Picture 1, Military representatives of the Republic of Serbia in biathlon

Endurance exercises

Skiing in the scale from 70 to 80% MHR in the period of 60 minutes. With this intensity we tried to improve the endurance. At the same time we tried to build up the leg muscel system and to improve considerably the sliding step technique. We were graduatelly increasing the duration, intensity and scope of training. The increase of intensity we controled based on the level of effort sensation, which meant that athletes were not ready for a higher intensity exercises.

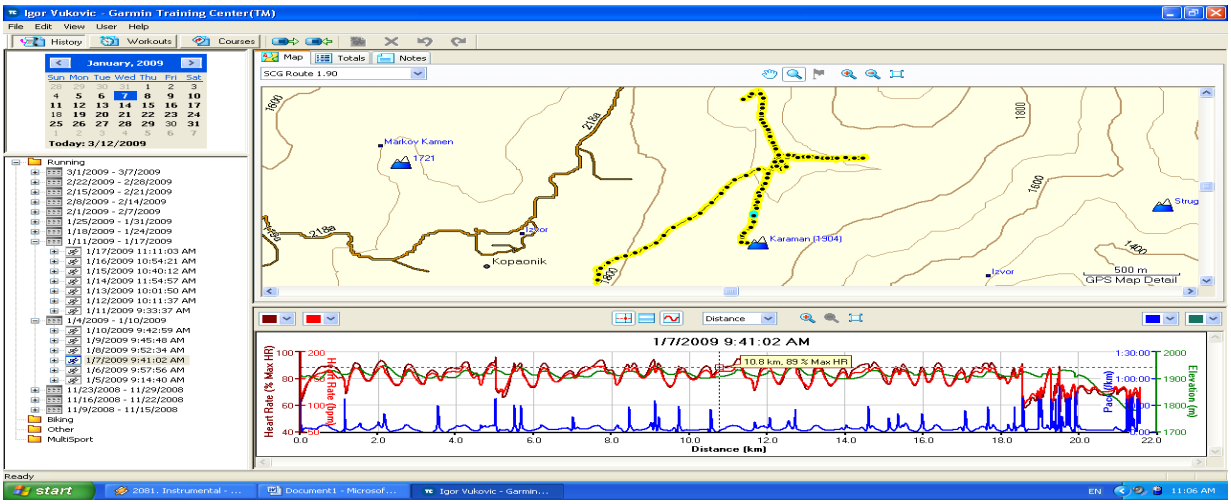


Chart 1. Aerobic zone 70 to 80% of the maximum heart rate, for gaining better overall condition

Time endurance exercises

Skiing 3x30 minutes in the zone from 80 to 90% MHR with pauses up to the pulse readings under the unaerobic threshold. With this intensity we tried to improve the endurance near the unaerobic zone. We also tried to improve the fast rhythm training right from beginning, but not too fast, because then in the real competition, that is race, it is necessary to slow down in order to keep tempo and rhythm on the high performance regime. The increase of intensity we controled based on the level of effort sensation, which meant that athletes were not ready for a higher intensity exercises.

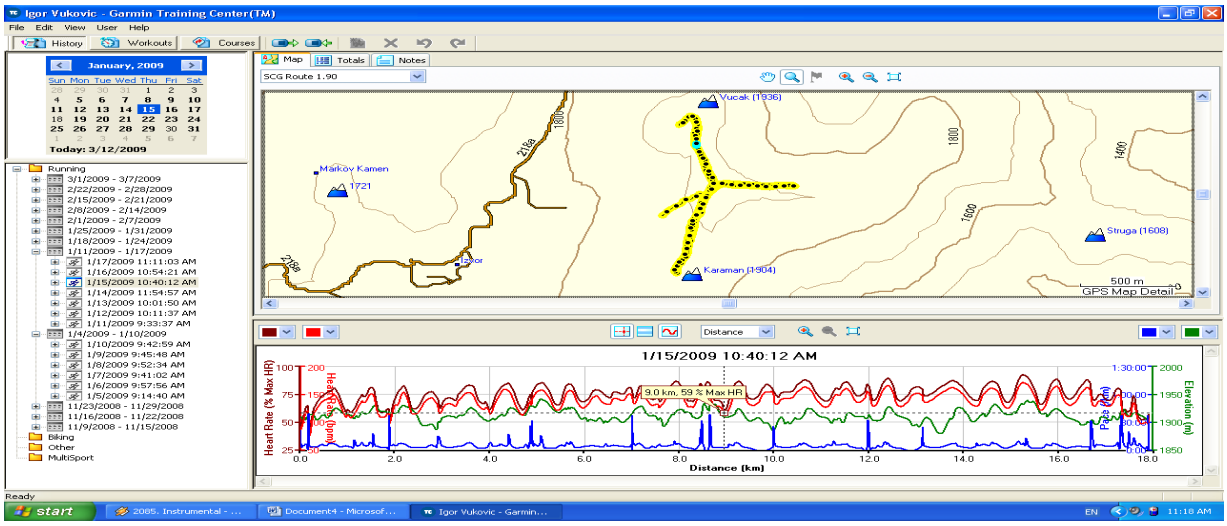


Chart 2. Unaerobic threshold zone 80 to 90% of the maximum heart rate

Speediness exercises

Most of the time during skiing should be spent in the aerobic-unaerobic threshold zone with the short term efforts of high intensity, not longer then one minute with return to the start specified zone. The performance scale is in the range from 70 to 80% MHR and goes towards interval from 90 to 100% MHR in the period of 90 minutes. We were graduatelly increasing the duration, intensity and scope of training. The increase of intensity we controled based on the level of effort sensation, which meant that athletes were not ready for a higher intensity exercises.

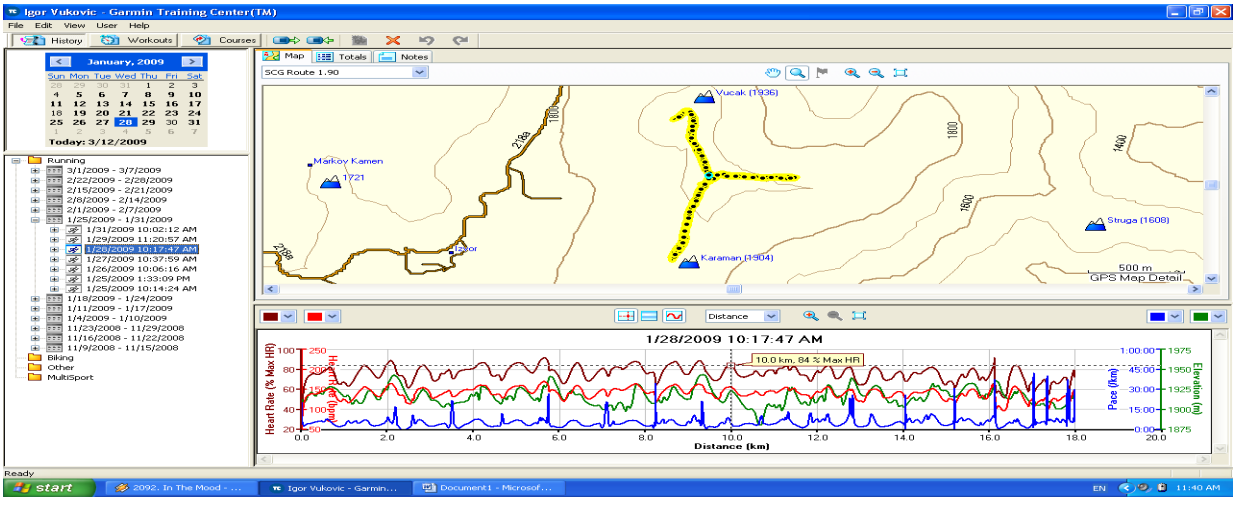


Chart 3. Training in red zone 90 to 100% of the maximum heart rate

Endurance exercises with sprint

Skiing 3 minutes in the scale from 90 to 100% HRM, then ten minutes in the scale from 70 to 80% MHR, in the total period of 60 minutes. By this intensity we tried to improve the upper limits of the unaerobic capacities of athletes using „game of speediness intensity change“. Synchronously we tried to develop the tolerance for the threshold of the lactic products control in the muscles system. We also improved the control of sliding step technique. We were graduatelly increasing the duration, intensity and scope of training. The increase of intensity we controled based on the level of effort sensation, which meant that athletes were not ready for a higher intensity exercises.

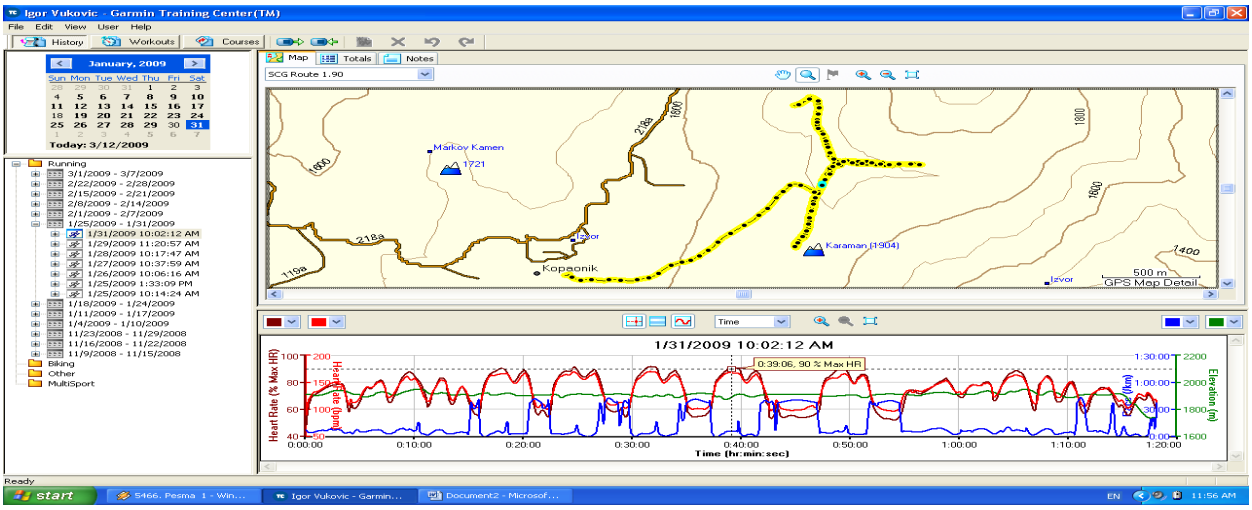


Chart 4. Unaerobic threshold zone 70 to 80% of the maximum heart rate - Intervals.

Results

The parameters we have got by using MHR are certainly valid and reliable indicators of directed planning, good programming and carrying out trainings for biathlon athletes. By the application of specific directed training models in the aerobic zone, we confirmed that it is possible to exercise in this zone for a long period, without emergencing of a lactic acid. Since the preparedness of our athletes was on different level, as a primary source of energy for carrying out tasks was used the platform of carbon hydrates, stored as glycogen. As the level of condition and tecniques of performance were improving by training, organism was using more fats as energy, maintaining longer the desired intensuty and in that way saving the stored glycogen. At the level from 80 to 90% MHR most of athletes were on the unaerobic threshold, that is in the unaerobic zone.

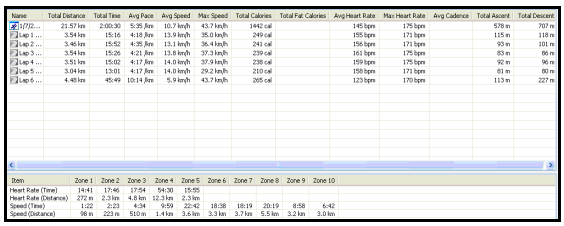


Table 1. Control - Initial 1. - 07.01.2009.

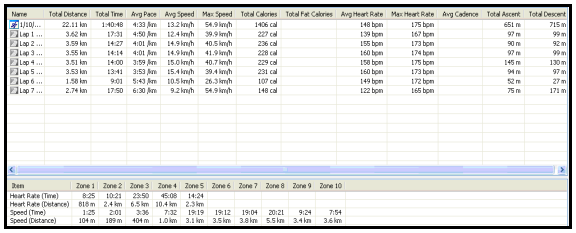


Table 2. Control 2. - 10.01.2009.

Since athletes realized their training with discipline and very correctly, tiredness and pains in muscles, breathing with difficulty and general fatigue, were appearing later and later, and they were capable to train longer with lower heart rate readings.

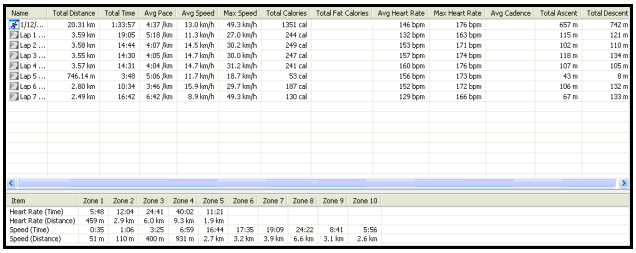
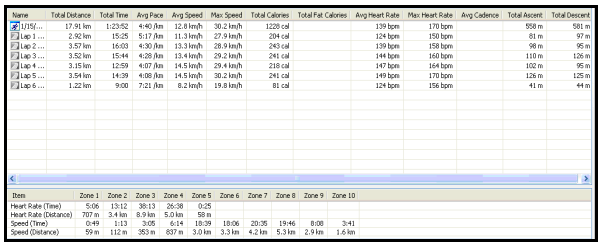


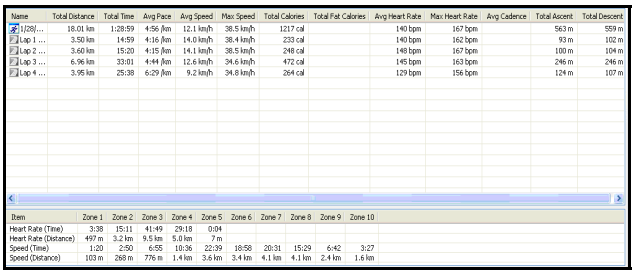
Table 3. Control 3. - 12.01.2009.



Name	Total Distance	Total Time	Avg Pace	Avg Speed	Max Speed	Total Calories	Total Fat Calories	Avg Heart Rate	Max Heart Rate	Avg Cadence	Total Ascent	Total Descent
17/5/...	17.91 km	1:23:52	4:40 /km	12.8 km/h	30.2 km/h	1220 cal		139 bpm	170 bpm		558 m	581 m
Lap 1 ...	2.92 km	15:25	5:17 /km	11.3 km/h	27.9 km/h	204 cal		124 bpm	150 bpm		81 m	97 m
Lap 2 ...	3.57 km	16:03	4:30 /km	13.3 km/h	28.9 km/h	243 cal		139 bpm	158 bpm		98 m	95 m
Lap 3 ...	3.52 km	15:44	4:28 /km	13.4 km/h	29.2 km/h	241 cal		144 bpm	160 bpm		110 m	126 m
Lap 4 ...	3.15 km	12:59	4:07 /km	14.5 km/h	29.4 km/h	218 cal		147 bpm	164 bpm		102 m	95 m
Lap 5 ...	3.54 km	14:39	4:08 /km	14.5 km/h	30.2 km/h	241 cal		149 bpm	170 bpm		126 m	125 m
Lap 6 ...	1.22 km	9:00	7:21 /km	8.2 km/h	19.8 km/h	81 cal		124 bpm	156 bpm		41 m	44 m

Item	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
Heart Rate (Time)	5:06	13:12	38:13	26:38	0:25					
Heart Rate (Distance)	707 m	3.4 km	8.9 km	5.0 km	58 m					
Speed (Time)	0:49	1:13	3:05	6:14	18:39	18:06	20:35	19:46	8:08	3:41
Speed (Distance)	59 m	112 m	353 m	837 m	3.0 km	3.3 km	4.2 km	5.3 km	2.9 km	1.6 km

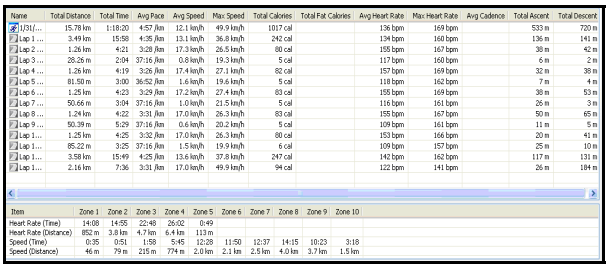
Table 4. Control 4. - 15.01.2009.



Name	Total Distance	Total Time	Avg Pace	Avg Speed	Max Speed	Total Calories	Total Fat Calories	Avg Heart Rate	Max Heart Rate	Avg Cadence	Total Ascent	Total Descent
1/28/...	18.01 km	1:28:59	4:56 /km	12.1 km/h	38.5 km/h	1217 cal		140 bpm	167 bpm		563 m	559 m
Lap 1 ...	3.50 km	14:59	4:16 /km	14.0 km/h	38.4 km/h	233 cal		140 bpm	162 bpm		93 m	102 m
Lap 2 ...	3.60 km	15:20	4:15 /km	14.1 km/h	38.5 km/h	248 cal		148 bpm	167 bpm		100 m	104 m
Lap 3 ...	6.96 km	33:01	4:44 /km	12.6 km/h	34.6 km/h	472 cal		145 bpm	163 bpm		246 m	246 m
Lap 4 ...	3.95 km	25:38	6:29 /km	9.2 km/h	34.8 km/h	264 cal		129 bpm	156 bpm		124 m	107 m

Item	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
Heart Rate (Time)	3:38	15:11	41:49	29:18	0:04					
Heart Rate (Distance)	497 m	3.2 km	9.5 km	5.0 km	7 m					
Speed (Time)	1:20	2:50	6:55	10:36	22:39	18:58	20:31	15:29	6:42	3:27
Speed (Distance)	103 m	268 m	776 m	1.4 km	3.6 km	3.4 km	4.1 km	4.1 km	2.4 km	1.6 km

Table 5. Control 5. - 28.01.2009.



Name	Total Distance	Total Time	Avg Pace	Avg Speed	Max Speed	Total Calories	Total Fat Calories	Avg Heart Rate	Max Heart Rate	Avg Cadence	Total Ascent	Total Descent
1/31/...	15.78 km	1:18:20	4:57 /km	12.1 km/h	49.9 km/h	1017 cal		136 bpm	169 bpm		533 m	720 m
Lap 1 ...	3.49 km	15:58	4:35 /km	13.1 km/h	36.8 km/h	242 cal		134 bpm	160 bpm		136 m	141 m
Lap 2 ...	1.26 km	4:21	3:28 /km	17.3 km/h	26.5 km/h	88 cal		155 bpm	167 bpm		38 m	42 m
Lap 3 ...	28.26 m	2:04	37:16 /km	0.8 km/h	19.3 km/h	5 cal		117 bpm	160 bpm		6 m	2 m
Lap 4 ...	1.26 km	4:19	3:26 /km	17.4 km/h	27.1 km/h	82 cal		157 bpm	169 bpm		32 m	38 m
Lap 5 ...	81.50 m	3:00	36:52 /km	1.6 km/h	19.6 km/h	5 cal		118 bpm	162 bpm		7 m	4 m
Lap 6 ...	1.25 km	4:23	3:29 /km	17.2 km/h	27.4 km/h	83 cal		155 bpm	169 bpm		38 m	53 m
Lap 7 ...	50.66 m	3:04	37:16 /km	1.0 km/h	21.5 km/h	5 cal		116 bpm	161 bpm		26 m	3 m
Lap 8 ...	1.24 km	4:22	3:31 /km	17.0 km/h	26.3 km/h	83 cal		155 bpm	167 bpm		50 m	65 m
Lap 9 ...	50.39 m	5:29	37:16 /km	0.6 km/h	20.2 km/h	5 cal		109 bpm	161 bpm		11 m	5 m
Lap 1...	1.25 km	4:25	3:32 /km	17.0 km/h	26.3 km/h	80 cal		153 bpm	166 bpm		20 m	41 m
Lap 1...	85.22 m	3:25	37:16 /km	1.5 km/h	19.9 km/h	6 cal		109 bpm	157 bpm		25 m	10 m
Lap 1...	3.58 km	15:49	4:25 /km	13.6 km/h	37.8 km/h	247 cal		142 bpm	162 bpm		117 m	131 m
Lap 1...	2.16 km	7:36	3:31 /km	17.0 km/h	49.9 km/h	94 cal		122 bpm	141 bpm		26 m	184 m

Item	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
Heart Rate (Time)	14:08	14:55	22:48	26:02	0:49					
Heart Rate (Distance)	852 m	3.8 km	4.7 km	6.4 km	113 m					
Speed (Time)	0:35	0:51	1:58	5:45	12:28	11:50	12:37	14:15	10:23	3:18
Speed (Distance)	46 m	79 m	215 m	774 m	2.0 km	2.1 km	2.5 km	4.0 km	3.7 km	1.5 km

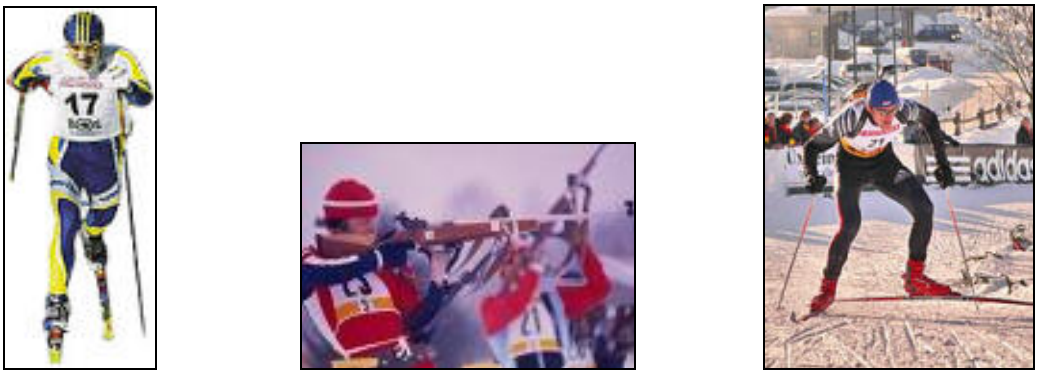
Table 6. Control - Final 6. - 31.01.2009.

At the intensity from 90 to 100%, athlets considerably exceeded unaerobic threshold and trained with a large oxygen deficit. Because of this, the training in this zone was programmed individually for each athlete and the training plan was made according to the preparedness level of each athlete.

