XXI International Scientific Congress
"Olympic Sport and Sport for All"

BOOK OF ABSTRACTS

Scientific Editors: A. Bołdak, M. Gałązka, M. Guszkowska, M. Lenartowicz

September 14-16, 2017
Warsaw, Poland

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Contents

WELCOME

Welcome address from the Prof. Andrzej Mastalerz

Rector of Józef Piłsudski University of Physical Education in Warsaw

Dear Congress Participants,

Józef Piłsudski University of Physical Education in Warsaw is proud to host XXI International Scientific Congress "Olympic Sport and Sport for All", which will be held on September 14-16, 2017.

We are happy to support International Association of the Physical Education and Sport Universities in developing cooperation between universities educating sport coaches PE teachers and other sport and PE specialists, promoting and disseminating scientific research results in sport sciences, both in highly competitive sport and in recreational sport for all.

XXI International Scientific Congress "Olympic Sport and Sport for All" enables exchange of both biomedical and social sciences research, teaching experiences and good practices in elite and recreational sport between academic and sport staff from Eastern and Western Europe, and around the world.

We believe that both our over 80 years long expertise in physical education, adapted physical education, sport studies, physical rehabilitation and experience in hosting international scientific meetings, including International Scientific Congresses on Modern Olympic Sport in 1999 and 2002, guarantee that XXI International Congress "Olympic Sport and Sport for All" will be a successful event.

You are warmly welcomed to Józef Piłsudski University of Physical Education and Warsaw!

Welcome address from the Prof. Kairat Zakiryanov

President of International Association of Physical Education and Sport Universities

Dear participants and guests!

On behalf of the International Association of Physical Education and Sport Universities, I would like to congratulate and express the best wishes to all participants of the XXI International Scientific Congress "Olympic Sport and Sport for All".

In recent years with the growth publicity of society to health and physical exercises, the interest in sport has also increased. Public consciousness of healthy lifestyle benefit, which includes sport and physical culture, has more arisen from joint efforts of the elite athletes and research scientists, studying their achievements.

The Congress subject is directed to the problems solution, which are extremely important for all of us: sport for all and role of sport in modern society.

Discussion on the Congress of a wide range problems, connected with Olympic sport development and sport for all, medical biological and sociological aspects of sport, will undoubtedly contribute to further development of the theory and practice of elite sport and world sports science.

It is notable that this Congress is hosted by Józef Piłsudski University of Physical Education in Warsaw, which is the large academic and sports center of Poland and hosts the world scientific and sports community for several times.

Within this framework, I want to express words of gratitude for the Academy, for prof. Andrzej Mastalerz for the contribution to the organization of this representative international forum of sports science.

I am confident that the meeting of the leading scientists of world sports science, representatives of the international sports movement will promote opening of new ways of cooperation, will serve the case of unity to recreational and sports movement of the different countries.

I wish to all participants of the Congress the success and fruitful work.

Уважаемые участники и гости!

От имени Международной ассоциации университетов физической культуры и спорта я хотел бы поздравить и выразить самые лучшие пожелания всем участникам XXI Международного научного конгресса «Олимпийский спорт и спорт для всех».

В последние годы с ростом внимания общества к здоровью и физическим упражнениям также возрос интерес к спорту. Общественное осознание выгоды здорового образа жизни, который включает в себя спорт и физическую культуру, в большей степени возникло из совместных усилий элитных спортсменов и ученых-исследователей, изучающих их достижения. Тематика Конгресса направлена на решение проблем, которые чрезвычайно важны для всех нас: спорт для всех и роль спорта в современном обществе.

Обсуждение на Конгрессе широкого спектра проблем, связанных с развитием олимпийского спорта и спорта для всех, медицинскими биологическими и социологическими аспектами спорта, несомненно, внесет свой вклад в дальнейшее развитие теории и практики спорта высших достижений и мировую спортивную науку.

Примечательно, что этот Конгресс принимает академия физического воспитания Юзефа Пилсудского в Варшаве, которая является крупным научно-образовательным и спортивным центром Польши и в очередной раз принимает мировую научную и спортивную общественность. В этой связи, хочу выразить слова благодарности академии, в лице ее ректора Анджея Масталежа, за вклад в организацию этого представительного международного форума спортивной науки.

Уверен, что встреча ведущих ученых мировой спортивной науки, представителей международного спортивного движения