Discussion

Certainly it can be claimed with a great reliability that the future of programming, supervising and control of trainings and improvment of athletes (in individual sports), lies in the application of the sophisticated technologies, and that in the future will be imopssible to make some significant results without using these or some similar instruments. One of the main postulate for the winter soprts, at least for the ones from the group of the Nordic events (biathlon), certainly is the excellent physical preparedness but in specific aero conditions. We think, above all, to the altitude differences and possibility to perform very hard in very difficult conditions. In this experiment was applied the main postulate of a good acclimatization: **„train in altitude and sleep (rest) in plain“.** With very thoughtfully programmed aerobic-unaerobic model of endurance, time endurance, speed, endurance with sprint on the individual level from initial to final condition, it was evident the controlled improvement. The main parameters were gained owing to MHR. From the all above-mentioned it is posible to conclude that some periods and cycles are connected stages of the sport condition development managing process. The directed influence on the sport condition development within some periods and cycles, as well as their appropriate changing are possible only in defined limits, because their durations, at one hand, depend on some concrete conditions (athletes preparedness level, individual characteristics, sport branch characteristics, competition calendar, etc). It is known that the most important moment in managing sport condition is the last microcycle (competitive), as well as days immediately before a competition within the microcycle. The condition is revealed at the end of the mezocycle. Precisely in this period the biggest errors might occure, especially if the conditions of training are changed. This changes of condition happen during the organized joint preparations, where is taken to little account of individual characteristics of athletes (settled life and training regime) and reached level of the organism acclimatization. This result in disharmony between previous and new conditions, which can provoce contrary effect, that is decreased training result. The specific attention is paid to the athletes recovery system, where are apostrophized the psychological preparation and recovery. In the sport practice are known several methods of the athletes condition regulation, and we applied the following under

the professional supervision: psychoregulation training, autogenetic training, and biofeedback training. Also, we paid the specidic attention to the correct and quality nutrition as a support to the faster recovery. By correct nutrition we prevented that athletes dehydrate, that their stomaches are full of gastric acid or almost empty, that their muscles are full of the metabolic products, that the reserves of glycogen are used up, that they have excess electrolytes because of the lost minerales. The proof of the correctly selected models of the training technologies applied in the concrete case, for this group of athletes, is the fact that we had good results at the Regional Military Championship in Macedonia in Februar 2009. Our team won the second place in biathlon. Our competitors had excellent results in Bulgaria as well, in 2009 at the Euro Cup, when they won the second place in the individual competition.



Picture 2. Illustration of the biathlon competition tecniques

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The Relationship Between the Malformations of the Spine with the Disabilities of Blindness and Deafness of the Male University Student

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Abstract

Introduction

The main purpose of this research is to investigate the relationship between the malformations of the spine with the disabilities of blindness and deafness of the male students in Ahwaz. Blindness and deafness belong to those limitations that can affect on physical posture. Usually, blind person during walking and ground touching, for prevention in contact with barriers, have an especial position on the neck and head. Also, deaf persons for better determination of voice stimuli, have side flexion on their head.

Methods

The research is a describing and analytic one which is done in a semi-experimental way. Statistical community included 262 people. The statuses of their upper bodies were measured from three sides: front, back and sides by expanse chess. And Adam test was used to identify scoliosis. Meanwhile all the tastes were asked to fill a question naira in order to identify and find out how they do their dairies and how they spend their free time. In the end, the findings were analyzed statistically through SPSS program based on described statistics. And K-Square test with 95% reliable coefficient and 5% error was used.

Results

The result showed that 82% of the blind and 72% of the deaf had abnormal state of the spine. 78% of the blind and 62% of the deaf had torticolis. 82% of the blind and 89% of the deaf had kyphosis. 93% of the blind and 61% of the deaf had Lordosis lumbar.70% of the blind and 61% of the deaf had Scoliosis. 85% of the blind and 62% of the deaf had suffered from forward head.

Discussion

This research showed relationship between vertebral column abnormality with blindness and deafness. This relation is debatable from different view. First, Because of children's disabilities, parents support them with more accuracy so this leading toward bad posture. Second, this person for the reason of fear from injuries, usually have compensate posture, so their skeletal and muscular system is not symmetric.

Introduction

The phenomenon of handicap exists in all human societies and there is no country which has not had any kind of handicap. Based on the available information, some %5 of exceptional children are deaf and %20 blind. Also, it has been reported that in Iran (in the school year of 2005-2006), there are 16292 blind and deaf students including male and female in three sections of elementary, guidance and high schools. It goes without saying that limitation and handicap of individuals especially youngsters and youths force them in special, social and mental conditions. They do not attend in many social chances and deprive themselves voluntarily or involuntarily considering their functions and physical activities or movements based on their handicap type. Having little activity and movement or not dynamic life influences the different aspects of person's life. In addition to the confirmation of many research results related to such life status with mental problems, (Mayer. T, Brooks. A, (2000)), there are other documentation indicating the relationship between unsuitable body structure and handicap (Elder. D, Roper. M, Henderson. R, Davenport. M,(2002)). Blindness and deafness are of handicap types which gradually change and defect the form, structure and posture of body (Garofid. N, fraginer. B(2000)). The blind people while walking to touch the ground, preventing from hitting the probable jams and falling down always follow a special status for their scapula and head and neck muscles. Some tend to have a posterior position and some forward. In both cases, the gravity line will be changed and body will be deviated from anatomic and standard status. Also, deaf of slightly deaf people noticeably bend their heads to one side or laterally to the up to distinguish sound stimulant better. Thus, the repetition of such habit for a long time creates deformity of many body organs (francis. A,kingsley. R, Chin. J, (2001)). This research deals with the likely relationship between five physical deformities called Torticolis, kyphosis, Lordosis, Scoliosis and forward head. Also, the blind and deaf students in Ahwaz were studied.

Method

The present research is analytical and descriptive type. Therefore, 262 people were statistical samples and 133 of them were deaf and 89 blind. The distribution of the students in three school sections regarding to the type of their handicap was as below:

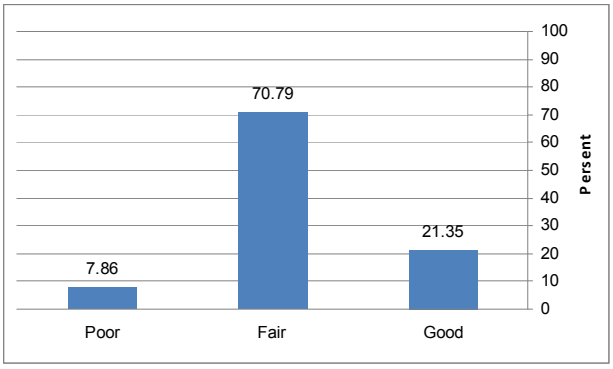
Handicap / Sections	Blindness	Deafness
Elementary School	38	110
Guidance School	23	27
High School	28	36
Total	89	173

To test, evaluate and distinguish the rate of studied deformities, we used New York test based on three levels with grades of poor, moderate and fair. Posture screen with 100×200 cm was used and testees were evaluated from three views of forward, back and lateral. Also, a 13 questionnaire was used to collect the data corresponding the personal characteristics of the testees such as body activity level, forms of standing, walking, sitting, sleeping, carrying things and the use of shoe type.

Statistical method

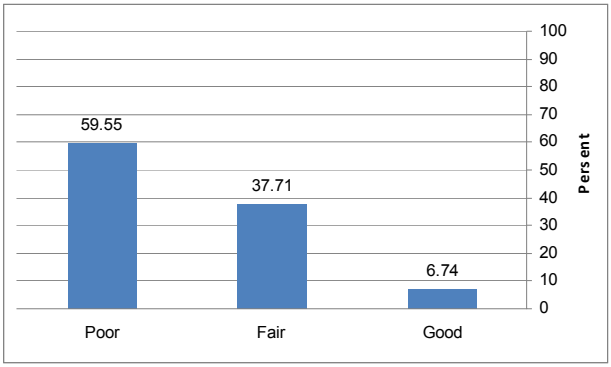
We applied descriptive statistics to present the data extracted from the questionnaire and to show the deformity rate of the examinees. The k- Square test was used to determine the relation rate between the kind of handicap and deformity rate of the testees. In this research, the alpha error was $\alpha = 0.05$. We used SPSS software to analyze the data and Excel software to draw the graphs.

Research Results:

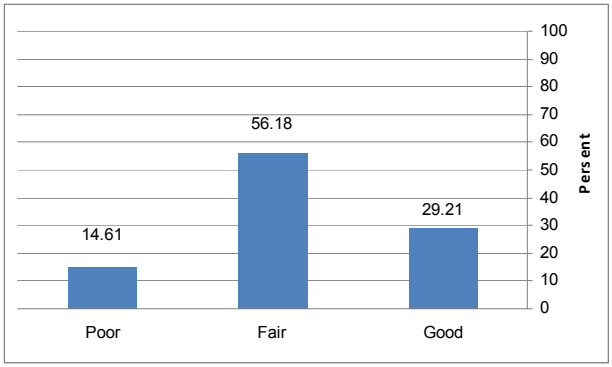


Graph No1. : Frequency distribution of the Blindness testees based on Torticolis disorder

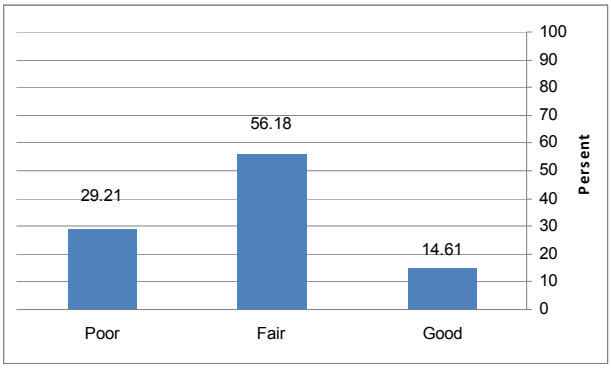
Graph No2. : Frequency distribution of the Blindness testees based on Kyphosis disorder



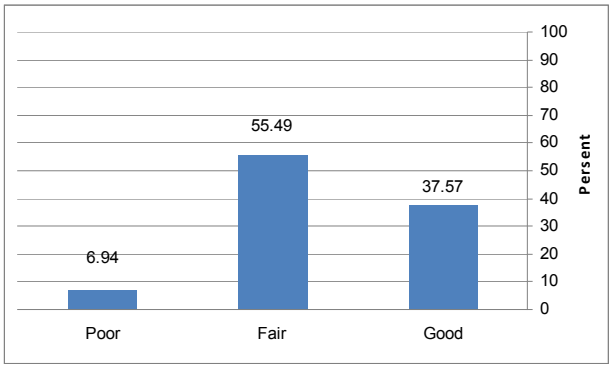
Graph No3. : Frequency distribution of the Blindness testees based on Lordosis disorder



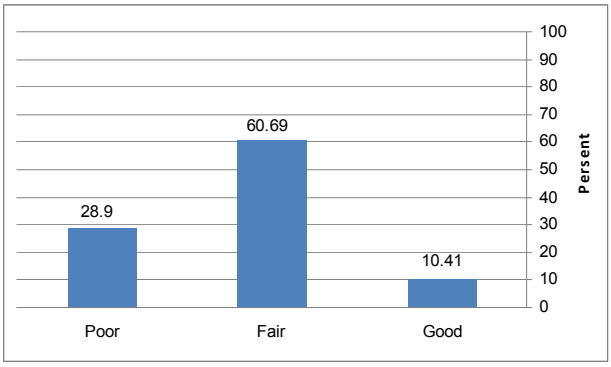
Graph No4. : Frequency distribution of the Blindness testees based on Scoliosis disorder



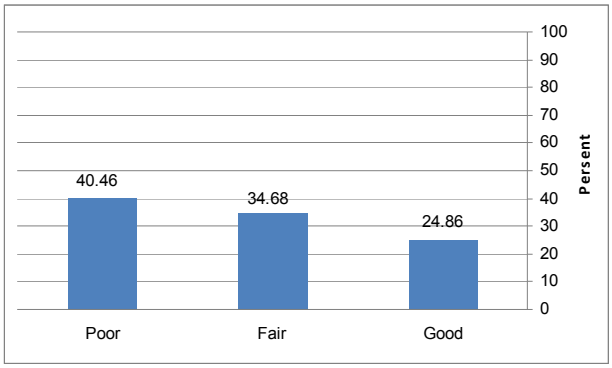
Graph No5. : Frequency distribution of the Blindness testees based on Forward Head disorder



Graph No6. : Frequency distribution of the Deafness testees based on Torticolis disorder

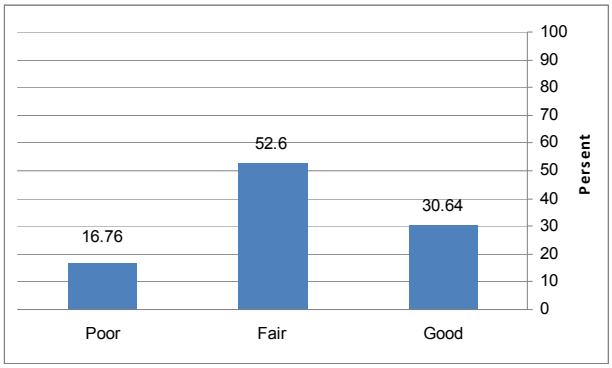


Graph No7. : Frequency distribution of the Deafness testees based on Kyphosis disorder



Graph No8. : Frequency distribution of the Deafness testees based on Lordosis disorder

Graph No9. : Frequency distribution of the Deafness testees based on Scoliosis disorder



Graph No10. : Frequency distribution of the Deafness testees based on Forward Head disorder

Table 1. The relationship between Blindness and Torticolis of the subjects.

Deformity rate	Frequency	Percentage	K-Squar	p
Poor	7	7.86	58.60	0.001
Fair	63	70.79		
Good	19	21.35		
Total	89			

Table 1. The relationship between Blindness and Kyphosis of the subjects.

Def.	Fre	%	K^2	p
Poor	39	43.82	9.86	0.007
Fair	34	38.20		
Good	16	17.98		
Total	89	1.00		

Table 1. The relationship between Blindness and Lordosis of the subjects.

Def.	Fre	%	K^2	p
Poor	53	59.55	37.23	0.001
Fair	30	33.71		
Good	6	6.74		
Total	89	1.00		

Table 1. The relationship between Blindness and Scoliosis of the subjects.

Def.	Fre	%	K^2	p
Poor	13	14.61	23.75	0.001
Fair	50	56.18		
Good	26	29.21		
Total	89	1.00		

Table 1. The relationship between Blindness and Forward head of the subjects.

Def.	Fre	%	K^2	p
Poor	26	29.21	23.75	0.001
Fair	50	56.18		
Good	13	14.61		
Total	89	1.00		

Table 1. The relationship between Deafness and Torticolis of the subjects.

Def.	Fre	%	K^2	p
Poor	12	6.94	62.57	0.001
Fair	96	55.49		
Good	65	37.57		
Total	173	1.00		

Table 1. The relationship between Deafness and Kyphosis of the subjects.

Def.	Fre	%	K^2	p
Poor	50	28.9	67.15	0.001
Fair	105	60.69		
Good	18	10.41		
Total	173	1.00		

Table 1.Tthe relationship between Deafness and Lordosis of the subjects.

Deformity rate	Frequency	Percentage	K-Squar	p
Poor	70	40.46	6.46	0.040
Fair	60	34.68		
Good	43	24.86		
Total	173	1.00		

Table 1.Tthe relationship between Deafness and Scoliosis of the subjects.

Def.	Fre	%	K^2	p
Poor	9	5.20	69.41	0.001
Fair	97	56.07		
Good	67	38.73		
Total	173	1.00		

Table 1.Tthe relationship between Deafness and Forward head of the subjects.

Def.	Fre	%	K^2	p
Poor	29	16.76	33.89	0.001
Fair	91	52.60		
Good	53	30.64		
Total	173	1.00		

Results Summary

1. The poor rate of the blind testees in the five selected deformities was respectively: Torticolis (%7.86), Kyphosis (%43.82), Lordosis (%59.55), Scoliosis (%14.61) and Forward head (%29.21).
2. The poor rate of the deaf testees in the five selected deformities was respectively : Torticolis (%6.94), Kyphosis (%28.90), Lordosis (%40.46), Scoliosis (%5.20) and forward head (%16.76).
3. There is a meaningful relationship between blindness and torticolis (p=0.001).
4. There is a meaningful relationship between blindness and Kyphosis (p=0.007).
5. There is a meaningful relationship between blindness and Lordosis (p=0.001).
6. There is a meaningful relationship between blindness and Scoliosis (p=0.001).
7. There is a meaningful relationship between blindness and forward head (p=0.001).
8. There is a meaningful relationship between deafness and Torticolis (p=0.001).
9. There is a meaningful relationship between deafness and Kyphosis (p=0.001).
10. There is a meaningful relationship between deafness and Lordosis (p=0.040).
11. There is a meaningful relationship between deafness and Scoliosis (p=0.001).
12. There is a meaningful relationship between deafness and forward head (p=0.001).

Discussion

The research results indicate that there is a relationship between blindness and the rate of forward head deformity. If we pay attention to the people having such deformities while they are standing, walking, and even sitting, we will observe that they bend their heads forward and down to keep themselves safety and balanced. Also, the status of their heads and necks is changed and deviated from the standard and gravity line. In this case, the extensors of neck will be in traction status and gradually the traction power will be decreased and weakened. The energy momentum in the head and neck area in normal condition causes head fall and come forward. Thus, the mentioned muscles even at resting to prevent head from tending to forward will be in traction status. So, the muscles weakness causes forward head abnormality. The finding of this research confirms this, too. The research findings of Wojthys. e, Ashton. J, Huston. L, (2005), Thomas. E, Kuirila. M, (2001), Paediats. R. Nissinen. M, (1998) is in accordance with this research.

As we know forward head deformity in poor level and status can influence on the curve of vertebral column and increases the Kyphosis rate. That is why body automatically enhances the vertebral column curve to compensate the deformity of forward head and to balance the area pressures on the upper part of the body. Therefore, this can cause Kyphosis which is in turn one of the causes of Lordosis. The results of this research verifies the relationship between blindness and Lordosis. The findings of Baumgratner. A, Sucher. N(1991), Norris. R, Douglas. C, (1992), Machmahom. D, (1990) is also accorded with this research results. Mainly, children, youngsters and youths with blindness are usually supported severely with their parents and friends.

Undesirable movement conditions and having no authority for many body activities and movements gradually face the handicapped to poor conditions of moving and the deformity of skeleton muscular structure. On the other hand, there are some documentation indicating deformity of skeleton muscular structure. And there are some documentation showing the effective relation between poor movement and weak efficiency of skeleton muscular system in individuals with mental problems, Tahhan. M,(2004), Sarasun. A,(1997), Sandra. S,(1995).

A blind youngster is not able to distinguish and have a real understanding of moving and functional models due to the lack of correct imaging and around comprehension. Therefore, such individuals (considering their age conditions and critical life period). Usually prefer to be alone in their silent life. Also, due to having no enough motivation, they do not participate in social group work and they will be depressed to a great extent. (Plante. T, Rodin. J, (1990), Hosseini. N, (2000).

Deafness can pastorally make an effect on physical status, too. The results of this research have confirmed the relationship between these two variables. The deaf people like the blind in different aspects of walking, standing or interacting with others direct their head near to the sound source to come close to the sound stimulant. This gradually becomes a habit and deviates body structure. Such conditions create Tortocolis and Scoliosis. The research findings of Mayer. T, Brooks, A,(2000), Kingsley. R, Chin. J,(2001) also support this issue.

According to these research findings, there is a high relationship between deafness and Torticolis, Scoliosis, forward head and other related abnormalities. The chained relation between the mentioned deformities on one hand and poor movement and weak muscles and anxiety, fear and lack of self-confidence on the other hand can be a triangle influencing on the blind and deaf and postural cause unbalance and asymmetry of body. This in turn can create problems for long in the cardiovascular, breathing and digesting diseases and other vital organs of body, too. (Wojthys. E, Moga. P, (2000), Schoenmarlicers, M, helders. P, (2000).

It is suggested that to prevent deformities of the blind and deaf body structure and to control the effective causes on deformities, first we should create constant and correct situations of body in different conditions for individuals every day. Second, we try to make the skeleton and muscles so strong that no pressure of stress can affect on the correct status of the body. The research results propose that tools and facilities used for the handicapped should be suitable to the handicap type. More over, these tools should be taken into consideration when used in incorrect status.

Investigate and compile talent identification characteristics in men's climber's cyclists from the viewpoint of the experienced coaches of Iran

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Abstract

Introduction
The purpose of the present study was to investigate and compile talent identification characters in the field of men's climber's cyclists from the viewpoint of the experienced coaches of Iran. Therefore, the researcher evaluated the viewpoint of the experienced coaches of the country, who attended the championship games of the clubs of Iran in June, 2008 and Taftan international tournament in March, 2008.
Methods
The research method was survey method and all member of population were studied in this research (n=100).The instrument used in this study was a questionnaire provided by the researcher with the constancy of 0/86. The raw statistical data were analyzed using EXCEL and SPSS software's and repeated measure dependant t- student at the *P* level of 0.05 ($p \leq 0.05$).
Results
The results showed that, the more important characters for elite hill cycling from viewpoint of coaches are: cardio respiratory endurance, muscle endurance, muscle strength, ecto-mesomorphy, low weight, Ectomorph, perseverance, psychological readiness (perseverance, self confidence and motivation), group cooperation sense, and respecting rules and regulations, respectively.
Conclusion
The general conclusion shows that for choosing persons for national teams and obtaining better results, talent identification and obeying one suitable pattern and acculturate cycling in the society is necessary.

Introduction

The purpose of the present study was to investigate and compile the characters of talent identification in the field of men's climber's cyclists from the viewpoint of the experienced coaches of Iran. Therefore, the researcher evaluated the viewpoint of the experienced coaches according to features such as anthropometric, body composition, general readiness of the body, psychology and sociology. Various studies investigated the physiological profile of professional male cyclists in relation to their morphological characteristics and role in competition (Lucia et al. 2000; Padilla et al. 1999; Sallet et al 2006). Overall, these studies suggest that road cycling performance is related to a cyclist's anthropometric characteristics, as their morphological profile influence the resistance they overcome (force of gravity and air resistance; Lucia et al. 2000; Padilla et al. 1999). For this reason, Mujika and Padilla (2001) and Padilla et al. (1999) suggest the appearance of morph type-dependent specialists in professional cycling who are characterized by different roles in competition. Hamilton (2008) compared the physiological and anthropometrical characteristics of the successful mountain cyclists with professional road cyclists and understood that mountain cyclists were lighter and thinner than the road cyclists. Also they understood that the mountain cyclists have higher power in relation to their weight; so that their consuming oxygen is higher in relation to their body mass. Various studies show that road cycling performance is related to cyclist's morphological profile (Luice et al. 2000; Padilla et al. 1999; Sallet et al.2006). More specifically, not the anthropometric profiles per se but their relation with the physiological characteristics are important determinants of cycling performance. Hamilton et al. (2008) compared the physiological and anthropometrical characteristics of the successful mountain cyclists with professional road cyclists and understood that mountain cyclists were lighter and thinner than the road cyclists. Also they understood that the mountain cyclists have higher power in relation to their weight; so that their consuming oxygen is higher in relation to their body mass. Lee et al. (2002) and Impellizzeri and Marcora (2007) found that male mountain bikers have absolute values lower than road cyclists. Specifically, Impellizzeri and Marcora (2007) reported lower absolute maximal and sub maximal parameters of aerobic fitness in male mountain bikers and climbers compared with flat specialists. However, when the same parameters were normalized by body mass, climbers and mountain bikers displayed higher values. Impellizzeri et al. (2008) suggested a performance advantage for time trialists even when compared to mountain bikers.

Methods

The statistical community of this research was all the Experienced male cycling coaches of Iran which have been employed as the coaches in year 2008 (N=100). Regarding the nature of the research and the number of statistical societies, all the statistical society has been investigated through survey method (n=100). The instrument used in this study was a questionnaire provided by the researcher with the constancy of 0/86, and the important of each characteristic such as anthropometric, body composition, physical fitness, psychology and sociology was investigated in climber's cyclists. For reaching the purpose of the research, the researcher evaluated the viewpoint of experienced cycling coaches in Iran which attended in championship games of Iran's clubs in May 2008 in Karaj small province and Taftan international tournament in February 2007. In this research, the researcher attended the Taftan international cycling tournament and also the championship games of Iran's clubs directly and 100 numbers of questionnaires were given to the coaches by him and 92 questionnaires have been collected. Among this questionnaires, 75 questionnaires can be used which are 75 percent of the distributed questionnaires.

Results:

1. According to coaches' believes, having long legs and being tall are one of the important anthropometric characteristics of the elite climber's cyclists.
2. According to coaches' believes, ecto-mesomorphy, low weight and ectomorphy are the important body composition characteristics of the elite climber's cyclists.
3. According to coaches' believes, cardio respiratory endurance and muscle endurance are as important physical fitness characteristics for elite climber's cyclists.
4. According to coaches' believes, perseverance, self confidence, motivation and goals setting, are as important Psychological characteristics for elite climbers cyclists (Table1).

Table (1). The statically descriptive of psychological factors in Men's climber's cyclist's elite

Number	Rank	SD	Mean	Parameters / characteristic
75	4	./634	4/386	Motivation
75	3	./640	4/426	Self confident
75	5	./806	4/253	courageousness and competing
75	9	./869	4/120	Innovative and technically creative
75	7	./838	4/200	focused attention
75	6	./745	4/226	Psychically controlled
75	8	./925	4/186	Mental practice
75	2	./663	4/153	Targeted
75	1	./553	4/666	Diligence

5. According to coaches' believes, the mass cooperation morale, respecting the rules and regulation, having order and obeying coaches and supervisor and having responsibility are as important characteristics among sociological factors for elite climbers cyclists(Table2).

Table (2). The Paired comparison psychological factors in Men's climbers Cyclist's elite

Sig	df	T coefficient	SD	Mean difference	parameters / Comparison mean
./369	74	-./903	./383	-./040	Self confident motivation
./024	74	2/299	./502	./133	courageousness and competing motivation
./010	74	2/639	./875	./266	Innovative motivation and technically creative motivation
./038	74	2/111	./765	./186	Focused motivation
./027	74	2/249	./616	./160	Psychically controlled motivation
./028	74	2/246	./771	./200	Imaginary motivation
./199	74	-1/297	./445	-./066	Targeted motivation
P<.01	74	-4/338	./558	-./280	Diligent motivation
./008	74	2/708	./554	./173	Self confident with bravery and competitiveness
./002	74	3/170	./837	./306	Technically Innovative Self confident
./009	74	2/699	./727	./226	Focused Self confident
./001	74	3/332	./519	./200	Psychically controlled Self confident
./028	74	2/241	./927	./240	Imaginary Self confident
./726	74	-./351	./657	-./026	Targeted Self confident

./005	74	-2/913	./713	-./240	Diligent Self confident
./124	74	1/558	./741	./133	Technically Innovative bravery and challenge ability
./483	74	./705	./655	./053	Focused bravery and compete ability
./620	74	./497	./462	./026	Psychically controlled bravery and compete ability
./357	74	./928	./622	./066	Imaginary bravery and compete ability
./013	74	-2/555	./677	-./200	Targeted bravery and compete ability
P<.001	74	-4/857	./736	-./413	Diligent bravery and compete ability
./181	74	1/349	./513	-./080	Technically Focused Innovation
./159	74	-1/424	./648	-./106	Technical Innovation with Psychological control
./439	74	-./779	./741	-./066	Technical Innovation with intellectual Imagination
./002	74	-3/137	./920	-./333	Technical and Targeted Innovation
P<.001	74	-5/616	./824	-./546	Technical Innovation with Diligence
./620	74	-./497	./462	-./026	focused attention with controlled psychosomatic state
./859	74	./178	./647	./013	focused attention through intellectual imagination
./007	74	-2/777	./790	-./253	Targeted and focused attention
P<.001	74	-5/322	./759	-./466	Focused attention through diligence
./634	74	./487	./724	./040	controlled psychosomatic state through intellectual imagination

6. Totally, the more important characteristics for elite climbers cyclists from viewpoint of coaches are: cardio respiratory endurance, muscle endurance, muscle strength, ecto-mesomorphy, low weight, ectomorphy, perseverance, psychological readiness (perseverance, self confidence, motivation and goals setting), group cooperation sense, and respecting rules and regulations, respectively.

Discussion and Conclusion:

The coaches consider ecto-mesomorphy and low weight for elite climbers cyclists as important body composition characteristics. The researcher mentions this mater that, in climber's roads, the earth's gravitational force is one of the important preventing forces of movement. Therefore, it is obvious that having low weight and ecto-mesomorphy is important for an elite climbers cyclists. This result confirms with the results of Gregory (2007) and Hamilton (2008) researchers. According to coaches cardio respiratory endurance is as more important physical fitness (readiness) characteristics for elite climber's cyclists. Regarding, road tournaments last much time in climbers (4 minutes to 7 hoarse), the necessary energy is high for climbers tournaments; therefore, cardio respiratory endurance is more important for climbers cyclists. This result confirms with the results of Impellizzeri (2008) and Hamilton (2008) researchers. Also the results show that motivation, perseverance and self-confidence are more important among psychological factors. Since, long- and heavy practices last for 8 hours a day, a cyclist should have enough motivation and

perseverance. Since, cyclists can participate in tournaments with every kind of bicycle (new – old – made of Carbon, Aluminum or Titanium through different trade names); so, he should have enough self-confidence to accomplish his race. Also mass cooperation morale is so important because climber's races are performed through a team or group; so this factor is considered as another important feature.

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Control and physical loading in students individual exercise with fitness devices

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Abstract

Introduction
The issues concerning individual exercises of students in the theory and practice of physical education have still not been studied thoroughly. That is why the purpose of this research was to facilitate the improvement of the ways for controlling and setting the physical loading in individual exercises with fitness devices, which have become quite popular with students in the last few years.

Methods
Object of research were 30 students from MU - Pleven, who for three months took part in experimental training programs with exercise bike, treadmill and cross-trainer. On the basis of the theoretical analysis and the specificity of work with such training devices allowing regulating the degree of physical loading and reading the time, pace and pulse rate, we developed and tested a 30-minute procedure of physical loading, working in intervals of 5 min uninterruptedly, noting that the pulse rate does not exceed the maximum permitted levels for the respective age, calculated with the formula 220 minus the age in years, and the intensity of the loading within the limits of 70-85% of it.
For the mathematical processing of the data obtained we used alternative analysis. The standard device (SD) in % is defined according to the formula:

$$SD = \frac{X_2 - X_1}{0{,}5 \,.(X_1 + X_2)} \,.\, 100$$ (Siris, P. Z. 1973).

Where X_1 и X_2 respectively the outcoming of the tested indices*

Results
The results of the research show considerate improvement in the physical fitness of the female students as for 77% of them it is good and only for 23% - slightly lower. The resultant physiological curves from the three fitness devices show gradual and undulate change in the pulse rate(Sd=-10,12%) during the particular program workouts but the values do not exceed the permitted levels for this age. Positive changes have also been noted in the increase rate of the researched indices for physical ability, these values being higher for the body weight(Sd=-6,08%) and the obesity(Sd=-6,09%), the jumping abilities(Sd=+5,02%) and the pulse rate (Sd=-10,12%) at the step-test. High increase rate has also been noticed in the other strength indices and the speed(Sd=-5,93%).

Discussion
The research has proved that the use of fitness devices and programs for working with them in individual exercises with the students is a highly-effective approach for improving their physical fitness and physical ability.

Introduction

The issues concerning individual exercises of students in the theory and practice of physical education have still not been studied thoroughly. However, the problem is of utmost importance not only for the immediate preparation of the students but also as short-term and long-term objectives of the education process.
In the recent years there has also been a change in the students' preferences for the different sports and the physical education and sport activities. Great interest has been shown in exercises with fitness devices, which have become quite popular with students. Fitness halls have been equipped in the universities. This, on the other hand, requires knowledge of specific characteristics in the sport pedagogy, methodology and health issues for this kind of physical activities, concerning mainly the volume and intensity of physical load, the control and self-control, observance of certain hygienic norms, etc, on which to a great extent depends the efficiency of the fitness workout. The purpose of this research was to facilitate the improvement of the ways for controlling and setting the physical loading in individual exercises with fitness devices. For its fulfillment we set the following tasks:

- To determine the students' physical condition
- To develop a methodology of loading and model programmes for work with the training devices included in the research – exercise bike, treadmill (without electric motor, set into motion by consecutive foot pushes) and cross-trainer.
- To study the work effectiveness of these training devices.
- Subject of research were 30 students from MU - Pleven.

Methods

The research lasted three months - from February to March 2007. We worked with the subjects at least three times a week. To determine the students' physical condition we used a test for the degree of physical fitness suggested by V. Baranov, 1988, which reports the difference in the values of the pulse rate measured for 1 min after relaxed lie-back for 5 min. Then the pulse was measured again after an upright position of the body for 1 min.(Tabl. 1).

Table 1 Evaluation of the degree of fitness (on V. Baranov)

№	Difference in the values of the pulse rate	Evaluation
1.	From 1 to 12 beats per min (BPM)	Good physical fitness
2.	From 13 to18 BPM	Low physical fitness
3.	From 19 to 25 BPM	Lack of physical fitness
4.	Over 25 BPM	Exhaustion or bad shape

On the basis of the theoretical analysis and the specificity of work with such training devices allowing regulating the degree of physical loading and reading the time, pace and pulse rate, we developed and tested a 30-minute procedure of physical loading, working in intervals of 5 min uninterruptedly with different degree and intensity of loading, noting that the pulse rate does not exceed the maximum permitted levels for the respective age, calculated with the formula 220 minus the age in years, and the intensity of the loading within the limits of 70-85% of it. (Tabl. 2).

Table 2 Model programmes for work with exersice bike, cross-trainer and treadmill

EXERCISE BIKE			CROSS-TRAINER			TREADMILL		
Time min	Degree of loading	Speed kph	Time min	Degree of loading	Speed kph	Time min	Degree of loading	Speed kph
5	I	20-25	5	I	13-14	5	I	3-4
5	II	25-30	5	III	15-16	5	II	4-5
5	III	30-35	5	III	18-20	5	IV	5-6
5	II	25-30	5	III	14-15	5	II	3-4
5	IV	30-35	5	IV	18-20	5	V	5-6
5	I	20-25	5	I	13-14	5	I	3-4

To determine the efficiency of the applied methodology for physical loading with the used training devices, we tested the growth rate of the indices for evaluation of the students' physical abilities at the beginning and at the end of the research. The test battery included: full height (cm); body weight (кg); body mass index

(BMI); standing vertical jump (cm); leaning depth (cm); pulse rate after step-test – 5 min at 30-cm height, at pace 30 ups and downs per min (BPM); sitting up from lie-back (number); 30 m running from upright start (sec); long jump with two feet without a run-up.
We measured the pulse rate by means of palpation measurement and a pulse meter.
Mathematical-statistical methods. For the mathematical processing of the data obtained we used alternative analysis. The standard deviation (SD) in % is defined according to the formula:

$$SD = X2 - X1 \,.\, 100 \text{ (Siris, P. Z. 1973).}$$

$$0{,}5 \,.(X1 + X2)m$$

Where X1 are X2 are respectively the initial and final results of the tested indices.

Results

The results show that at the beginning of the research 23.33% of the female students have a good level of physical fitness, whereas 13.33% lack any. The highest is the pecentage for those who have low physical fitness - 63.33% /Fig.1/. At the end of the research, owing to the applied measured physical loading according to the developed programmes, we notice that the physical fitness of the female students have improved considerably and for 77 % it is dood while only for 23 % - slightly lower /Fig.2/.

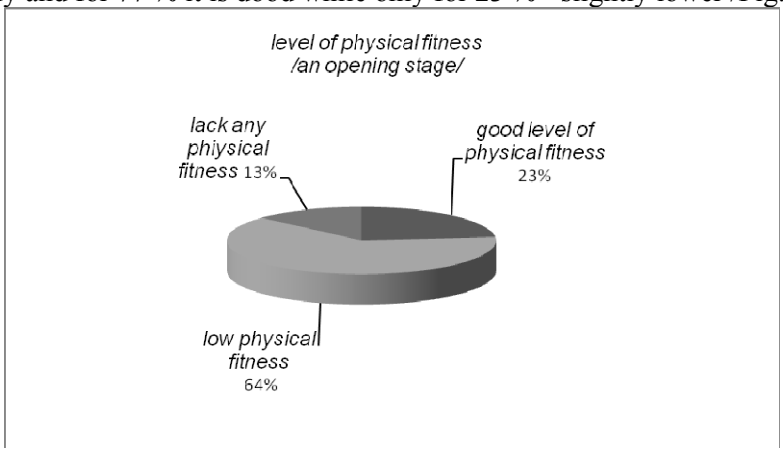

Figure 1

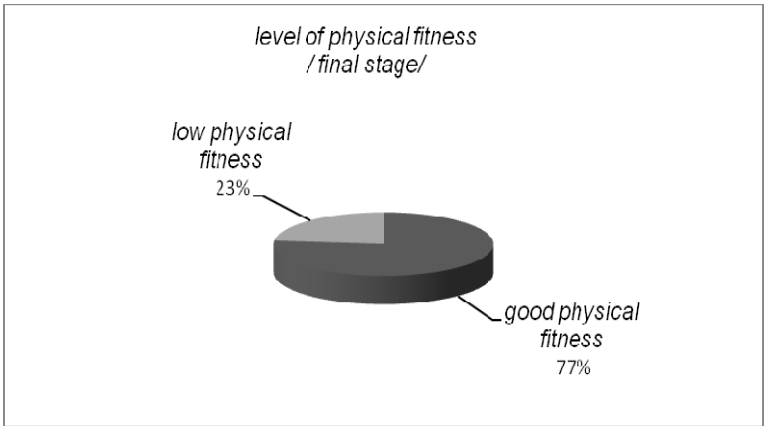

Figure 2

The resultant physiological curves from the three fitness devices show gradual and undulate change in the pulse rate during the particular programme workouts but the values do not exceed the permitted levels for this age. During the preparation period the average values are within the boundaries of 115/125 BPM; these

are values which correspond to the adaptation of the cardiovascular system and its capability to bear bigger loads. We observe values of 150/180 BPM at the end of 15 and 25 min, when the degree and speed of the loading are higher.
We find lower values of the pulse rate during the periods of loosening-up, while at the end of the recovery period they are close to the initial ones. /Fig. 3,4 and 5/.

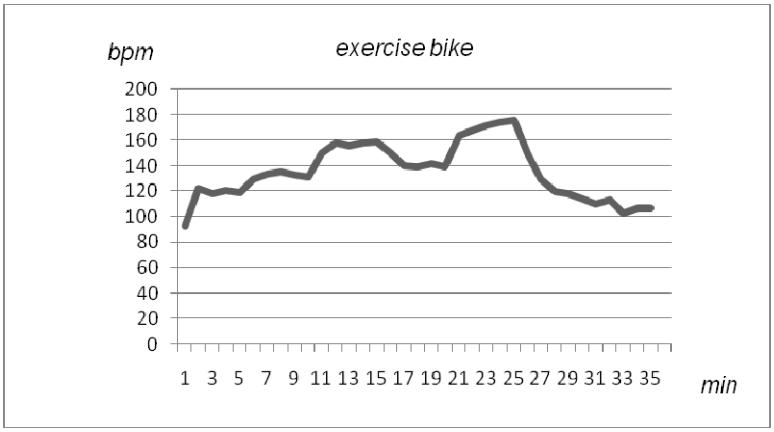

Figure 3

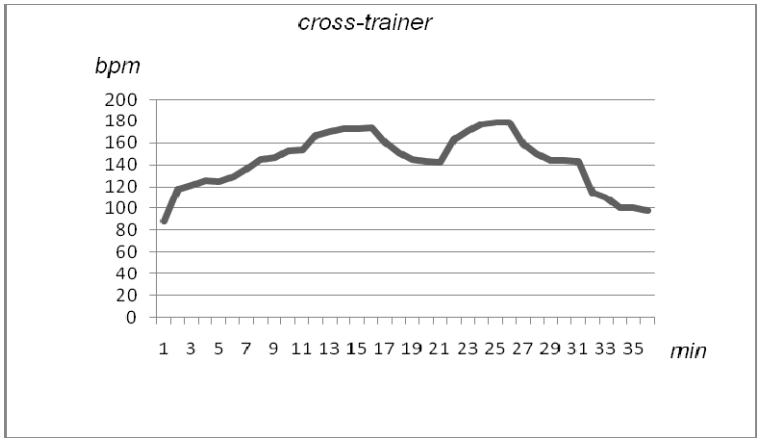

Figure 4

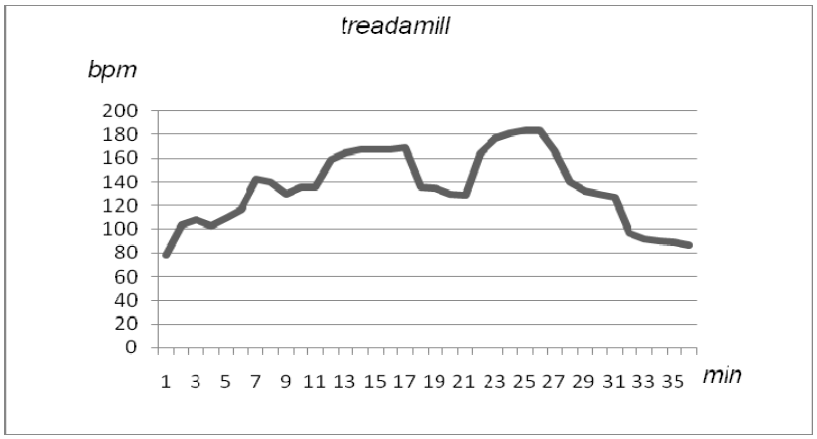

Figure 5

The results of the present research show that the pulse rate (without being an absolute indicator), if measured initially, during the loading and through the recovery period, enables an efficient and purposeful controlling and optimising of the students' individual workouts with training devices. The recorded maximum pulse rate proves that the performed exercises with fitness devices set considerable requirements to the cardiovascular

system and that the systematic workouts are a powerful factor for increasing its functioning capacity and consequently for improvement of the overall working ability of the body.
As far as the standard deviation (SD) is concerned (Tabl.3), the researched physical ability indices have shown that no changes in the height are noted unlike the body weight and the body mass index (BMI), where it is more than 6 %. In the indices characterising the development of the locomotive abilities we observed an index for improved working ability of the female students in the jumping abilities (SD = +11,36%) and the pulse rate at the step-test(SD = -10,12%). High increase rate has also been noticed in the other strength indices and the speed, while in the flexibility it is insignificant.

Table 3 Average values and standard deviation of the indices evaluating students' physical ability female

Indices	$X_1 \pm \Delta$	$X_2 \pm \Delta$	SD %
Full height (cm)	162,14 ± 3,22	162,8 ± 3,50	+0,40
Body weight (кg)	59,78 ± 3,42	56,25 ± 3,90	-6,08
BMI	22,81 ± 2,44	21,46 ± 1,93	-6,09
Standing vertical jump (cm)	32,13 ± 2,94	36,00 ± 2,10	+11,36
Leaning depth (cm)	57,20 ± 3,16	58,14 ± 2,77	+1,62
Pulse rate after step-test (BPM)	172,93 ± 4,96	156,26 ± 5,58	-10,12
Sitting up from lie-back (number)	44,33 ± 4,73	48,13 ± 2,92	+8,21
30 m running from upright start (sec)	5,90 ± 0,20	5,56 ± 0,18	-5,93
Long jump with two feet without a run-up (cm)	160,40 ± 6,67	168,66 ± 5,74	+5,02

Discussion

1. The research has proved that the use of fitness devices in the students' individual exercises is a highly-effective approach for improving their physical ability. 2. The changes in the pulse rate during the different working stages throughout the research prove right the choice of loading and set-up of the applied programmes and methods, as well as their training effect in the individual workouts with fitness devices.
3. We recommend wide application of the work with fitness devices in the students' individual exercises.

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Basketball players and wrestlers academical status in Serbia

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Abstract

Introduction

Twenty years ago, most of the basketball players and wrestlers, and athlethes in general, in Serbia (ex SFRJ) were students. Nowadays, athleths are stimulated, before all financially, for up-keeping topflight results, which requires to devote themselves to sport completely. For that reason, it can be asusumed that small number of them is interested in academic titile acquiring. The aim of this stydy was to investigate today top-rated Serbian basketball players and wrestlers academical status.

Methods

In the sample of 312 basketball players (48 from NLB league, 120 from Swislion league and 144 from I B league) and 110 wrestlers the questionnaire was conducted about their academical status. Basic questions were: is athlete styding something, on which faculty is studying and what year of styding were they.

Results

In basketball teams which are playing in NLB league, 27% of basketball players are students, in Serbian Swislion league 45% of basketball players are students, while 44% of players in I b league are students. From total number of basketball players, most of them are studying some of business or managemant faculties. On the contrary, 40% of Serbian wrestlers are students, with 60% of them who are studying some sport and physical education faculties.

Conclusion

Number of students among basketball players and wrestlers is approximately equal, except NLB league basketball players. Wrestlers are maily determined for sport studies, meaning they see their future existence in sport. On the other hand, basketball players in Serbia see their present life in professional basketball pursuing, and future life in some other spheres, before all
business and managemant.

Introduction

Sport system in ex Yugoslavia enabled athletes to study, along with sport practicing. A great number of basketball players and wrestlers from Serbia, as well from the other parts of ex Yugoslavia, were students / 2 /. There is a thesis in Serbia, and general public opinion, that it is not possible to study successfully and achieving significant sport results. As the argument for this attitude is the fact of everyday hard and long termed trainings and competing athletes' activities. That means that they don't have too much time for class attendance and studying in faculty, because they need time for rest and effort recovery.

Fact is that sport career lasts relatively short, and those athletes, after ending it, need to have another profession. These facts obligate sport pedagogists to pay attention on athletes' education. Except bringing sport results, they have to prepare athletes for life after finishing sports career / 1 /.

Today, athletes in Serbia are more stimulated for top-level results achieving. Basketball and wrestling are traditional sports in Serbia, and ex-Yu, which brought huge number of medals from great international championships. Serbian clubs basketball competitions are divided in five ranks. First two ranks are professional leagues: the most valuable competition is common ex-Yu league, called NLB league, while I league of Serbia is named Swislionn league. Rest three ranks are amateur leagues: Ib league of Serbia, I Serbian league and II Serbian league. Basketball players from first two ranks are financially stimulated for better competitive results, while amateur basketball players don't have significant material stimulation, but do have chance, if they have good results, to become professional players. From the other hand, wrestlers don't have professional competitions, meaning they are all amateurs. National competitions are I and II league, and some tournaments are organized for those wrestlers who don't have quality for competing in these leagues / 3, 4 /. Wrestlers, comparing with basketball players don't have significant material stimulation. Exception are just high-quality wrestlers, who have state stipend, and league rank competitors have clubs stipend. Basketball players, as well as wrestlers, are required to be completely devoted to sport, which majority is. It can be assumed that minority of them are interested academical calling acqiuirement.

There is no later available research about athletes' academicals status in Serbia. The aim of this study is to investigate academicals status of nowadays basketball players and wrestlers in Serbia, with relation to determine currently athletes concern for academicals education acquisition, as well as to determine possible characteristics concerning these sports.

Method

Participants

Participants in this study were 531 male athletes: 421 basketball players and 110 wrestlers. Basketball players were divided in three groups according to competition level: 75 from NLB league, 138 from Swislionn league of Serbia, 208 from First B league of Serbia. Wrestlers were, also, divided in three groups, based of their success / 5, 6 /: 6 international level wrestlers, 24 national level wrestlers and 80 of them were the lowest level wrestlers.

Instruments and procedure

Data collecting was made with a questionnaire. This questionnaire contained seven questions:

1. In which rang are you competing?
2. Are you studying?
3. Are you attending secondary school?
4. Did you finish faculty?
5. If you are studying, which faculty is it?
6. If you are studying, which year of studies are you attending?
7. If you are studying, is that state or private University?

From the questionnaire we received following variables: rank of competition, number of students among basketball players and wrestlers, number of secondary school students among basketball players and wrestlers, number of finished students among basketball players and wrestlers, faculties on which are studying basketball players and wrestlers, number of students on state and private faculties, year of studying.

Analysis of data

Analysis of data included descriptive statistics of all variables included in this study.

Results and Discussion

Basketball players

From total number of basketball players (N=421), 75 (17.81%) of them were from NLB league, 138 (32.78%) from Swislionn league, and 208 (49.41%) from Ib league of Serbia. Figure 1 presents academicals status of basketball players. 121 of them are students (28.74%), in secondary school are 109 (25.89%) and 14 (3.33%) of them are senior students. Number of others is 177 (42.04%).

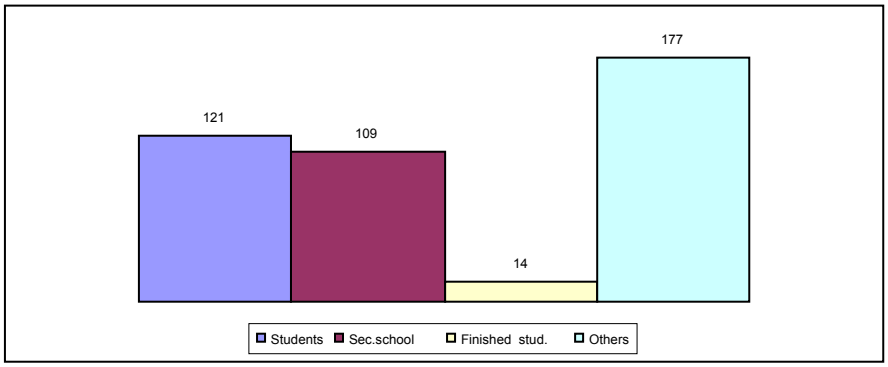

Figure 1: Number of students, secondary school students, senior students and others

In NLB league are 19 students (15.70%) from the total number of students basketball players, in Swislionn league of Serbia 37 (30.58%), and in Ib league 65 (53.72%) (Figure 2). Students from NLB league make 4.51% from total number of basketball players, from Swislionn league of Serbia 8.79%, and from Ib league 15.44%. In relation to number of players in each rank of competition, there are 25.33% students in NLB league, 26.81% in Swislionn league of Serbia, and 31.25% in Ib league. (Figure 3).

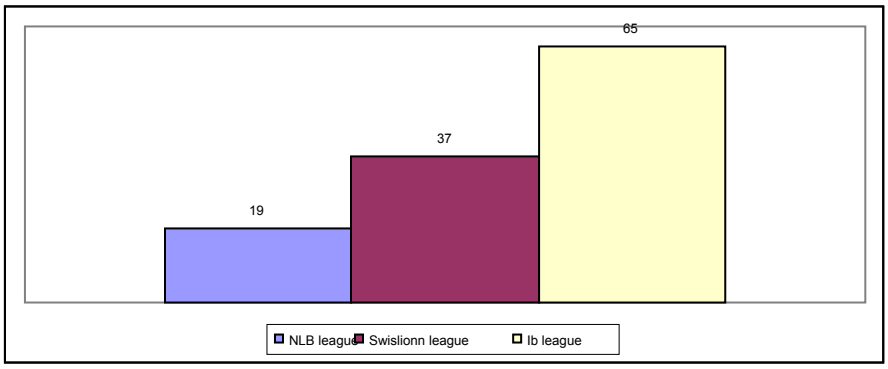

Figure 2: Number of students according to rank competition

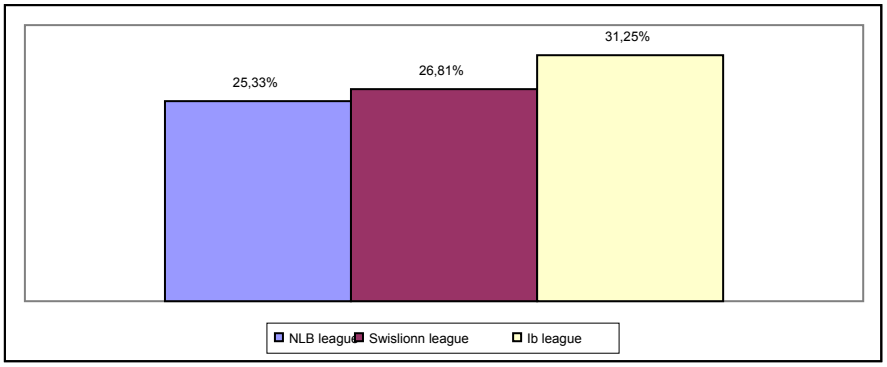

Figure 3: Percent of students according to number of players in each competition rank

Table 1 presents distribution of students' basketball players according to rank competition, with relation to type of faculty (4 groups of sciences). Majority are students of the socially-humanistic sciences faculties, 98 of them (80.99%), mostly from I b league. In the other three groups of faculties is significantly less number of basketball players: 3 (2.48%) on mathematics sciences, 7 (5.79%) on medical sciences and 13 (10.74%) on technical sciences. There is no any NLB league basketball player in these three faculty groups.

Group of faculty	NLB league	Swislionn league	Ib league	Tolal	
Socially humanistic sciences	19	30	49	98	80.99%
Mathematics sciences	0	1	2	3	2.48%
Medical sciences	0	4	3	7	5.79%
Technical sciences	0	2	11	13	10.74%

Table 1: Number of students according to group of faculty per rank competition

Number of students who are studying on state and private faculties, according to rank competition is presented in Table 2. Approximately the same number of students is studying on state faculties (58 students, 47.93%) and on private faculties (63 students, 52.07%). We distinguished that majority of students in NLB league attend private faculties. In Swislionn league of Serbia is almost the same number of students who are studying on state and private faculties, while in Ib league is majority who are studying on state faculties.

	NLB league	Swislionn league	Ib league	Total	
Private faculty	16	19	28	63	52.07%
State faculty	3	18	37	58	47.93%

Table 2: Number of students on state and private faculties according to rank competition

Students' distribution according to year of studying per rank competition is presented in Table 3. Almost the same number of students is in the first year (40 students, 33.06%) and in the second year (35 students, 28.93%). Also, there is approximate number of students in the third (20 students, 16.53%) and fourth (14 students, 11.57%) year of studying.

	NLB league	Swislionn league	Ib league	Total	
I year	9	11	20	40	33.06%
II year	3	13	19	35	28.93%
III year	2	5	13	20	16.53%
IV year	2	5	7	14	11.57%
V year	0	1	2	3	2.48%
Senior stud.	3	2	4	9	7.44%

Table 3: Number of students according to year of studying per rank competition

Number of basketball players who have finished faculty is very small. Only 14 active players, or 3.33% from the total number of basketball players, finished some faculty. Approximately the same number of finished students is in every rank competition: 3 in NLB league, 6 in Swislionn league of Serbia and 5 in Ib league.

It is significant to mention number of basketball players who are in secondary school, because they are potential students in the future. Number of secondary school basketball players is 109 (25.89% from total number of players). From 109 secondary school players, 6 (5.50%) are in NLB league, 22 (20.18%) in Swislionn league of Serbia and 81 (74.31%) in Ib league of Serbia.

In observing competitions, 109 secondary school students play basketball: 6 in NLB league (8.00% from total number players in that league), 22 in Swislionn league of Serbia (15.94% players in that league), as well as 81 in Ib league of Serbia (which is 38.94% players in that league).

It is determined that number of students and finished students is relatively satisfactory, when we take in consideration facts about basketball players' trainings and competition activities. Rising trend of students among basketball players with the rank decreasing is quite predictable. Professional competitions require practictically more obligations and efforts comparing with amateur. Furthermore, professionals are concerned on their current results. Percentage of basketball players who are studying, comparing to number of players in that rank, is almost equal for all thee rank competition. (Figure 3). However, if we leave out secondary school students from total number of Ib league, percentage of students in that league would be 51%. Huge number of secondary school students indicates possible increasing number of students' basketball players in the future.

Large percent of students in the group of socially-humanistic sciences is expected. Most of basketball players are studying on some management or business faculties. It is understandable, because these faculties have lower standards in schooling attendance and obligations in the faculty building itself, so they enable bigger independent students work: there are no laboratories, no practical lecturing, etc. Except that, that kind of basketball players orientation is in the connection with their profession after finishing sports career, which means manager business.
It is expectable that professional basketball players are mostly studying on private faculties, because they make possible different adaptive studying regime, and on the other hand, basketball players' amateurs decide to study on state faculty, because of the tradition of those faculties, as well as cheaper costs. Increasing number trend of private faculties presumably contribute to increasing number of students athletes.
When we compare years of basketball players studying, its expected decreasing students number trend with the increasing year of studying. Great number of basketball players on second or third year, over 62%, and significantly lower number of those who get forward with studying, indicate that basketball players, sometimes, enter to faculty and start studying with dosage of reserve in relation to how they are going to devote themselves seriously to studying. (Table 3).

Wrestlers
From total number of wrestlers (N=110), 6 (5.45%) of them are international category wrestlers, 24 (21.82%) are national category and 80 (72.73%) no labeled.
Number of students is 44 (40.00%), number of secondary school students is 21 (19.09%) and number of finished students 12 (10.91%). Number of others is 33 (30.00%) (Figure 4).

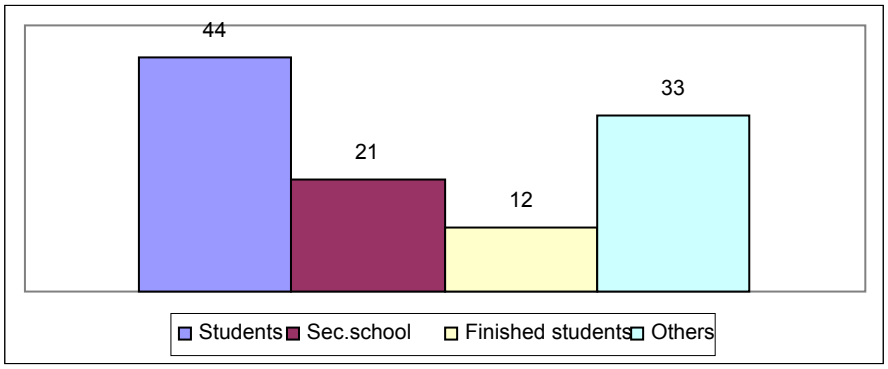

Figure 4: Number of students, secondary school students, finished students and others

In Figure 5 is presented students distribution in accordance with rank competition. Four students wrestlers, or 9.09% of total wrestlers who are studying, are international rank wrestlers, 12 (27.27%) of them are national rank wrestlers, and 28 (63.64%) students wrestlers are not categorized. International rank students make 3.64% from total number of wrestlers, 10.91% are from national category, and 25.45% are not categorized (Figure 6). According to total number of wrestlers in each rank competition, 66.67% of international rank wrestlers are students, 50% of national rank wrestlers are students, and 35.00% of non categorized wrestlers are studying. (Figure 7).

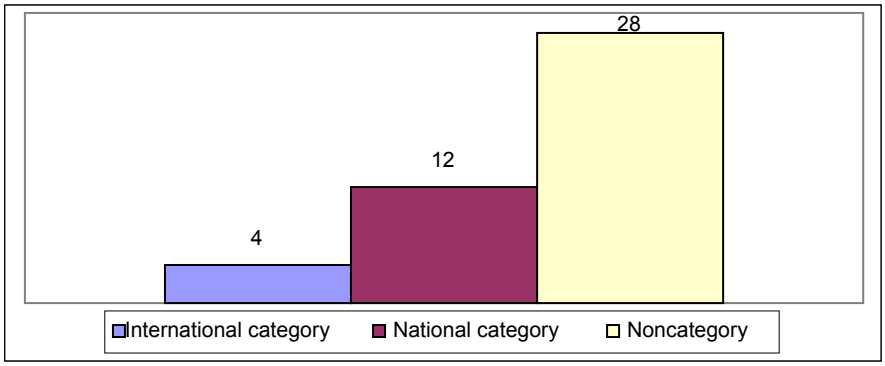

Figure 5: Number of students according to rank competition

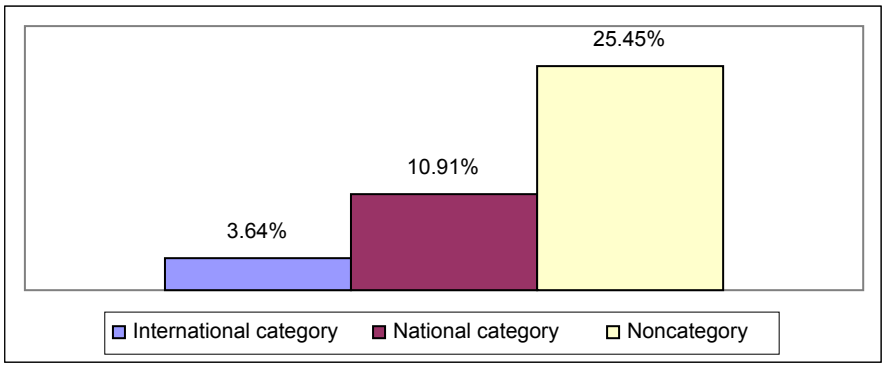

Figure 6: Percentage of students according to total number of wrestlers

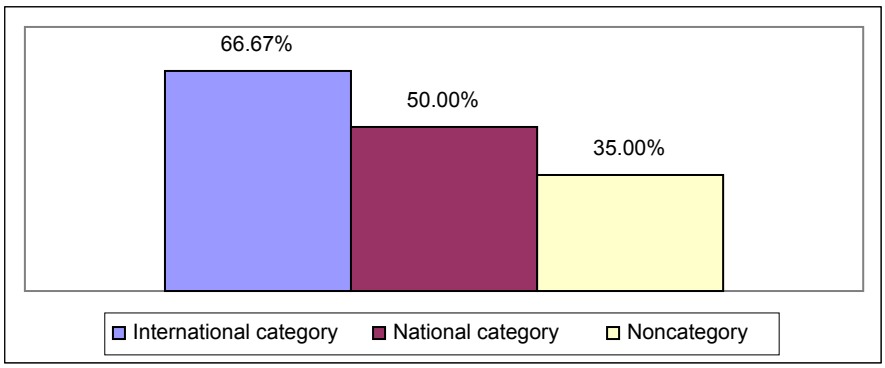

Figure 7: Percentage of students according to number of wrestlers in each rank competition

Table 4 presents distribution of students' wrestlers according to group of faculty which they are studying. The majority of wrestlers, 38 (86.36%), are studying on some faculty from the group of social- humanistic sciences: 3 of them are international level wrestlers, 12 are national level and 23 wrestlers are not categorized. Significantly lower number of wrestlers is studying in the rest 3 groups of faculties: only 6 wrestlers (13, 64%) are studying technical sciences. From those 6 wrestlers, one is international category wrestler and 5 of them are non categorized.

Group of faculty	International category	National category	Noncategory	Total	
Socially-humanistic sciences	3	12	23	38	86,36%
Mathematics sciences	/	/	/		
Medical sciences	/	/	/		
Technical sciences	1		5	6	13.64%

Table 4: Number of students' wrestlers according to group of faculty per rank competition

Table 5 presents number of students who are studying on state or private faculty according to rank competition. 12 wrestlers (27.27%) are studying on private faculties, while 32 wrestlers (72.73%) are studying on state faculties. Although number of students who are studying on state faculties is larger, we have noticed that international level wrestlers prefer to study on private faculties. Larger number of those who are studying on state faculties is among national level wrestlers, while number of those who are studying on state faculties is increasing in the group of non categorized wrestlers. Wrestlers' preferences are consequence of liberal studying regime on private faculties, as well as favorable financial effects on state faculties.

	International category	National category	Noncategory	Total	
Private faculty	3 (75%)	3 (25%)	6 (21,43)	12	27,27%
State faculty	1 (25%)	9 (75%)	22 (78, 57%)	32	72,73%

Table 5: Number of students' wrestlers on state and private faculties according to rank category

Students' distribution according to year of studying and rank competition is presented in Table 6. Almost equal number of students is on the first (40, 33.06%) and the second year (35, 28.93%). Also is equivalent number of students on the third year (20, 16.53%) and fourth year (14, 11.57%). It's obvious that number of students' wrestlers is largest on the first year and its decreasing according to year of studying.

	International category	National category	Noncategory	Total	
I year	3	4	6	13	29,54%
II year	1	3	8	12	27,27%
III year		3	5	8	18,18%
IV year		1	4	5	11,36%
V year					
Senior stud.		1	5	6	13,64%

Table 6. Number of students according to year of studying and rank competition

Only 12 wrestlers (10.91%) from total number of wrestlers, finished some faculty: only one (8.33%) international level wrestler, 7 (58.33%) national level wrestlers and 4 (33.33%) non categorized wrestlers.
It is important to mention number of secondary school wrestlers, because they present potential students in the future. Number of secondary school wrestlers is 21 (19.09%) from total number of wrestlers: none of them is international category, 2 (9.52%) are national category, and 19 (90.48%) are non categorized wrestlers. This distribution is quite expected, because, after all, notable results in wrestling are achieving in some elderly age. /1, 2/.
Number of secondary school wrestlers according to number of wrestlers in each rank competition: there are no international level wrestlers, 2 (8.33%) of them are national category, and 19 (23.75%) are non categorized. This distribution is expected and reasonable, and wrestling is a sport where the best results can be expected after 19 year, so secondary school wrestlers have minor role in competition system in Serbia.

Basketball players and wrestlers
Percentage of students and finished students wrestlers is much more larger than percentage of basketball player who are studying (Table 7), which presumably consequence of significant differences in material stimulation between basketball players and wrestlers, who have less chance to earn as active competitors, so they are rather oriented on studying.

	Students	Sec.school	Senior students	Others
Basketball pl.	121 (28.74%)	109 (25.89%)	14 (3.33%)	177 (42.04%)
Wrestlers	44 (40.00%)	21 (19.09%)	12 (10.91%)	33 (30.00%)

Table 7: Number of students, secondary school students and finished students basketball players and wrestlers

In both group of athletes, basketball players and wrestlers, it is significant that percentage of students is decreasing according to year of studying (Table 10). This unbalance is expected, because huge number of young athletes enter faculty with the idea that they will study seriously one day when they have enough time for it. In the time, most of them recede from studying, so the number of competitors who finished faculty is relatively small. (Table 8).

	I year	II year	III year	IV year	V year	Sen.stud.
Basketball players	40 (33,06%)	35 (28,93%)	20 (16.53%)	14 (11.57%)	3 (2.48%)	9 (7.44%)
Wrestlers	13 (29,54%)	12 (27,27%)	8 (18,18%)	5 (11,36%)	0	6 (13,64%)

Table 8: Students distribution according to year of studying

Wrestlers and basketball players are dominantly studying socially-humanistic sciences, while they are less interested in studying other groups of faculties (Table 9). Studying on socially-humanistic sciences is less conjucted with permanent attendance on practice and lectures.

	Socially-humanistic sciences	Mathematics sciences	Medical sciences	Technical sciences
Basketball pl.	98 (80.99%)	3 (2.48%)	7 (5.79%)	13 (10.74%)
Wrestlers	38 (86,36%)			6 (13,64)

Table 9. Student's distribution according to group of faculty

Comparing studying on state and private faculty, there are some differences between wrestlers and basketball players. While basketball players are studying on state as well as on private faculties, wrestlers prefer state faculties (Table 10). The motive for studying on private faculties is some liberal way of payment and schooling attendance, and the motive for studying on state faculties are dominantly favorable financial aspects. Fact is that in higher competition level both wrestlers and basketball players are studying on private faculties, while in lower competition level both athletes groups prefer state faculties.

	State	Private
Basketball pl.	58 (47.93%)	63 (52,07)
Wrestlers	32 (72,73%)	12 (27,27%)

Table 10: Students distribution on state and private faculties

Conclusion

On the sample of 421 basketball players and 110 wrestlers from Serbia we conducted a pool about their academicals status. From the total number of basketball players, 32.07% are ex or nowadays university students, while 50,91% are studying or already finished studies among wrestlers population. Percentage among wrestlers and basketball players' students is almost equal, except basketball players who are playing in NLB league. Wrestlers prefer studies of sport sciences, which mean that they see their future existence in sport. On the contrary, basketball players in Serbia their current life see in professional playing, and future life in some other, first of all, in management and business sphere.

In both athletes' population, basketball players as well as wrestlers, number of students is increasing according to decrease of rank competition. This trend is present in the basketball players' population, also when we separately observe each rank competition. On the other hand, among wrestlers population, with rank competition is increasing percentage of students. Wrestlers and basketball players prefer to study on socially-humanistic group of faculties. Basketball players prefer management and business sphere, and 80.99% of them are studying on socially-humanistic group of faculties. Similarly, majority of students wrestlers population, 38 of them (86,36%), decided to study on socially-humanistic group of faculties, while only 6 wrestlers (13,64%) choose some faculty from technical group of faculties. Wrestlers prefer to become sport pedagogists and managers.

At the basketball players population it can be noticed that almost equal number is studying on state and private faculties, while number of wrestlers on state faculties is significantly higher then on private. In both sports, higher rank competitors prefer studying on private faculties, while with competition rank decreasing percentage of students on state faculties is increasing. Already in Ib league of Serbia majority of basketball players are studying on state faculties, so it is expected that in lower rank competition percentage of students' basketball players become higher. Although majority of students wrestlers, 32 of them (72,73%), is studying on state faculties, we have noticed that international level wrestlers prefer to study on private faculties, that it is lower in national level wrestlers and non categorized wrestlers mostly prefer state faculties. This trend can be explained with the fact that scholarship to the high-level wrestlers is paid by clubs or someone else, so financial aspect is not special problem, and studying requirements on those faculties are usually smoother. On the other hand, non categorized wrestlers prefer to study on state faculties, where scholarships are cheaper. Some athletes are studying on state charge, so many of wrestlers and basketball players from lower rank competition are studying on them, although they don't have some special benefits.

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Sub Themes 6.

University Sports: open session

The study of relationship between the forward head and kyphosis disorders with the psycho-health among the male staffs of Saderat bank in Dezful

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Abstract

Introduction
Human resources are important in all society. Maintains and development of physical and psychiatric health of staff in any country is sensitive responsibility which carry on of this topic is debatable usually. The aim of this research was review of the relationship between the forward head and Kyphosis disorders with the Psycho-health among the male staffs of Saderat bank in Dezful-Iran. In this research Psycho-health symptoms, were including anxiety, sleep disturbances, social functions and depression.

Methods
So, all of the male staffs of Saderat Bank (150) were the statistical society in this research and they were evaluated through New York physical test techniques according to three levels, low, average and serer, for forward head and kyphosis disorders. 115 of the testes were recognized for the case in a way and they were considered as a statistical sample. They filled up the GHQ-28 psycho-health questionnaire. We manipulated the Pierson correlation coefficient with an error of α=0/05 and the one way variance analysis and the kronbach alpha approach to calculate the validation coefficient.

Results
The results show that there is a positive and meaningful relationship between forward head disorder with psycho-health, stress and sleep disturbance, social function and depression (p=0/0001) but there is no meaningful relationship between forward head disorder and physical symptoms (p=0/093). Meanwhile, there is a meaningful relationship between kyphosis disorder and psycho-health, physical symptoms and depression (p=0/043), but there is no meaningful relationship between kyphosis and stress and sleep disturbances and social function (p=0/134).

Discussion
There results show that the forward head and kyphosis can endanger the staffs' health. Kyphosis abnormality if doesn't correct, can cause contracture in breathing muscle, reduction of breathing volume and problem in inspiration and expiration. Also, forward head can cause many problems like weakness of vision, premature fatigue, impatience, anxiety, stress and ultimately leading to reduction in daily activity and social function.

Introduction

Human is a creature consisting of body and soul. Any loss and disorder of one of these can affect on the other (Surtris 1992). Physical disorders create problems for people specially the working ones. Based on the scientific documents, the main reason of some disorders is not necessarily physical ones but some inner and mental status can be considered (Mandara 1995). Therefore, body abnormalities (although seemingly physical) can have negative effects on the cardiovascular function, circulation, breathing, central nerve system, reduction of psychomotor function and generally the reduction of efficiency and quality of work and life(Kashef 2001). As the motive is effective for individuals, physical status can affect on the peoples' motivation. The researches in the past have shown that individuals with positive and high motivation usually have better conditions to decide on their body status. They usually have strong body and raising head and shoulder (Mohammadi 2004).

One of the factors which can expose staffs and working people to the stress and body abnormality is the stable or almost fixed status curing working. If this status is with incorrect principles, later it will be a constant habit and this can deform the skeleton muscular structure of individual and physical balance as well. Now, regarding to the effectiveness of both physical and mental status on each other, it is clear that mental problems such as depression, anxiety, sleep disturbances, social functions, premature fatigue and so on can be related to the physical disorders. Thus, in this research, we have tried to evaluate the relationship between the abnormalities of some upper organs such as forward head and kyphosis with the mental aspects (such as depression, anxiety, sleep disturbance, social function) and physical symptoms in the staffs of banks.

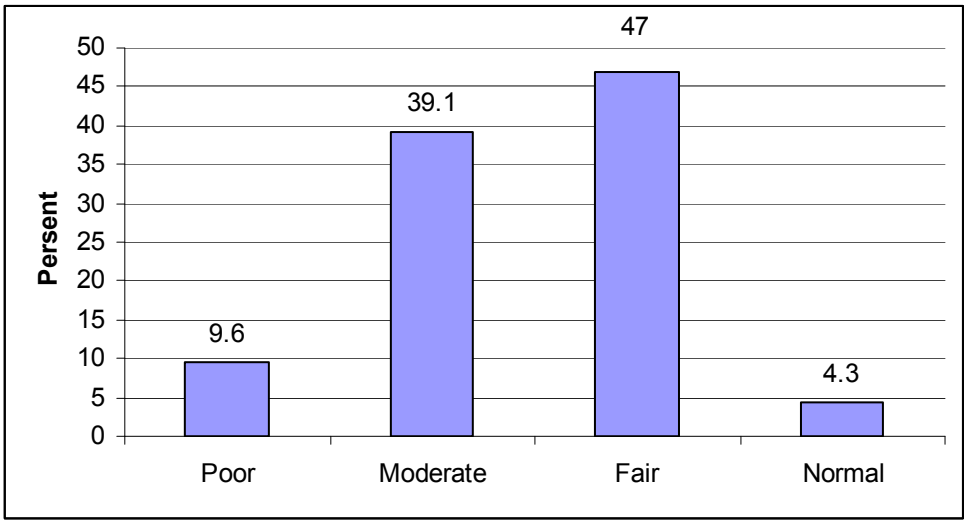
Research method

The present research is a descriptive and correlation kind. The statistical society in this research was 150 male staffs of Saderat bank in Dezful with the average age of 37±6 and 15±5 years of services. To evaluate the physical status of the testees and distinguish kyphosis and forward head disorders, we used posture screen and gravity line based on New York physical test techniques to three levels, poor, fair and good.

Also, to determine the total rate of psycho-health, physical symptoms, anxiety and insomnia, social function disorder and depression, we used the GHQ-28 psycho-health questionnaire.

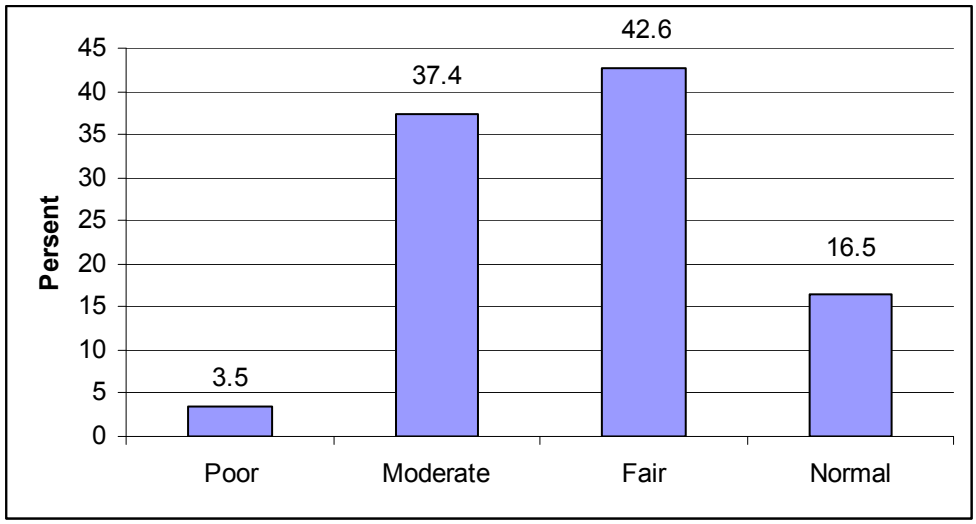
We used descriptive statistics, mean, standard deviation and the data maximum and minimum. To determine the relationship between research variables, we used Pierson correlation coefficient and to analyze the findings we applied the unilateral variance method with the tenth version of computer software, SPSS. In this research α was 0.05.

Research Findings:



Graph No.1 : Frequency distribution of the testees based on the rate of forward head disorder

As it is observed in graph No.1, %47 of the testees have Fair forward head disorder, %39.1 Moderait, %9.6 Poor and %4.3 Normal.



Graph No.2: Frequency distribution of the examinees based on the rate of Kyphosis abnormality

As we observe in graph No.2, %42.6 of the testees have Fair kyphosis disorder, %37.4 Moderaite, %3.5 Poor and %16.5 Normal.

Table 1. the descriptive findings related to the psycho-health testees.

Variable	Mean	Standard Derivation	Minimum	Maximum
Disorder in Psycho-health	26.85	14.23	2	69
Physical Symptoms	6.83	4.23	0	19
Anxiety and insomnia	8.10	4.60	0	20
Disorder in Social Function	7.64	2.92	1	18
Depression	4.33	5.18	0	21

Table 2. Correlation coefficient between forward head and psycho-health disorders of the testees.

Dependent Variable	Independent Variable	Pierson correlation coefficient	P
Forward head disorders	Psycho-health disorder	0.38	0.001
	Physical symptoms	0.16	0.093
	Anxiety	0.41	0.001
	Society function disorder	0.27	0.005
	Depression	0.41	0.001

Table 3. Correlation coefficient between Kyphosis and psycho-health disorders of the testees.

Dependent Variable	Independent Variable	Pierson correlation coefficient	P
Froward head disorders	Psycho-health disorder	0.21	0.043
	Physical symptoms	0.20	0.043
	Anxiety	0.12	0.233
	Society function disorder	0.15	0.134
	Depression	0.23	0.022

Based on the results shown in tables 2 and 3, the following findings were obtained:

1. There is a relationship between forward head and Psycho-health disorders of the testees.
   (p = 0.001, r = 0.38)
2. There is no meaningful relationship between forward head abnormalities and physical symptoms
   (p = 0.093 , r = 0.16)
3. There is a meaningful relationship between forward head disorder and anxiety of the testees.
   (p = 0.001 , r = 0.41)
4. There is a relationship between forward head and social function disorders of the testees.
   (p = 0.005 , r = 0.27)
5. There is a relationship between forward head deformity and depression of the examinees.
   (p = 0.005 , r = 0.41)
6. There is a relationship between kyphosis and Psycho-health disorders of the testees.
   (p = 0.043 , r = 0.21)
7. There is a relationship between Kyphosis and disorder Physical symptoms of the testees.
   (p = 0.043 , r = 20)
8. There is no meaningful relationship between Kyphosis disorder and anxiety of the testees.
   (p = 233 , r = 12)
9. There is no meaningful relationship between Kyphosis and Social function disorders of the examinees. (p=134, r = 15)
10. There is a relationship between Kyphosis disorders and depression of the testees.
    (p= 0.022, r = 23)

Discussion and Conclusion

This research showed that the fixed or stable models of muscles, joint and skeleton during office working can influence the body and postural health of individuals. Because the bank staffs do their job while sitting for a long time, the function of their muscles and joints (during working) will be decreased. Due to the premature fatigue which can be created from the disorder of blood circulation for the muscles specially the upper organs of head, shoulder and vertebrae column. In this case, individual involuntarily will have incorrect and non-standard status to release from stress and fatigue. And this leads to mal posturing. Getting the habit of such undesirable physical status creates problems such as premature fatigue, extra energy, joint deformity, ligament tone and shortness, unusual pressure on the intercostals' discus and even disorder in the functions of vital organs, such as cardiovascular, respiratory, digesting systems and kidneys.

Based on the theory of organism solidarity, psychiatric aspects can constantly affect on the physical structure of individuals and vice versa. Thus, the present research showed that those bank staffs with forward head disorders are more exposed to anxiety, social function disorder and depression then the other staffs. The results indicate that mal posture or undesirable body shape (which can be rooted from different working conditions) can cause bending despair, depression moral change and sadness. And these causes can continue for the days, weeks, months and years. The findings of Norris, Douglas and Kochran(1992),Baumgratmer and Sucher(1991), Tahhan(2005), also confirm the research results.

More curve of the vertebrae column in area of Kyphosis causes the thoracic cavity of individual (while sitting) extends. The shortness of muscles of inferior thoracic cavity means the reduction of cavity volume and pressing costal and respiratory muscles. There fore, the reduction of respiration volume for such people is common (in comparison with normal people having no disorder) and in same condition, they receive less oxygen; as a result, they will have abnormality in metabolism of their cells and muscles. Also, blood circulation becomes slower and there will be lack of energy in muscles. Therefore the signs of such long status indicate the loss of function regarding both individual performance ability and social functions. The meaningful relationship between Kyphosis disorder, psychiatric health abnormality, physical symptoms and depression can be derived from the influence of physical aspects with internal ones. The research of Karyouso(1986), Suruson(1997), Mirobrox(2000), Davis(1990), Plante(1990), Prank and Et al (1995) and Tahhan (2005) also verify this research.

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Relation Between Motor Abilities and Performing of Fundamental Elements in Rhythmic Gymnastics

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Abstract

Introduction
Relations between motor abilities and sports performing were widespread investigated. Those relations for different sports and for rhythmic gymnastics to, differ according to specificity of sports techniques and ages. Level of those differences determines limits for selection of tests.

Methods
Developments of basic motor abilities, as well as improvement in performance of specific free elements in rhythmic gymnastics were monitored during four years period of time, on the sample of young rhythmic gymnastics competitors. Rank correlations among data were determined for 10, 11, 12 and 13 years aged subjects separately.

Results
At 10 and 11 years of age, jumping ability correlates significantly with stag leap, while flexibility correlates significantly with split leap. At 12 years of age, coordination and agility correlates significantly with all elements or most of them. Hip extensors strength significantly correlates with stag leap, balance elements and combination of elements, jumping ability with most of jumps, some of balance elements and combination of elements, while flexibility correlates significantly with split leap and some balance elements. At age of 13, agility correlates significantly with almost all elements, jumping ability with some jumps, pivots and combination of elements, while flexibility correlates significantly with some jumps and balance elements.

Discussion
Correlations significance among analyzed data growing with ages. Applied tests of motor abilities differently correlate with different groups of elements, as well as with elements in any group. Some tests of motor abilities do not correlate with performing of free elements.

Introduction

Rhythmic gymnastics (hereinafter RG) belongs to acyclic poly-structural sports of very complex coordination. As a complex sport it uses very different motor potentials, aimed at successful performance of most difficulties.

Specificities of RG, as a sport, is work with apparatuses. However, its foundation is the technique of gymnast's body work, to which a specific and very diverse technique with various apparatuses is added on top. Basic element groups with a body in RG are: leaps, balances, pivots, flexibility and waves. In top competitors, all elements must be performed by clearly differentiated position of all body parts, maintained and defined form, maximal amplitude, sufficient height (leaps), performed in the build-up phase (balances and pivots) or by fulcrum on one or both feet (flexibility, waves). It indicates to necessity to bring the motor abilities, necessary for correct performance of body elements, by training process, to the satisfactory level, which would be a support for successful performance of each of the stated structural exercise groups without apparatuses.

Motor abilities have significant place in carrying out of complex movement forms and they are condition for successful resolving of sports assignments. They are mostly genetically conditioned, although with long lasting and systematic training abilities they can be raised and improved, but only to the limit determined by genes. Each sport requires development of certain motor abilities, and their hierarchical structure is different in different sports.

Researches in RG indicate that the problems of connection of general motor abilities and successfulness of performance of specific technique were not dealt with by great number of authors. Some of them underline that for success in RG both active and passive flexibility of pelvic area is significant as well as maximal flexibility of spinal column, speed power readiness, asymmetric and coordination rhythmic structures, explosiveness, static balance and ability of maintaining of uniform tempo (Krakova, 1975 pursuant to Popović, R. 1986). Researching connectivity of success in RG and motor abilities (Popović, R. 1986), a conclusion is made that success in this sport depends on harmonized action of all the mechanisms responsible for expression of balance, flexibility, speed, coordination and explosive power.

Miletić, Đ. et al. (2004) have determined that flexibility, explosive power, duration of the bounce phase and anthropometric features participate with 41% in successful execution of basic structural body element groups in RG, which also participate in formation of difficulties, while the movement frequency and quantity on non-fat tissue have 26% of share in specific manipulation with apparatuses in RG.

Brooks, T.J. (2003), pursuant to Di Cagno, A. et al. (2008.) found out that lack of strength, flexibility and movement precision can cause a very bad, even catastrophic performance of the routine.

Miletić, Đ. et. al. (2004) determined by canonic correlation analysis the connection between motor tests results and performance of leaps in RG. According to the results of the linear correlation and canonic correlation analysis, coordination (particularly coordination in rhythm), followed by power (especially explosive power of legs), contribute to achievement of better results in performance of leaps in the beginner females (aged 7) in RG.

Miletić, Đ. and Kostić, R. (2006) carried out a research on a sample of 53 girls (average age 7,1 years), aimed to determine a possible influence of motor abilities and morphological features to performance of „arabesque" and „passé" pivots. According to the results of this research, the training process for beginners in sports events with aesthetic component, especially in pivot learning process, must be programmed with emphasized aims of development of agility and flexibility and decrease of fat tissue percentage.

Methods

Sample of subjects

The research was performed on a sample of competitors in rhythmic gymnastics of the sports club „Ritam" from Belgrade, within the project „Morphological, motor and psychological factors of acquiring specific technique in rhythmic gymnastics". The research lasted from 2004 to 2008.

For the research needs, a general motor development and progress in specific technique of exercises without apparatus was monitored. The tests of general motorics were carried out twice a year in Research laboratory of the Faculty of Sport and Physical Education in Belgrade, and monitoring of the progress in specific technique was done in the sports hall of the Faculty of Sport and PE and quantified by a scale ranging from 1 to 10. The assessment was done by a three-member commission. Each commission member independently made a decision on mark, and the final mark was a mean value of these three marks rounded to half a point. For needs of the research the subjects were classified according to age in four sub-samples.

Sample of variables

The following variables were assessed for motor abilities:

- Maximal strength in isometric regime
  - for extensors in knee joint (KExt)
  - for hip joint extensors (HExt)
  - for hip joint flexors (HFl)
- counter movement jump without arm swings (CMJ)
- counter movement jump with arm swing (CMJSw)
- long jump (LJ)
- speed of body extension (SBExt)
- sit ant reach for 30 seconds (S&R30)
- hand tapping (HTap)
- leg tapping (LTap)
- coordination obstacle course (Koor)
- running with direction shifting 10x5m (Agyl)
- deep bend forward in position of gymnastic sit (Flex).

All motor abilities were measured pursuant to the protocol of the Research laboratory of the Faculty of Sport and Physical Education in Belgrade. Maximal strength was measured with precision of 10 N, leaps and deep bend with precision of 1 cm, and speed of body extension, hand and leg tapping, coordination and agility test with precision of 0,01 s.

Specific technique of rhythmic gymnastics was verified by selected (representative) movement forms such as:

- Split leap with right and left leg (SplR, SplL)
- Stag leap with right and left leg (StaR and StaL)
- Inward (en dedans) and outward (en dehors) 360° pivot on right and left leg performed in side „passé“ position (InwR, InwL, OutwR, OutwL)
- Balance with ascent on one, and the other one in „passé“ position (BPassR i BPassL)
- Balance on the entire foot, high springing with a free leg, the leg is held by the same hand (BSplR, BSplL)
- Vertical balance performed by ascent (BSplAsR, BSplAsL)
- Combination of elements (Komb)

Statistical analysis

The result frequency distribution in the tests of general motor abilities is represented by mean value, as a measure of central tendency, standard deviation as absolute and variability coefficient as a relative measure of the results variability compared to mean value (Table 1). The mark frequency distribution in the tests of specific technique is represented by mean value and median, as measures of central tendency. Pursuant to the lowest and highest mark, as well as to marks on the level of quartiles, overall range as well as the range between quartiles can be determined, as indexes of marks variability compared to the marks of median level (Table 2). The degree of deviation from normal frequency distribution of all variables, was verified by Kolmogorov-Smirnov test with Lilliefors correction of significance of differences (Tables 1 and 2).

In order to determine the degree of correlation between general motor abilities and performance technique of specific exercises, Spearman and Kendall rank correlation coefficient was applied. In the case when we had up to 20 pairs of rank of measured values and awarded marks, Kendall rank correlation coefficient was applied, and in cases when we had more than 20 pairs, Spierman rank correlation coefficient was used.

Results and discussion

The motor ability data had not normal frequency distribution in four of thirteen variables (table 1). However, data for specific technique evaluation have not normal frequency distribution in neither one variable (table 2).

Table 1. Descriptive parameters for motor ability data with test of normality of frequency distribution

	Mean	Std. Deviation	CV	Kolmogorov-Smirnov Z	p
KExt	177,4(N)	43,1	0,24	0,108	0,048*
HExt	541,5(N)	135,6	0,25	0,066	0,200
HFl	210,0(N)	58,7	0,28	0,074	0,200
CMJ	25,6(Cm)	3,1	0,12	0,059	0,200
CMJSw	30,6(Cm)	4,2	0,14	0,055	0,200
LJ	167,8(Cm)	17,4	0,10	0,057	0,200
SBExt	11,3(s)	1,1	0,10	0,123	0,005**
S&R30	28(27,7)	3,7	0,13	0,109	0,017*
HTap	6,4(s)	1,0	0,15	0,138	0,001***
LTap	8,5(s)	0,8	0,09	0,089	0,152
Koor	4,8(s)	0,4	0,07	0,077	0,200
Agyl	20,2(s)	1,0	0,05	0,076	0,200
Flex	39,6(Cm)	4,5	0,11	0,093	0,070

Table 2. Descriptive parameters for specific technique data with test of normality of frequency distribution

		SplR	SplL	StaR	StaL	InwR	InwL	OutwR	OutwL
Min-Max		0,5-5,5	0,0-5,0	0,5-5,5	0,5-4,5	0,7-5,0	0,5-5,0	0,0-4,5	0,0-5,0
Mean		2,90	2,67	3,07	2,48	2,79	2,73	2,57	2,35
Median		3	2,5	3	2,5	2,5	2,5	2,5	2,5
Percentiles	25	2	2	2,5	1,5	2	2	2	1,5
	50	3	2,5	3	2,5	2,5	2,5	2,5	2,5
	75	3,5	3,5	3,5	3	3,5	3,5	3,5	3
Kolmogorov	Z	0,175	0,122	0,116	0,114	0,120	0,103	0,112	0,101
Smirnov	p	0,000***	0,004**	0,008**	0,009**	0,005**	0,030*	0,012*	0,035*

		BPassR	BPassL	BSplR	BSplL	BSplAsR	BSplAsL	Komb
Min-Max		0,5-6,0	0,5-6,0	0,5-5,0	0,5-6,0	0,5-5,0	0,5-6,0	1,0-7,5
Mean		3,29	3,35	3,06	3,56	2,80	3,56	3,63
Median		3,5	3,5	3	3,5	3	3,8	3,5
Percentiles	25	2,5	2,5	2	3	2	2,5	3
	50	3,5	3,5	3	3,5	3	3,8	3,5
	75	4	4	4	4,5	3,5	4,375	4
Kolmogorov	Z	0,133	0,107	0,146	0,098	0,131	0,112	0,141
Smirnov	p	0,001***	0,019*	0,000***	0,049*	0,006**	0,033*	0,000***

In that circumstances, we chose Spearman`s rho and Kendall`s tau rank correlation coefficient as a techniques for estimation of connectivity between general motor abilities and performance of basic elements in rhythmic gymnastics.

In competitors of cadet age, 10 and 11 years old (Tables 3 and 4), connection of the technique of specific exercises without apparatus with general motorics is mostly weak. At this age, it was shown that takeoff is important for carrying out of a stag leap (StaR and StaL), and general flexibility for performing split leap, only with better (right) leg (SplR). Since stag leap is performed by both legs bounce vertically upwards, height is primary for it, so the appearance of such connection is logical. Split leap is featured by maximal amplitude and appropriate height. At this age it is evident that technique of this leap is characterized by flexibility, but with absence of its height.

Table 3. Correlations between motor abilities and specific techniques at 10 years.

Spearman's rho	Ext K	Ext H	FlH	CMJ	CMJS w	LJ	SBExt	S&R3 0	HTa p	LTap	Koor	Agyl	Flex
SplR	0,18	0,15	0,04	0,11	-0,07	0,05	0,43	0,03	0,29	-0,20	0,18	0,17	0,36
	0,43	0,51	0,85	0,61		0,81			0,17				
	0	7	9	7	0,755	4	0,036*	0,895	2	0,347	0,407	0,417	0,087
SplL				-		-			-				
	0,32	0,15	0,07	0,09	-0,05	0,18	-0,05	0,23	0,17	-0,42	0,11	0,09	0,50
	0,14	0,49	0,75	0,68		0,41			0,43	0,043			0,014
	1	8	5	4	0,818	2	0,799	0,290	0	*	0,622	0,672	*
StaR	-	-											
	0,19	0,05	0,00	0,22	-0,05	0,12	0,36	-0,25	0,19	0,12	0,11	0,03	0,25
	0,39	0,83	0,99	0,29		0,57			0,38				
	0	7	4	9	0,824	6	0,080	0,247	6	0,577	0,605	0,906	0,239
StaL		-							-				
	0,00	0,23	0,08	0,23	0,30	0,29	-0,02	0,05	0,14	-0,13	-0,08	-0,07	0,22
	0,99	0,29	0,72	0,27		0,16			0,52				
	5	8	9	8	0,155	8	0,922	0,829	7	0,552	0,699	0,747	0,299
InwR	-	-	-			-							
	0,18	0,14	0,13	0,27	-0,20	0,04	0,59	-0,17	0,19	0,17	0,36	0,28	-0,18
	0,41	0,52	0,55	0,20		0,86	0,002*		0,36				
	8	5	1	6	0,339	3	*	0,433	3	0,436	0,083	0,178	0,392
InwL	-		-			-							
	0,06	0,00	0,02	0,10	-0,31	0,15	0,53	-0,01	0,05	-0,03	0,21	0,20	0,00
	0,78	0,98	0,92	0,63		0,47	0,008*		0,81				
	8	7	1	5	0,135	8	*	0,978	5	0,884	0,332	0,357	0,985
OutwR	-												
	0,03	0,00	0,06	0,12	-0,27	0,02	0,42	-0,14	0,24	0,17	0,19	0,04	0,26
	0,89	0,99	0,78	0,56		0,93			0,25				
	8	1	2	6	0,199	8	0,040*	0,503	7	0,439	0,374	0,845	0,219
OutwL	-	-	-										
	0,21	0,13	0,16	0,35	-0,19	0,07	0,40	-0,12	0,38	0,08	0,12	0,10	0,01
	0,35	0,57	0,48	0,09		0,74			0,07				
	2	0	0	9	0,365	8	0,052	0,574	1	0,697	0,563	0,627	0,976
BPassR	-	-	-	-		-							
	0,10	0,11	0,16	0,01	-0,18	0,08	0,35	-0,01	0,18	0,33	0,22	0,10	0,38
	0,64	0,61	0,47	0,97		0,71			0,39				
	2	5	5	2	0,413	0	0,095	0,971	2	0,111	0,312	0,657	0,066
BPassL	-	-	-	-		-							
	0,15	0,17	0,14	0,01	-0,11	0,03	0,25	-0,06	0,04	0,45	0,25	0,13	0,38
	0,50	0,44	0,54	0,98		0,90			0,84	0,027			
	7	0	0	1	0,604	8	0,241	0,775	2	*	0,237	0,558	0,066
BSplR	-		-			-							
	0,07	0,02	0,08	0,18	-0,32	0,10	0,54	-0,13	0,30	0,15	0,55	0,43	0,35
	0,76	0,94	0,74	0,41		0,65	0,006*		0,15		0,005*	0,034	
	8	1	0	0	0,127	4	*	0,546	8	0,477	*	*	0,095
BSplL	0,31	0,15	0,12	0,18	-0,03	0,06	0,18	0,15	0,02	-0,12	0,21	0,25	0,45
	0,16	0,49	0,60	0,39		0,78			0,91				0,027
	2	2	5	1	0,893	7	0,401	0,488	4	0,563	0,313	0,238	*
BSplAsR		-	-						-				
	0,06	0,11	0,12	0,14	-0,02	0,13	0,26	0,31	0,04	0,22	0,38	0,59	0,22
	0,85	0,70	0,67	0,59		0,62			0,88			0,015	
	0	5	0	5	0,938	9	0,331	0,245	4	0,415	0,147	*	0,419
BSplAsL									-				
	0,17	0,27	0,04	0,13	-0,23	0,03	-0,05	0,42	0,34	0,03	0,04	0,14	0,64
	0,55	0,34	0,89	0,64		0,92			0,19				0,007
	9	9	5	1	0,383	0	0,866	0,109	2	0,900	0,896	0,601	*
Komb		-	-						-				
	0,03	0,22	0,05	0,09	0,31	0,36	0,01	0,47	0,10	-0,07	-0,19	-0,14	0,45
	0,88	0,32	0,83	0,69		0,09		0,024	0,65				0,031
	4	9	3	5	0,147	1	0,975	*	7	0,734	0,381	0,534	*

This period is already loaded with learning of new and more complex movement structures, so that in training little or no use was made of additional means for development of certain motor abilities.
Passing to junior selection occurs at the age of 12 so that the requirements of competitive program are getting harder and more complex. The participation of general motor abilities in performance technique of specific exercises without apparatus is getting more and more important. Exercises, in this period are performed with an increased amplitude, appropriate height in leaps, in more secure, more harmonious, more correct way and all that requires appropriate motor support.

Table 4. Correlations between motor abilities and specific techniques at 11 years.

Spearman's rho	ExtK	ExtH	FlH	CMJ	CMJSw	LJ	SBExt	S&R30	HTap	LTap	Koor	Agyl	Flex
SplR	-0,08	-0,09	0,01	-0,14	-0,20	0,07	0,03	0,06	0,00	-0,01	0,26	0,00	0,27
	0,722	0,702	0,953	0,501	0,322	0,735	0,879	0,783	0,997	0,967	0,217	0,993	0,177
SplL	-0,30	-0,13	-0,17	-0,16	0,01	-0,11	-0,37	-0,15	-0,33	-0,46	0,13	-0,12	-0,42
	0,193	0,578	0,473	0,433	0,957	0,581	0,066	0,459	0,110	0,018*	0,534	0,584	0,031*
StaR	-0,23	-0,02	-0,08	0,24	0,30	-0,55	-0,16	0,13	-0,12	-0,16	-0,06	-0,34	0,16
	0,308	0,936	0,718	0,228	0,130	0,004**	0,458	0,532	0,558	0,433	0,778	0,095	0,428
StaL	-0,38	-0,07	-0,01	0,40	0,46	-0,53	-0,24	0,43	-0,12	-0,15	-0,21	-0,40	0,09
	0,086	0,768	0,951	0,041*	0,018*	0,005**	0,248	0,029*	0,567	0,452	0,311	0,045*	0,647
InwR	-0,06	-0,32	0,00	-0,04	0,05	-0,06	0,28	0,25	0,09	0,16	0,16	-0,02	0,03
	0,786	0,164	0,984	0,834	0,791	0,763	0,175	0,222	0,664	0,421	0,432	0,942	0,881
InwL	-0,37	-0,01	-0,06	0,12	-0,22	0,03	0,07	0,22	-0,05	0,03	0,02	-0,29	0,10
	0,101	0,972	0,812	0,558	0,287	0,895	0,737	0,273	0,821	0,879	0,922	0,166	0,643
OutwR	-0,03	-0,08	-0,07	0,04	0,09	-0,11	0,02	0,20	-0,24	-0,06	0,03	-0,10	0,20
	0,909	0,741	0,749	0,841	0,677	0,586	0,936	0,322	0,254	0,773	0,897	0,632	0,339
OutwL	-0,05	-0,22	-0,12	0,20	0,03	0,07	0,08	0,43	-0,14	-0,05	0,03	-0,13	0,01
	0,835	0,333	0,616	0,336	0,869	0,737	0,708	0,028*	0,514	0,819	0,891	0,529	0,958
BPassR	-0,23	-0,22	-0,14	0,12	-0,03	-0,06	-0,06	0,32	-0,07	-0,05	0,11	-0,19	0,13
	0,324	0,342	0,537	0,555	0,888	0,784	0,794	0,110	0,733	0,823	0,604	0,374	0,512
BPassL	-0,23	-0,21	-0,28	0,01	-0,15	-0,16	0,11	0,19	-0,13	-0,10	0,34	-0,08	0,35
	0,320	0,371	0,225	0,976	0,471	0,423	0,589	0,363	0,520	0,640	0,099	0,716	0,080
BSplR	-0,22	-0,09	-0,22	0,13	0,10	-0,01	0,13	-0,02	0,14	0,15	0,44	-0,16	0,03
	0,347	0,703	0,343	0,526	0,635	0,950	0,525	0,908	0,513	0,468	0,027*	0,445	0,876
BSplL	-0,04	-0,21	-0,06	0,29	0,18	0,20	-0,38	0,12	0,02	-0,12	0,11	-0,11	0,25
	0,851	0,372	0,780	0,153	0,376	0,321	0,064	0,563	0,933	0,551	0,611	0,603	0,218

BSplAsR	-0,14	0,01	0,02	0,43	0,22	-0,16	0,08	0,36	0,12	-0,04	0,17	-0,36	0,07
	0,623	0,958	0,947	0,058	0,353	0,496	0,748	0,115	0,628	0,881	0,474	0,130	0,775
BSplAsL	0,04	0,32	0,21	0,30	0,07	0,36	-0,56	0,41	-0,33	-0,42	-0,02	-0,38	0,38
	0,889	0,249	0,458	0,205	0,760	0,122	0,013*	0,073	0,164	0,062	0,939	0,113	0,095
Komb	-0,12	-0,15	-0,18	0,20	0,05	0,37	-0,27	0,38	0,05	0,03	-0,13	-0,13	-0,02
	0,605	0,530	0,448	0,330	0,819	0,071	0,209	0,064	0,807	0,876	0,539	0,554	0,937

The summary of the results in the Table 5 evidently display that in gymnasts aged 12, general coordination (Koor) is a dominant ability which correlated with performance of almost all specific RG tasks. Thanks to good coordination, movement synchronization of all body parts in each individual task was much better than in previous period. Beside coordination, muscular strength of hip joint extensors (ExtH) proved to be significant for performance of the majority of specific tasks. Explosive power of leg extensors (CMJ, CMJSw i LJ) proved to be significant for performance of technique of leaps, pivots and one type of balance (BPassR). In majority of specific tasks, agility was expressed (Agyl), and significant connection with flexibility (Flex) appeared in split leap and in vertical balance (BSplAsR and BSplAsL) where flexibility is very important.

Table 5. Correlations between motor abilities and specific techniques at 12 years.

Kendall's tau_b	ExtK	ExtH	FlH	CMJ	CMJSw	LJ	SBExt	S&R30	HTap	LTap	Koor	Agyl	Flex
SplR	0,32	0,65	0,44	0,37	0,40	0,38	-0,12	0,05	-0,19	-0,15	-0,55	-0,42	0,25
	0,125	0,001***	0,030*	0,031*	0,019*	0,026*	0,496	0,783	0,275	0,371	0,001***	0,013*	0,160
SplL	0,32	0,43	0,55	0,19	0,07	0,14	-0,03	0,18	-0,23	-0,22	-0,35	-0,28	0,42
	0,124	0,033*	0,007**	0,261	0,668	0,409	0,859	0,319	0,176	0,198	0,040*	0,106	0,016*
StaR	0,10	0,23	0,08	0,41	0,43	0,52	-0,27	-0,12	0,01	-0,02	-0,54	-0,38	0,04
	0,613	0,249	0,689	0,014*	0,010**	0,002**	0,118	0,494	0,948	0,895	0,001***	0,022*	0,816
StaL	0,05	0,26	0,11	0,58	0,57	0,49	-0,34	0,11	-0,06	-0,06	-0,59	-0,37	0,15
	0,799	0,191	0,580	0,001***	0,001***	0,004**	0,052	0,539	0,718	0,718	0,000***	0,028*	0,389
InwR	-0,04	0,14	0,18	0,32	0,27	0,20	-0,20	0,11	-0,02	-0,08	-0,38	-0,20	0,07
	0,838	0,478	0,389	0,065	0,114	0,248	0,255	0,560	0,895	0,644	0,025*	0,235	0,690
InwL	-0,08	0,01	0,03	0,18	0,18	0,27	-0,26	-0,01	0,01	0,09	-0,36	-0,12	-0,06
	0,718	0,959	0,878	0,302	0,303	0,126	0,151	0,945	0,973	0,618	0,039*	0,485	0,737
OutwR	0,12	0,33	0,40	0,31	0,35	0,35	-0,13	0,11	-0,17	-0,31	-0,55	-0,33	0,26
	0,573	0,105	0,048*	0,069	0,037*	0,040*	0,475	0,559	0,306	0,069	0,001***	0,051	0,133
OutwL	0,20	0,42	0,30	0,19	0,29	0,43	-0,19	0,03	-0,20	-0,17	-0,59	-0,34	0,28
	0,333	0,039*	0,130	0,263	0,087	0,011*	0,270	0,864	0,236	0,323	0,001***	0,041*	0,103
BPassR	0,11	0,40	0,34	0,34	0,36	0,34	-0,36	0,28	-0,33	-0,22	-0,43	-0,19	0,22
	0,610	0,049*	0,095	0,046*	0,037*	0,046*	0,041*	0,120	0,050*	0,195	0,013**	0,274	0,215
BPassL	0,08	0,20	0,31	0,31	0,16	0,11	-0,23	0,04	-0,24	-0,18	-0,35	-0,07	0,04
	0,718	0,332	0,126	0,067	0,335	0,506	0,196	0,836	0,153	0,303	0,042*	0,666	0,814
BSplR	0,36	0,66	0,42	0,21	0,20	0,34	-0,17	0,27	-0,25	-0,32	-0,49	-0,45	0,49
	0,087	0,001***	0,040*	0,230	0,243	0,053	0,348	0,136	0,152	0,066	0,005**	0,008**	0,006**
BSplL	0,16	0,58	0,40	0,25	0,22	0,31	0,00	0,21	-0,32	-0,32	-0,53	-0,50	0,32
	0,445	0,004**	0,044*	0,136	0,197	0,073	1	0,241	0,059	0,059	0,002**	0,003**	0,066
BSplAsR	0,33	0,61	0,45	0,20	0,20	0,25	-0,06	0,36	-0,34	-0,28	-0,39	-0,46	0,56
	0,126	0,004**	0,033*	0,253	0,254	0,153	0,757	0,051	0,054	0,108	0,027*	0,008**	0,002**
BSplAsL	0,23	0,62	0,33	0,27	0,21	0,21	-0,03	0,36	-0,44	-0,27	-0,32	-0,46	0,39
	0,281	0,003**	0,116	0,118	0,228	0,227	0,878	0,048*	0,011*	0,127	0,065	0,009**	0,031*
Komb	0,09	0,41	0,17	0,32	0,35	0,40	-0,16	0,23	-0,23	-0,10	-0,50	-0,43	0,25
	0,648	0,040*	0,394	0,056	0,035*	0,019*	0,357	0,194	0,168	0,554	0,003**	0,010**	0,153

Combination in rhythmic gymnastics is featured by a series of connected moves and movements from various structure groups, accompanied by a rapid change of kinematic and dynamic movement characteristics. The results of this research indicate that for successful performance of combinations (Komb), strength of hip extensors, explosive power of leg extensors, coordination and agility are important.

In the period up to 12 years of age, all exercises without apparatus are mostly learnt, and their advanced training occurs in the following period (achievement of maximal amplitudes, height of leaps, accuracy and harmony of performance of all movement forms) as well as development of ability to perform them in new circumstances (different combinations) because competitive routines are constantly being improved, enriched and become heavier.

In gymnasts aged 13 (Table 6), agility is a dominant ability when performing almost all exercises of specific technique. This indicates that appropriate maturity is achieved in the way of performance, which is expressed by delicate and rapid restructuring of the performance of exercises, so that, beside lightness and harmony, there is an expressed energy in the way of moves and movements performing. This really is the ultimate aim of improvement in rhythmic gymnastics because, only when such a performance level is achieved, a gymnast is considered to be a mature athlete who can change easily and rapidly the structure and character of exercises, which is very significant for successful performance of competitive routines.

Table 6. Correlations between motor abilities and specific techniques at 13 years.

Kendall's tau b	ExtK	ExtH	FlH	CMJ	CMJSw	LJ	SBExt	S&R30	HTap	LTap	Koor	Agyl	Flex
SplR	0,07	0,17	0,07	0,26	0,16	0,23	0,16	0,14	0,03	-0,16	-0,30	-0,49	0,28
	0,779	0,513	0,779	0,235	0,453	0,287	0,482	0,566	0,900	0,453	0,169	0,024*	0,207
SplL	0,24	0,28	0,19	0,23	0,21	0,17	-0,13	0,45	0,08	-0,16	-0,05	-0,64	0,63
	0,360	0,272	0,464	0,295	0,323	0,421	0,577	0,055	0,711	0,459	0,805	0,003**	0,004**
StaR	-0,24	0,34	0,10	0,44	0,18	0,15	-0,18	0,45	0,12	0,04	0,14	-0,32	0,10
	0,355	0,195	0,711	0,045*	0,415	0,490	0,438	0,062	0,573	0,851	0,531	0,149	0,658
StaL	-0,32	0,20	-0,07	0,66	0,40	0,39	-0,11	0,31	0,12	0,12	-0,15	-0,59	0,41
	0,227	0,457	0,780	0,003**	0,070	0,079	0,623	0,197	0,574	0,574	0,492	0,007**	0,068
InwR	0,17	0,02	-0,07	0,19	0,23	0,39	-0,11	0,25	-0,23	-0,36	-0,26	-0,58	0,28
	0,520	0,927	0,783	0,387	0,293	0,072	0,627	0,289	0,293	0,095	0,240	0,008**	0,212
InwL	0,09	0,09	-0,14	0,30	0,12	0,19	0,06	0,29	-0,01	-0,15	0,01	-0,37	0,10
	0,715	0,715	0,584	0,172	0,576	0,384	0,779	0,225	0,950	0,494	0,950	0,093	0,661
OutwR	-0,07	0,05	-0,19	0,26	0,26	0,60	-0,33	0,17	-0,33	-0,33	-0,47	-0,64	0,20
	0,782	0,854	0,460	0,235	0,234	0,007**	0,159	0,473	0,133	0,133	0,033	0,004**	0,377
OutwL	-0,05	0,24	-0,14	0,44	0,33	0,47	-0,28	0,35	-0,13	-0,19	-0,27	-0,69	0,36
	0,855	0,360	0,583	0,042*	0,123	0,030*	0,213	0,138	0,537	0,387	0,217	0,001***	0,105
BPassR	0,05	0,17	-0,12	0,22	0,26	0,44	0,03	0,19	-0,20	-0,26	-0,37	-0,42	0,13
	0,854	0,520	0,646	0,320	0,237	0,046*	0,888	0,432	0,351	0,237	0,093	0,054	0,572
BPassL	0,12	0,07	-0,02	0,20	0,29	0,41	-0,12	0,23	-0,27	-0,38	-0,32	-0,52	0,20
	0,646	0,783	0,927	0,376	0,183	0,066	0,615	0,341	0,229	0,087	0,145	0,019*	0,371
BSplR	0,14	0,05	0,09	0,23	0,14	0,23	0,03	0,22	0,22	-0,05	-0,14	-0,65	0,57
	0,583	0,855	0,714	0,292	0,535	0,290	0,889	0,356	0,321	0,804	0,535	0,003**	0,010**
BSplL	0,07	0,02	-0,02	0,21	0,01	0,26	-0,05	0,18	0,08	-0,23	-0,20	-0,66	0,36
	0,783	0,927	0,927	0,343	0,950	0,254	0,831	0,470	0,704	0,311	0,375	0,003**	0,111
BSplAsR	0,09	0	0,05	0,20	0,05	0,30	0	0,17	0,16	-0,14	-0,22	-0,65	0,47
	0,714	1	0,855	0,353	0,804	0,171	1	0,475	0,456	0,535	0,321	0,003**	0,033*
BSplAsL	0,09	0,05	-0,05	0,18	0,10	0,28	-0,10	0,23	0	-0,23	-0,31	-0,65	0,42
	0,714	0,855	0,855	0,409	0,656	0,203	0,667	0,342	1	0,309	0,162	0,003**	0,063
Komb	-0,12	0,12	-0,12	0,48	0,34	0,45	0,08	0,25	-0,04	-0,04	-0,31	-0,50	0,34
	0,650	0,650	0,650	0,026*	0,122	0,041*	0,729	0,289	0,853	0,853	0,155	0,022*	0,119

Segmental speed and coordination tests (Htap and Ltap) showed litle or no connectivity wit specific technique at all ages. No connectivity was also found between repetitive strength of abdominal muscle (S&R30) and specific techniques, while whole body strength and coordination test (SBExt) showed connectiviti with pivots, only at 10 years of ages. These tests must undergo valorization in accordance to specificity of technique in RG or can be excluded from investigation of connectivity between motor abilities and specific technique in RG.

No connectivity was found between strength of knee extensors and any of tested exercises, in spite of evident role of knee extensors in all jumps and at some lower extent, in pivots and balances. At first place, it can be

consequence of different movement pattern in our test for strength of knee extensors and performed jumps and other exercises. In addition to, knee angle in test was 90 degree, whereas in jumps and other exercises it was much higher. In further researches, this test also must be modified and valorized in accordance to specificity of technique in RG.

Conclusions

Based on the results obtained by this research, carried out with RG gymnasts aged 10-13 the following can be concluded:

With age significance of correlation between general motorics and performance technique of specific tasks in rhythmic gymnastics increases. Older gymnasts use better their motor potentials while performing specific RG tasks.

Certain tests of general motorics do not correlate with the tasks of specific technique of rhythmic gymnastics which indicates that in future researches they should be either eliminated or adjusted to specificities of this sport.

The implemented tests of general motor abilities correlate to different extents with certain structure groups (leaps, pivots, balances) as well as with certain task within each structure group.

Based on this research it is evident that a selection of more sensitive (more valid) tests of general motorics should be made with regard to each structure group as well as with regard to individual tasks within each structure group.

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The Influence of Some Anthropological Dimensions on The Speed of Swimmin

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Abstract

Introduction
The basic aim of this research is to establish the influence of some anthropological manifestations and crawl sprint swimming.
Methods
The sample of examinees included 13 swimmers from SC “NSA-Water Sports” from Sofia and 11 swimmers from SC “Niš 2005” from Niš, all cadet category (age 14-15).
The crawl sprint swimming performance (criterion variable) was evaluated according to variables: 50m crawl sprint swimming, first 25m in 50m crawl sprint swimming, 25m in 50m crawl sprint swimming and % of difference between first and second 25m in 50m crawl sprint swimming.
Predictor variable system was presented by flexibility tests sugested by Metikoš et. al. (1989) (sholder retroflexion and hyperextensions on the bench), morphology tests (height amd weight) and biography data (age and born age).
The multidimensional regression analysis was used to establish the influence of predictor on to criterion.
Results
Results at swimmers from Niš. Predictor variables could predict criterion variables from 46% to 77%.
Results at swimmers from Sofia – Predictor variables could predict criterion variables from 15% to 63%.
Discussion
According results, it could be concluded that the same set of variables have different influence on crawl swimming sprint performance on different samples.

Introduction

With the help of the international biological programme it is possible to do research by means of anthropometrics in the field of morphological characteristics of man. Four latent anthropometric dimensions and body mass are mainly measured in scientific and other measurements: Longitudinal dimensionality of the skeleton, Transfersal dimensionality of the skeleton, Circular dimensionality and body mass, and Adiposity of the body (subcutaneous fat tissue).

The longitudinal dimensionality of the skeleton is responsible for the growth of bones in length and for all longitudinal (linear) measures, regardless of the bones of either vertical or horizontal planes. The transversal dimensionality of the skeleton is responsible for the growth of the skeleton in width, especially joints, and the pelvic and shoulder bones. Volume and body mass are defined by the mass of the body and its limitations in size. External factors mainly exert some greater influence on this dimension among which the systematic physical exercise is emphasized. Subcutaneous fat tissue is responsible for all the degrees of skin wrinkling. External factors mainly exert influence on it, primarily dieting, then the systematic physical exercise and the life regime. Internal factors exert some lesser influence.

Motor abilities form the basis of all movements (commotion) of man. They are divided into basic and specific motor abilities. Zaciorski (1975) has through research emphasized seven physical characteristics of man (strength, speed, stamina, coordination, balance, precision and mobility) and within each defined several forms of their manifestation.

Nevertheless, two important biological mechanisms must be taken into account because they reflect the essence of the source of differences among individuals. These are the processes of homeostasis and adaptation. From the biochemichal and physiological aspects homeostssis means balancing the biochemical and physio-chemical stability of the environment: the organism and its organs. All internal organs and tissues with their functioning affect balancing the stability of basic physiological functions, which is stable or should vary within the limits. Any physiological or physical influence can bring about the disbalance of homeostasis.

Adaptation is a reaction of the organism to defferent disturbances of homeostasis. Depending on the type of disturbances of the organism it adapts its functions to new conditions. Then come the changes within the organism which bring it to a new level of homeostasis. The adaptation is always specific (Milišić, 2003).

Subject and Aim of Research

The whole sports activity regardless of the type of sport is based on the common efforts of sportsmen/women and the teams of experts to achieve success.

The relation between motor and functional abilities and motor information (skills) with different ages are always multidimensional and complex. It is considered that the high level of motor abilities is the basic prerequisite for the efficient learning of new motor structures, their development and successful usage. In a training process a dominant aim is the transformation of motor and functional abilities.

Swimming represents a mobile activity directed towards maintaining the body on and moving through water by means of motor manifestations of cyclic and acyclic type. Since it is performed in the specific surrounding, water, which possesses some specific physical characteristics which differently affect the organism and body movement, this all adds to the complexity of this mobile activity.

The movement of the body through water is on one hand possible due to the specific character of this medium, but on the other hand this specific character produces the effect of inhibition. Water also makes the visual evaluation of a swimming technique difficult. Forces who negatively or positively affect the forward body movement are even today in the limelight of trainers and researchers with the aim of describing their effects and at the same time searching for the most complete way by means of which negative factors could be eliminated, excluded or their negative effect could be lessened (Kamenov, 1999; Hanulah & Thornton, 2001; Maglischo, 2003; Tella et al., 2003).

The subject of this research are anthropometric characteristics, the motor and functional abilities of swimmers. **The basic aim** of this research is to establish the connectedness of some anthropological dimensions of swimmers and the speed of swimming at 50m and 400 m by crawl.

Methods

The sample of examinees included 13 swimmers from SC 'NSA' from Sofia and 11 swimmers from SC 'Niš 2005' from Niš. The sample of variables included the battery of 11 tests. The speed of swimming was evaluated according to 5 variables: 50 m crawl, the first 25 m and the second 25 m within 50 m, the difference in percents between the first and the second 25 m and 400 m crawl.
Flexibility was evaluated by tests for the evaluation of the mobility of shoulders – the retroflection of arms and by tests for the evaluation of the mobility of the back thigh muscles – the starting position with the hands touching the starting block.
The data about the height and weight of the body, the year of birth and age were collected as anthropometric measures.

Description of tests and measuring technique

The height of the body and the weight of the body was measured by the anthropometer according to Martin (Madić et al., 2004).
The speed of swimming 50 m, the passing time at 25 m and 400 m was measured by the stopwatch.
The retroflection of arms- from the prone lying position (nose touching the surface) arms are maximally stretched out in front and upwards. The distance from hands to the surface is measured in centimetres.
The starting position with the hands touching the starting block- an examinee stands with the legs in the parallel position on the 40 centimetre high block with a wooden 60 centimetre long tape measure vertically adjusted to it with a clearly marked scale graduation. The head of the tape measure, the zero point, is up 20 cm leveled with the block and the end of the measure is on the surface. While in the starting position (without knee bending), an examinee should touch the measure as further as he can. He has the right to two attempts. In order for the result to be read, he has to hold the final position for a moment.

Methods of data processing

Basic statistical parameters were used to establish the level in the space of manifestations of the examined anthropological dimensions of swimmers: arithmetic mean, (X), standard deviation (SD), minimum (Min) and maximum (Max) value, standard error of arithmetic mean (SX), coefficient of variance (CV).
The analysis of correlation and the multidimensional regression analysis were used to establish the influence of some dimensions of an anthropological status.
By means of the analysis of correlation and based on Person's coefficient of linear correlation (R) the influence of particular variables in manifestations on the set of dependent variables (speed of swimming) was established. By means of the regression analysis the coefficients of regression models (B) were calculated for the prediction of expected results for the speed of swimming on the basis of the variables in the space of manifestations.

Results with discussion

Table 1. SWIMMERS FROM NIŠ - Descriptive statistics

	50m	***25m-1***	***25m-2***	***% 1,2m***	***400m***	***retrofl.of shoul.***	***start. pos.***	***height***	***weight***	***age***
Mean	31.96	14.04	15.20	0.92	353.27	25.64	-7.73	173.91	63.96	16.36
SD	5.94	1.29	1.34	0.03	42.50	6.26	9.27	10.54	12.66	2.96
Min	26.73	12.13	12.64	0.87	310.00	16.00	-30.00	156.00	50.00	13.00
Max	50.00	16.20	17.00	0.97	421.00	33.00	5.00	189.00	87.60	21.00
SE Mean	1.79	0.39	0.40	0.01	12.82	1.89	2.80	3.18	3.82	0.89
cV %	19%	9%	9%	3%	12%	24%	-120%	6%	20%	18%

Table 2. Correlations

Correlations						
	retrofl.of shoul.	**start. pos.**	**height**	**weight**	**age**	**years**
50M	-0.57888	0.280999	-0.78119	-0.67608	-0.80901	0.809013
25m-1	-0.44381	0.165488	-0.70730	-0.59294	-0.77555	0.77555
25m-2	-0.32376	0.085147	-0.67931	-0.55588	-0.73436	0.734361
% 1,2 (50m)	-0.32568	0.226345	-0.13495	-0.15641	-0.18009	0.180093
400m	-0.48817	0.374102	-0.72960	-0.63604	-0.79927	0.799272

From Table 2. it can be maintained that the speed of swimming statistically relevantly correlates with the height, weight and age of swimmers. The retroflection of the shoulder region shows a statistically relevant correlation with the speed of swimming 50 m. The variable for the evaluation of the flexibility of the back thigh muscles (starting position with hands touching the surface) does not show any statistically relevant correlation with the speed of swimming.

Table 3. Regression Summary for Dependent Variable: 50m; R^2=0.75 (75%)

	BETA	**St. Err. of BETA**	**B**	**St. Err. of B**	**T (5)**	**p-level**
Intercpt			40.66904	25.76567	1.578420	0.175301
retrofl.of shoul.	-0.34336	0.377683	-0.137240	0.150964	-0.909120	0.404979
start. pos.	-0.06634	0.433185	-0.017890	0.1168	-0.153150	0.884266
Height	0.069194	0.871203	0.016411	0.206623	0.079424	0.939776
Weight	0.816996	1.086504	0.161382	0.214619	0.751949	0.485951
Age	-1.458700	1.324100	-1.231280	1.117663	-1.101650	0.320797

Table 4. Regression Summary for Dependent Variable: 400m; R^2=0.87

	BETA	**St. Err. of BETA**	**B**	**St. Err. of B**	**T (5)**	**p-level**
Intercpt			-70.84090	321.621	-0.220260	0.834378
retrofl.of shoul.	-0.530050	0.277372	-3.601070	1.884415	-1.910970	0.114244
start. pos.	0.603588	0.318133	2.766153	1.457956	1.897281	0.116268
Height	1.204684	0.639816	4.856225	2.579176	1.882859	0.118441
Weight	2.285494	0.797935	7.673321	2.678988	2.864261	0.035230
Age	-3.397190	0.972427	-48.73910	13.95127	-3.493520	0.017405

On the basis of Table 3 and 4 it can be established that the obtained coefficients of regression models can be used to estimate the monitored speed of swimming with a definite percentage of the common variance. The host of variables in manifestations with 87 % and 75 % out of the defined variance has the greatest predicting power (prognosis) with the speed of swimming 400 m and 50m by crawl, respectively.

Table 5. SWIMMERS FROM SOFIA - Descriptive statistics

	50m	*25m-1*	*25m-2*	*% 1,2m*	*400kr*	*retrofl.of shoul.*	*start. pos.*	*height*	*weight*	*age*
Mean	31.44	14.04	14.83	94.67	295.83	32.69	24.62	167.42	58.80	14.46
St.Deviation	2.71	1.14	1.10	1.85	21.21	43.64	5.80	4.93	6.18	1.50
Min	28.13	12.84	13.34	91.38	256.06	10.00	12.00	160.60	45.00	13.00
Max	36.38	16.07	16.75	97.58	323.54	180.00	36.00	178.00	68.60	17.00
SE Mean	0.75	0.32	0.31	0.51	5.88	12.10	1.61	1.37	1.72	0.42
cV%	9%	8%	7%	2%	7%	133%	24%	3%	11%	10%

Table 6. Correlations

	retrofl.of shoul.	**start. pos.**	**height**	**weight**	**age**	**years**
50m	-0.140870	0.072527	0.117092	0.031547	0.36424	-0.36424
25m-1	-0.222240	0.214479	0.214496	0.057401	0.331738	-0.33174
25m-2	-0.112850	0.096034	0.118820	-0.022890	0.255901	-0.25590
% 1,2 (50m)	-0.521260	0.538435	0.440337	0.326289	0.438401	-0.43840
400m	0.281808	0.451227	0.050374	0.152312	0.158580	-0.15858

Table 7. Regression Summary for Dependent Variable: 50m; R^2=0.18

	BETA	**St. Err. of BETA**	**B**	**St. Err. of B**	**T (5)**	**p-level**
Intercpt			19.87877	48.26194	0.411893	0.692738
retrofl.of shoul.	0.076255	0.399795	0.004729	0.024795	0.190734	0.854147
start. pos.	0.183875	0.379282	0.08583	0.177042	0.484798	0.642622
Height	0.042221	0.690801	0.023159	0.378917	0.061119	0.952973
Weight	-0.315260	0.693567	-0.137980	0.303565	-0.454550	0.663196
Age	0.518157	0.461564	0.935266	0.833116	1.122612	0.298626

Table 8. Regression Summary for Dependent Variable: 400m; R^2=0.46

	BETA	**St. Err. of BETA**	**B**	**St. Err. of B**	**T (5)**	**p-level**
Intercpt			300.1635	308.7135	0.972304	0.363291
retrofl.of shoul.	0.488759	0.326303	0.237570	0.158605	1.497870	0.177837
start. pos.	0.604136	0.309560	2.210127	1.132472	1.951595	0.091951
Height	-0.194020	0.563814	-0.834090	2.423791	-0.344120	0.740859
Weight	-0.177880	0.566071	-0.610180	1.941790	-0.314230	0.762501
Age	0.532896	0.376716	7.538488	5.329128	1.414582	0.200096

On the basis of Tables from 6 to 8 it can be maintained that the obtained coefficients of regression models can, with a definite percentage of the common variance, estimate the monitored speed of swimming. The host of variables in manifestations with 46 % and 18 % out of the defined variance has the small predicting power (prognosis) with the speed of swimming 400 m and 50m by crawl, respectively.

Conclusion

From Tables 1 and 8 it can be stated that swimmers from Sofia are younger, shorter, lighter and master with swimming 400 m by crawl which means that they are on the higher level of abilities conncted with the aero-anaerobic stamina in comparison with swimmers from Niš.

According to the obtained results it can be concluded that the same set of variables differently affects the evaluation of the speed of swimming (Okičić et al., 2004). With swimmers from the club from Niš the chosen set of variables has a high power of prediction for the speed os swimming. On the other hand, with swimmers from Sofia the same set did not prove to be as powerful in predicting.

On the basis of all this it can be maintained that in order to analyze, monitor and control the state of swimmers from Sofia being trained, the means and method which belong to the area of specific procedures are needed since swimmers from Sofia are on the much higher level of completed training (Okičić, 1999).

Parameters related to the spacial and temporal characteristics of swimming may have a greater predicting power since they would provide information about the tempo and rate of a stroke as well as the length of swimmer's pace. Also, tests for the evaluation of the aero-anaerobic abilities may provide a greater power of prediction (Rodrigez & Mader, 2003).

The results of this work may be significant for swimming and water-polo schools within which children are selected after the completed training of non-swimmers and the school of swimming in order forthem to be included in the process of training.

The theoretical application of the results is present in the way that it can be compared with the results of other authors.

All the data were subjected to universal statistical operations, also in the sense to initiate further research, by means of which complex conclusions could be reached from the enormous corpus of problems connected with adaptive changes under the influence of the involvement in swimming for several years.

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Evolution of Somatic Indices, Physical and Techniques a Team of Football Players With Children Aged 10-12 Years

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Abstract

The paper aims to determine indicators of somatic development, physical and techniques over a two years to a group of football players with children aged 10-12 years.

Introduction

We want to see how the improvement of training at this age may lead to further positive development of children. We believe that the improvement of training can significantly increase the level of physical indicators and techniques to a group of children 10-12 years.

Methods

In order to prepare our study we fixed the following tasks:

• developing and implementing an operating system level football player aged 7-8 years

• development and application of battery of tests to check the preparedness of the group (Waist; Weight; Speed - 10.20, 3x10 m; driving the ball race 32 meters; Long jump instead of; Ups; Keeping the ball in the air strikes with both legs alternative; Shoot bears in the area fixed. The player drives the ball and şutează from 10 meters to bear the full. Must shoot over to the gate (gate size of 5 / 2 meters); Care on aisle. Care on aisle (10 executions). It traces a long corridor of 15 meters and width of 15 meters. The player must hit the ball across and to send from one part to another corridor

• data collection and interpretation of our research and verify the effectiveness of applied

The data were collected at the beginning and at the end of the study period, and showed significant ($p< 0,01$, $p< 0,0005$) greater gains for experimental group.

Discussion and Conclusions

The comparisations made in the group regarding the technical performance shown up the differences between the initial test and the final test on all the technical data tested.

Comparisons made within the group as regards somatic performance, physical and technical have highlighted significant differences between tests(the initial test and the final, $p <0,0005$). We believe that progress is due to the means used by our practice. Significantly better results obtained by children from these tests confirm the hypothesis came to work.

Keywords: football, kids, evolution, somatic indices, and physical techniques Purpose.

The paper aims to determine how they evolved some somatic indices, and physical techniques over 2 years to a group of football players with children aged 10-12 years. We want to see if the training used in this period led to significant improvements in indices of these children tested.
Hypothesis. We believe that based on modern methods of training, effective use and taking into account the particularities of age can significantly improve the level of somatic indices, and physical techniques to a group of children of 10-12 years.
Task. In order to prepare our study we fixed the following tasks:
* developing and implementing a system of operation at the football players aged 10-12 years
* development and application of battery of tests to check the preparedness of the group
* collection and interpretation our research data and verifying the effectiveness of applied research methods.
Methods for investigating In our research we have used a number of known methods for investigating the parameters tested. Proposed to solve the tasks we used the following methods: analysis of literature, teaching observation, test method; educational experiment; statistico-mathematical method.
Contents of the experiment. The experiment was conducted at FC Farul Constanta group of children born in 1997. Group selection was made during 2004 and during the conduct of the experiment were conducted over 400 training. In this experiment, 12 children participated. Throughout the period of the experiment (February 2007 - February 2009) were performed on average every 4 practices per week. The presence of children in the training group was over 85%. In the experiment group of children were subjected to somatic testing, technical and physical (size, weight, speed 10,20,3 x 10 m, driving the ball in speed, length of the lift in place, push-ups, keeping the ball in the air alternative strikes with both legs, Sut the fixed area, the care aisle).

Tests.

1. Waist
2. Weight
3. Speed - 10.20, 3x10 m, driving the ball race 32 meters
4. Long jump instead of
5. Ups
6. Keeping the ball in the air strikes with both legs alternative
7. Sut bears in the area fixed. The player drives the ball and şutează from 10 meters to bear the full Siret. Must şuteze over to the gate (gate size of 5 / 2 meters).
8. Care on aisle. Care on aisle (10 executions). It traces a long corridor of 15 meters and width of 1.5 meters. The player must hit the ball across and to send from one part to another color.

Please note that training took place outdoors (synthetic field). In the training we used: - exercises for developing speed of reaction, movement and coordination (10 minutes / 3 times per week) - ways of driving the ball with a foot (10 minutes / 3 times per week) - ways improve the sense and control the ball (5 min. / antra.) - exercises transmission and retrieval of the ball across the (3 per week, 20 min.) - exercises for striking the ball with full Siret (3 per week, each 15 minute)

Results obtained.

Table nr.1

Nr. Crt	Name and surname	Waist		Weight	
		February 2007	February 2009	February 2007	February 2009
1	**MARALOI M.**	131	138,5	26,5	31,7
2	**LAZAR D.**	135	145	27,5	34,1
3	**ROGOZA V.**	145,5	157,5	35,7	43,7
4	**NEDELCU D.**	146	155	33,4	39,4
5	**CONSTANTIN L.**	137	146	34,3	39,5
6	**MANOLE M.**	136,5	142,5	26,8	31,4
7	**BARBU D.**	145	153	36,7	43,4
8	**IANI A.**	140	148,5	32,4	36,9
9	**BENGHEA C.**	141,5	150	30,5	36,5
10	**ANGHEL B.**	142,5	148	33,6	37,3
11	**FIMNIU T.**	138	144,5	36,3	42,4
12	**NEAGU A.**	134	141	26,4	30,7
	X+ DS	**139,33+ 4,87**	**147,45+ 5,71**	**31,67 + 3,97**	**37,25+ 4,61**
	CV	**3,5**	**3,87**	**12,56**	**12,38**
	t		**15,45 (a)**		**15,83 (b)**
	p		**< 0,005**		**< 0,005**

(a), (b) - significantly different from February 2007 (p< 0,0005)

Table nr.2

Nr. Crt	Name and surname	Long jump instead of		Speed **10m**		Speed **20m**	
		Feb. 2007	**Feb 2009**	**Feb. 2007**	**Feb 2009**	**Feb 2007**	**Feb 2009**
1	**MARALOI M.**	133	145	2,35	2,20	3,80	3,70
2	**LAZAR D.**	140	150	2,21	2,02	3,96	3,83
3	**ROGOZA V.**	155	170	2,05	1,88	3,48	3,33
4	**NEDELCU D.**	150	160	2,21	2,11	3,58	3,48
5	**CONSTANTIN L.**	150	160	2,31	2,21	4,16	4,02
6	**MANOLE M.**	160	170	2,25	2,15	3,76	3,65
7	**BARBU D.**	150	160	2,41	2,30	4,02	3,92
8	**IANI A.**	140	150	2,40	2,28	3,96	3,84
9	**BENGHEA C.**	145	155	2,38	2,28	4,02	3,90
10	**ANGHEL B.**	145	160	2,36	2,25	3,94	3,82
11	**FIMNIU T.**	120	135	2,43	2,33	4,12	4,01
12	**NEAGU A.**	140	155	2,43	2,30	3,85	3,77
	X+ DS	**144+10,58**	**155,83 +9,96**	**2,31+ 0,11**	**2,19+ 0,13**	**3,88 +0,20**	**3,77+ 0,20**
	CV	**7,34**	**6,39**	**4,96**	**6,11**	**5,27**	**5,46**
	T		**17,03(c)**		**13,85 (d)**		**20,63 (e)**
	P		**< 0,0005**				

(c), (d), (e), - significantly different from February 2007 (p< 0,0005)

Table nr. 3

Nr. Crt	Name and surname	Ups		Speed **3 x 10m**		Driving the ball race 32 m	
		Feb. 2007	**Feb 2009**	**Feb. 2007**	**Feb 2009**	**Feb. 2007**	**Feb. 2009**
1	**MARALOI M.**	18	24	8,12	8,00	7,80	7,68
2	**LAZAR D.**	32	44	8,18	8,11	7,86	7,70
3	**ROGOZA V.**	30	44	7,48	7,33	7,43	7,30
4	**NEDELCU D.**	11	15	7,52	7,43	7,37	7,27
5	**CONSTANTIN L.**	20	26	7,90	7,78	8,43	8,31
6	**MANOLE M.**	23	29	8,08	7,92	7,72	7,60
7	**BARBU D.**	7	12	8,14	8,01	7,75	7,64
8	**IANI A.**	24	32	8,46	8,38	7,66	7,56
9	**BENGHEA C.**	20	26	8,28	8,18	7,96	7,82
10	**ANGHEL B.**	25	32	8,00	7,84	8,12	8,00
11	**FIMNIU T.**	1	5	9,50	9,40	8,08	7,96
12	**NEAGU A.**	25	29	8,39	8,28	8,11	8,03
	X± DS	**19,66± 9,20**	**26,5± 11,66**	**8,17± 0,51**	**8,05 ± 0,52**	**7,85 ± 0,30**	**7,73± 0,30**
	CV	**46,82**	**44,02**	**6,31**	**6,53**	**3,86**	**3,91**
	t		**7,49(f)**		**13,38(g)**		**20,11(h)**
	p		**< 0,0005**		**< 0,0005**		**< 0,0005**

(f), (g), (h), - significantly different from February 2007 ($p < 0,0005$)

Table nr.4

Nr. Crt	Name and surname	Keeping the ball in the air strikes with both legs alternative	Keeping the ball in the air strikes with both legs alternative	Keeping the ball in the air strikes with both legs alternative
		Test 1 February **2007**	**Test 2** February **2008**	**Test 3** February **2009**
1	**MARALOI M.**	77	88	125
2	**LAZAR D.**	153	166	188
3	**ROGOZA V.**	35	55	80
4	**NEDELCU D.**	314	355	400
5	**CONSTANTIN L.**	36	55	88
6	**MANOLE M.**	32	58	80
7	**BARBU D.**	110	132	144
8	**IANI A.**	75	88	94
9	**BENGHEA C.**	65	75	86
10	**ANGHEL B.**	22	40	58
11	**FIMNIU T.**	121	133	145
12	**NEAGU A.**	56	77	99
	X± DS	**91,33±80,67**	**110,16± 85,87**	**132,25 ±91,84**
	CV	**88,32**	**77,94**	**69,44**
	t			**7,89(i)**
	p			**< 0,0005**

(i) - significantly different from test 1 ($p < 0,0005$)

Table nr. 5

Nr. crt	Name and surname	Sut bears in the area fixed.	Sut bears in the area fixed.	Sut bears in the area fixed.
		Test 1 February **2007**	**Test 2** February **2008**	**Test 2** February **2009**
1	**MARALOI M.**	5	6	8
2	**LAZAR D.**	10	10	10
3	**ROGOZA V.**	6	8	9
4	**NEDELCU D.**	10	10	10
5	**CONSTANTIN L.**	8	9	9
6	**MANOLE M.**	6	7	8
7	**BARBU D.**	5	7	10
8	**IANI A.**	7	8	9
9	**BENGHEA C.**	5	7	8
10	**ANGHEL B.**	5	7	7
11	**FIMNIU T.**	5	6	7
12	**NEAGU A.**	5	7	8
	X+ DS	6,41+**1,92**	**7,66+1,37**	**8,58+ 1,08**
	CV	**30,06**	**17,88**	**12,63**
	t			**5,34 (j)**
	p			**p< 0,0005**

(j) significantly different from test 1 (p< 0,0005)

Table nr. 6

Nr.crt.	Name and surname	Care on aisle	Care on aisle
		Testarea 1 February **2007**	**Testarea 2** February **2009**
1	**MARALOI M.**	6	9
2	**LAZAR D.**	9	10
3	**ROGOZA V.**	6	9
4	**NEDELCU D.**	9	10
5	**CONSTANTIN L.**	7	8
6	**MANOLE M.**	5	8
7	**BARBU D.**	5	8
8	**IANI A.**	5	8
9	**BENGHEA C.**	5	7
10	**ANGHEL B.**	4	6
11	**FIMNIU T.**	5	7
12	**NEAGU A.**	5	7
	X+ DS	**5,91+ 1,62**	**8,08 1,24**
	CV	**27,39**	**15,34**
	t		**8,99(k)**
	p		**p< 0,0005**

(k) significantly different from test 1 (p< 0,0005)

Waist interpretation results.

1. **Height .** When measuring height is observed that there are significant differences between tests (February 2007-February 2009, t = 15.45, p <0.0005) due to increased normal aspect older. The coefficient of variance (3.87), indicating a homogeneous group in this parameter.
2. **The weight** measurement weight is observed that there are significant differences between tests (February 2007-February 2009, t = 15.83, p <0.0005) due to appearance normal increase in age. The coefficient of variance (12.38), indicating an average homogeneity within the group.

3. **Long jump.** When this parameter is a good evolution of the results between tests. From Table 2 notes that there are significant differences between tests ($t = 17.03$, $p < 0.0005$). The coefficient of variance (6.39) indicates a homogeneous group.
4. **Speed 10m**. At this year players were able to progress between the two tests. It notes that the testing results of 2009 are significantly better than testareadin 2007. ($p < 0.0005$, table 2)
5. **Speed 20m.** At this year players were able to progress between the two tests. It notes that the testing results of 2009 are significantly better than testareadin 2007. ($p < 0.0005$, table 2)
6. **3x10m speed.** At this year players were able to progress between the two tests. It notes that the testing results of 2009 are significantly better than testareadin 2007. ($t = 13.38$, $p < 0.0005$, table No. 3)
7. **Push-ups.** Also, this parameter is a good evolution of the results between tests. In Table 3 is observed that this year there are significant differences between tests ($p < 0.0005$). The coefficient of variance (44.02) shows a lack of homogeneity within the group.
8. **Management in ball speed -32 meters.** At this year players were able to progress between the two tests. It notes that the testing results of 2009 are significantly better than testareadin 2007. ($T = 20.11$, $p < 0.0005$, table No. 3)
9. **Keeping the ball with both feet alternately**. Also, this exercise is a good evolution of the results between tests. In Table 4 is observed that there are significant differences, the players have progressed significantly between tests ($t = 7.89$, $p < 0.0005$). The coefficient of variance (69.44) shows a lack of homogeneity within the group.
10. **Sut fixed in the area.** Also, the exercise in Sut in a fixed area is a good evolution of the results between tests. In Table 5 is observed that this year there are significant differences, the players have progressed significantly between tests ($t = 5.34$, $p < 0.0005$). The coefficient of variance testing 1 shows a group scratchy. Testing of the 2009 rate (12.63) indicates an average homogeneity within the group.
11. **Care on aisle.** To exercise care on the corridor, the players have managed to progress between the two tests. It notes that results of testing 2 are significantly better than in test 1. ($t = 8.99$, $p < 0001$, Table No.6), the homogeneity of the group is testing the average 2.

Conclusions

Comparisons made within the group as regards somatic performance, physical and technical have highlighted significant differences between tests(the initial test and the final). We believe that progress is due to the means used by our practice. Significantly better results obtained by children from these tests confirm the hypothesis came to work.

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Influence of Individual Programmed Exercise and Nutrition on the Body Composition of Student Population

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Abstract

Introduction

Obesity creates a great problem of modern people and students too. The fundamental aim of exercise and nutrition of fat people (BMI over 30) is the reduction of fat deposits. The programs based on performance of aerobic activities, beside the reduction of body fats, cause the reduction of muscular mass (1, 2) as well. However, large number of students who are considered to have excessive body mass (BMI from 25 to 30) or even optimal body mass (BMI from 20 to 25) wish to improve their body status, that is to reduce as much as possible body fats, but maintaining or increasing at the same time, the absolute amount of muscular mass. This research has checked a specially designed exercise program for that purpose.

Methods

Body composition was determined to 11 male students (age 23,91 ± 1,70 years; body height 181,06 ± 4,38 cm) based on the equations of the program according to Mateigiki. The anthropometric variables were measured according to the International Biologic program, in standardized conditions. The energetic and nutritive requirements of each student were determined pursuant to the body composition and knowledge on their life and exercise regime. Upon the interview regarding the eating habits, a diet was created, aimed at reducing body mass, which contained daily energetic deficit of approximately 2 g/kg of the body mass. The structure of energetic input amounted to CHO/proteins/lipids: 60-65%/20-25%/15%. The testing of strength of all important muscle groups was performed by determining MR 10 (maximum repetitions 10). Based on the sex and age, the intensity zone was determined, in which heart frequency will range during the exercises on cardio equipment. The experimental program lasted three months; the trainings were 4 times per week, the duration of a single training session ranged from 90/120 minutes (warm-up 10-15 minutes, strength exercises 60-70 minutes, aerobic exercises 15-30 minutes, stretching 5 minutes). The final measurement of body composition was done after three months of the program.

Results

Three months after exercising, statistically significant changes of body composition were recorded. The body weight was reduced on average for 4kg. The body fat was reduced on average for 8,2kg. Therefore the relative amount of body fat was reduced for 9%. Muscular mass was increased in the absolute amount for 1,9kg. That, together with the reduction of body weight, caused the relative increase of muscular mass for 4.7%.

Discussion/Conclusion

The results show that the experimental program accompanied with the adequate nutrition regime, gave the desired effects: reduction of body fats while increasing the muscular mass. The reduction of body weight of 4kg for three months is very significant when considered as a result of increase of muscular mass of about 1,9kg and reduction of body fats of even 8kg. The important change of body composition was recorded: muscular mass increased for almost 5% and fat tissue reduced for 9%. The increase of muscular mass was due to important role of strength exercises in the experimental program; fat reduction was mostly due to the aerobic part of the training; while certain significance certainly belongs to nutrition regime with relatively great amounts of proteins and little fats. The results show that people of average weight should primarily work on qualitative modifications (change of body composition), and not only on quantitative reductions (reduction of body mass). Therefore recreational programs must be complex and combined: exercises of aerobic endurance and strength exercises, which do not cause undesired reduction of muscular mass. (3)

Introduction

Obesity creates a great problem of modern people and students' population as well. The fundamental aim of exercise and nutrition of fat people (BMI over 30) is mostly the reduction of body mass, but we think that better goal is reduction of fat deposits, accompanied with preservation or if possible with increase of muscular mass.

There are few data which could use as a conclusion that sole increase of physical activity is as efficient as the restriction of energetic intake for body mass reduction in obese and people with increased body mass (Jakicic et al., 2001). It is similar for healthy persons who want to improve their body composition and influence positively their health. Aerobic exercises without energy restriction improve cardiovascular fitness and body composition depending on the doze of applied exercises.

Aerobic exercises lead to drop of body fats and increase or at least prevention of significant loss of metabolic activity LBM (lean body mass). The drop of metabolic activity LBM, as a rule occurs in cases of dietary restriction which is not combined with exercise program.

Sufficient quantity of aerobic exercise of moderate intensity (55-70% of max heart rate) shall favorably affect body mass. The scientific data, to support necessity of much stronger exercise forms (≥ 70% max heart rate) aimed at reduction and preservation of body mass in long term are limited (Jakicic et al., 2001).

But programs based only on performance of aerobic activities, beside the reduction of body fats, sometimes cause the reduction of muscular mass as well (Stojiljkovic, 2005; Oskai, 1975).

Reduction of body mass can be achieved also by reduction of caloric intake, but that is not the best way. Caloric deficit in a body, unfortunately, is not compensated only from the fat deposits, but certain percentage of caloric deficit is made up from proteins. Pursuant certain data 45-50% of caloric deficit is made up form proteins, i.e. muscles (Oskai, 1975; Henry, 1996). That means, if daily caloric deficit is 500 cal, slightly more than 200 calories are made up from proteins, which leads to a loss of about 50 grams of muscle mass daily (Stojiljković et al., 2005). Except from an obvious loss of power (less muscle mass = less power), which is always bad, there are another three negative consequences of muscle mass reduction:

- Decrease of basal metabolism: the muscles have higher level of basal metabolism than fats. Therefore: less muscles = lower level of basal metabolism = slowed losing of body mass.
- The ability of fat burning is reduced: in the course of work (of certain intensity and duration) fats within muscle cells transform into energy – greater quantity of muscles can burn greater quantity of fats.
- The level of testosterone is reduced, and the testosterone influences faster fat burning.

Due to the aforesaid and some other reasons, no wonder that research data pointed out the fact that over 50% of subjects who reduced their body mass, only by a dietary restriction, cannot manage to maintain the newly established state (Donnelly & Smith, 2005). The establishment of new life style is surely necessary for long lasting favorable effects.

Nowadays, it is completely clear that preservation of LBM (lean body mass), and therefore preservation of RMR (resting metabolic rate) is a precondition for preservation of reduced body mass (Lockwood et al., 2008; Stiegler & Cunliffe, 2006). LBM is of heterogeneous structure, but mostly composed of muscle mass. Skeleton muscles are primary for metabolic consumption of glucose and triglycerides as well as a significant RMR determiner. Muscular power is inversely related to all death causes and prevalence of metabolic syndrome, regardless of the cardiovascular fitness level.

In the procedure of body mass reduction and improvement of body composition, two main factors to favorably influence preservation and/or increase of muscle mass are application of resistance training – RT and dietary composition of macronutrients, with preserved high intake of proteins (not less than 1.5 g/kg body mass) (Lockwood et al., 2008).

Additionally it is very important to keep the reduction of overall energy intake within the limits of optimal (approximately 20% or deficit of 500 -1000 kcal/day). Very low calorie diets (<800 $kcal.d^{-1}$) are applied today in justified medical indications. The contents of macronutrients in the diet shall influence body mass only if simultaneously there is a reduction of overall energy intake. It is clear that reduction of diet fats to ≤30% of overall energy intake shall affect body mass and risk factors, such as hypercholesterolemia (Jakicic et al., 2001). Although the influence of proteins on termogeneous effect is known as well as feeling of satiety, the significance of macronutrient composition on body mass reduction is still not clear. Therefore, further research is needed in this respect.

It is considered that high termogeneous effect of proteins (energy price of nutritive absorption, processing and depositing of proteins) – around 30%, favorably affects RMR and satiety feeling (Lockwood et al., 2008;

Stiegler & Cunliffe, 2006). Diet proteins are necessary for syntheses in skeletal muscles, and the increase of intake can improve nitrogen retention and muscular hypertrophy. Therefore, protein supplementation is often used in power sports for accumulation and preservation of muscle mass.
Higher intensity of exercises, present in power exercises, can cause the desired changes in body composition. Resistance training shows the desired result which is manifested in body composition and in RMR. Hard resistance training is a potent stimulus of acute growth of anabolic hormones (testosterone, growth hormone and IGF-1) in young males (Bradley, Scoville & Sheehan, 2002). This way the effects of such trainings on muscle mass and RMR can be explained.
The usual forms of aerobic exercise are superior for body mass reduction, but good combination and adequate dosage of aerobic and resistance training should, beside the reduction of body fats, improve muscular strength and endurance, which is a special benefit that can lead to adaptation to much more active life style in sedentary and obese persons (Jakicic et al., 2001).
Based on the aforesaid, it can be concluded that for improvement of body composition, it is best to combine increase of energy consumption by introduction of physical exercises (aerobic and power exercises) and reduction of energy intake by a certain diet (decrease fat intake to ≤30% of total energy intake; take at least 1,5g of proteins per kg of body mass).
However, large number of students who are considered to have excessive body mass (BMI from 25 to 30) or even optimal body mass (BMI from 20 to 25) wish to improve their body status, that is to reduce as much as possible body fats, but maintaining or increasing at the same time, the absolute amount of muscle mass. This research has checked a specially designed exercise program for that purpose.

Methods

Subject

The subject of this research is body composition and possibilities for its improvement in students' population. The aim of the research was to establish the effects of programmed exercises (aerobic and power exercises included) and high- protein and low-fat diet, to a body composition of male students.
Eleven sedentary male students (< 30 min. physical activity per week) volunteered to participate in this study (age 23.91 ± 1.70 years; body height 181.06 ± 4.38 cm; body mass 80.64 ± 10.24 kg). Only three of them were overweight (BMI ≥ 25), while others had normal body mass index (BMI = 20-25). Prior to the start of a 12-week program (PRE), participants visited the laboratory to complete all tests. The same measures were performed after 12 weeks of training (POST).
Each participant was assessed by routine medical screening for inclusion. None of the participants reported or exhibited: a history of medical or surgical events that may significantly affect the study outcome; use of any medicine that may significantly affect the study outcome; use of nutritional supplements, other than a multi-vitamin/mineral, in the four weeks prior to the start of the study; participation in another clinical trial or ingestion of another investigational product within four weeks prior to screening.

Measurements

All body composition assessments were performed on the same day. Participants were instructed to avoid exercise for at least 24 hours prior to testing. Body composition was determined based on the equations of the program according to Mateigiki (Eremija, 1997). The anthropometric variables were measured according to the International Biologic program, in standardized conditions. Body height (BH) was measured to the nearest 0.1 cm using a calibrated stadiometer; body mass (BM) was measured using a calibrated clinical scale to the nearest 0.01 kg.
The energetic and nutritive requirements of each student were determined pursuant to the body composition and knowledge on their life and exercise regime. Upon the interview regarding the eating habits, a low-fat/high-protein diet was created (about 1.5-2 g of proteins per 1 kg of body mass per day). Diet aimed at reducing body mass contained daily energetic deficit of approximately 500 kcal. The structure of energetic input amounted to CHO / proteins / lipids: 60% / 25% / 15%.
The testing of strength of all important muscle groups was performed by determining 10-repetition maximum (10RM). Each participant completed a familiarization session prior to testing. Testing began with a warm-up consisting of 10 repetitions at approximately 60% of the tester-estimated 10RM load. Following adequate rest of 2 to 3 minutes, weight was added and participants attempted 10 repetitions through the full range of motion. After each successful set, the weight was increased until subjects could no longer complete 10 repetitions. Participants rested for 2 to 3 minutes between sets.

Training protocol

The exercise program was designed using the experience from our earlier studies and American College of Sports Medicine (ACSM, 1998) recommended guidelines for apparently healthy adults. All participants were supervised and trained by certified trainer. The experimental program lasted 12 weeks. Training was performed three days per week in first for weeks, and four days per week in last eight weeks. Duration of a single training session ranged from 60-90 minutes in first four weeks and 90-120 minutes in last eight weeks (warm-up 10-15 minutes, resistance training 60-70 minutes, endurance training 15-30 minutes, stretching 5 minutes).

Resistance training in first four weeks was performed in form of "circuit" training. Participants completed 10-12 exercises that incorporated all major muscle groups. Participants completed 8-12 repetitions per exercise until volitional exhaustion. Each exercise was performed once per session in first week (one "circuit"). In second week participants completed two "circuit" and in 3rd and 4th weeks they completed three "circuit" on every session. From 5th to 12th weeks all major muscle groups were divided into two parts. Participants were practice leg muscles, back muscles and biceps of upper arm on Monday and Friday, and chest muscles, shoulders and triceps of upper arm on Wednesdays and Saturdays. Abdominal muscles were exercised at each workout. Weight was increased when participants performed 12 repetitions at the same resistance during two consecutive lifting sessions.

The experimental group had aerobic part of the program in compliance with the recommendations of recognized authorities (ACSM, 1998; Astrand, 1992; Jakicic et al., 2001), related to exercises of healthy adult persons aimed at cardiovascular health and correction of body composition. The type of activity was walking / running on a treadmill, frequency of activity: 3-4 times weekly, volume of activity at each individual training ranged from 15 to 30 minutes, and the intensity ranged from 55-70% of the maximum heart rate.

The progressive endurance training program used is summarized in table 1.

Table 1. **Endurance training protocol**

Week	Duration (min)	% Heart Rate Maximum
1	15	55 – 60
2	20	55 – 60
3	25	55 – 60
4	15	55 – 60
5	20	60 – 65
6	25	60 – 65
7	30	60 – 65
8	20	60 – 65
9	20	65 – 70
10	25	65 – 70
11	30	65 – 70
12	20	65 – 70

Statistical analyses

Two-Sample t-Test for Correlated Samples was used to identify any changes in body composition from PRE to POST. The level of significance was set at $p \leq 0.05$ (*) and $p \leq 0.01$ (**). Analyses were performed using VassarStats (web site for statistical computation).

Results

After 12 weeks of combined aerobic and resistance exercise and diet program, statistically significant changes of body composition were recorded (table 2). The body mass was reduced on average for 4 kg and

that caused the decrease of BMI for 1.25%. The body fat was reduced on average for 8.2 kg. Therefore the relative amount of body fat was reduced for 9 %. Muscle mass was increased in the absolute amount for 1.9 kg. That, together with the reduction of body mass, caused the relative increase of muscular mass for 4.7 %.

Table 2. **Changes in body composition from PRE to POST ($\bar{x}$ ± SE)**

	PRE	POST	change	t	p
Body mass (kg)	80.64 ± 10.24	76.59 ± 8.02	4.05	2.72	0.01078 *
BMI (kg/m^2)	24.61 ± 3.18	23.36 ± 2.35	1.25	2.71	0.01097 *
Fat mass (kg)	19.66 ± 8.95	11.43 ± 3.07	8.23	4.02	0.00122 **
Fat mass (%)	23.84 ± 7.72	14.85 ± 3.25	8.99	5.02	0.00026 **
Muscle mass (kg)	35.84 ± 4.43	37.70 ± 3.89	- 1.86	- 3.17	0.00499 **
Muscle mass (%)	44.59 ± 3.57	49.27 ± 3.35	- 4.68	- 8	< 0.0001 **

(PRE - prior to the start of the 12-week program; POST - after 12 weeks of training)

Discussion

As hypothesized, the results show that the experimental program consists of combined aerobic and resistance exercise accompanied with the adequate nutrition regime (high-protein/low-fat diet), gave the desired effects: reduction of body mass, BMI and body fats while increasing the muscle mass. The reduction of body mass of 4 kg (5 % of body mass) for three months is not so big, but it is very significant when considered as a result of increase of muscle mass of about 1,9 kg and reduction of body fats of even 8 kg. The important change of body composition was recorded: muscle mass increased for almost 5 % and fat tissue reduced for 9 %.

Recently, a relatively similar research was carried out by Lockwood et al. (2008) and after 10 weeks of training (resistance training 2 times per week and endurance training 3 times per week) and diet (with addition of food supplement – high-protein/low-carbohydrate/low-fat shakes 2 times per day) they obtained similar results: decrease of fat mass for 9.3 % and increase of muscle mass for 2.3 %. Stojiljković, S., Đorđević-Nikić, M. & Macura, M. (2005.) recorded significant changes of body composition after 12 weeks of combined diet and exercise program (resistance and endurance training 4 times a week). The body mass was reduced on average for 2.7 kg. The body fat was reduced on average for 6.1 kg (7.3 %). Muscle mass was increased for 2.4 kg (4.8 %).

Expectedly, significant improvements in cardiovascular fitness and strength were observed in students on training at the end of 12 weeks of combined training and diet (although those were not the subject of this study). Important factor for that is rise in muscle mass and reduction in fat mass. Lofgren et al. (2005) state that even modest changes in body mass (< 5 %), in response to increased physical activity and reduced energy intake, improves cardiovascular fitness as assessed by low-density lipoprotein (LDL) cholesterol. On the other hand the programs that are primarily directed at improvement of cardiovascular fitness and that are based on running without resistance training and diet, beside the improvement of aerobic abilities and spontaneous reduction of body fat, spontaneously cause also reduction of muscle mass, which even when it is not statistically significant, is still not desirable (Stojiljković & Mitić, 2006; Stojiljković et al., 2008).

The increase of muscle mass was due to important role of strength exercises in the experimental program (resistance training) but fat reduction was mostly due to the aerobic part of the training. Although the aerobic part of the training was not voluminous (up to 30 minutes), a favorable effect for fat reduction was achieved thanks to the fact that aerobic part of the training followed the resistance training: in that case fats are almost immediately included in energy production, because free fat acids have already been mobilized due to previous exercises.

Certain significance certainly belongs to nutrition regime with relatively great amounts of proteins and little fats. It has been well documented that, in absence of dieting, exercise elicits only minor effects on total body mass, despite significant improvements in cardiovascular fitness and strength (Garrow & Summerbell, 1995; Utter et al., 1998). Behavioral and metabolic compensatory events in response to exercise-induced increases in energy expenditure, may largely explain non-significant changes in body mass from some exercise-only studies (King et al., 2007).

Apart form the positive significance in construction of muscular mass, a relatively high quantity of proteins in nutrition probably contributed indirectly to decrease of body fat quantity. Namely, it is known that greater quantity of proteins in diet causes the effect of satiety (Astrup, 2005), so the subjects found it easier to follow the diet which meant a deficit of around 500 kcal daily. There are also researches showing that reduction of

fats and carbohydrates in nutrition, spontaneously leads to reduced overall caloric intake (Astrup et al., 2000; Dumesnil et al., 2001; Wood et al., 2006).
Layman et al. (2005) suggests that a hypocaloric diet with carbohydrate to protein ratio (in g/day) of 1.5 : 1.0 would be more effective in changing body composition than the 3.5 : 1.0 ratio currently recommended. In our study carbohydrate to protein ratio was 2.4 : 1.0. This diet, together with an appropriate exercise program gave satisfactory results. Even if we wanted, it is hard to make a diet with the proportion CHO : PRO 3.5 : 1.0 without use of food supplements, and in this research we did not have possibility to use them.
Another possible reason of successfulness of the diet implemented by the subjects for 12 weeks of training is that the number of daily meals was increased (from 3-4 which they had in everyday nutrition prior to the research, to 5 meals in the course of a day, for the duration of the research), while the size of individual meals was reduced. The reduced size of meals (expressed in kcal), as one of the reason of reduced daily energy intake, was reported by Egger (2006).

Conclusion

The complex 12-week experimental program consists of combined aerobic and resistance exercise (four times per week) accompanied with the adequate nutrition regime (high-protein/low-fat diet), gave the desired effects on body status of eleven male students with average body mass (BMI 24.6 kg/m^2). Statistically significant changes of body composition were recorded: reduction of body mass of 4 kg (5 %), reduction of fat mass of even 9 % and increased of muscle mass for almost 5 %.
The results of this study show that people of average body mass who want to improve their body status should primarily work on qualitative modifications (change of body composition), and not only on quantitative reductions (reduction of body mass). Therefore, recreational programs must be complex and combine resistance and aerobic endurance training and high-protein/low-fat diet, which cause decrease of body mass and fat mass and increase of muscle mass.

Key words: Strength training / Endurance training / Nutrition / Body composition

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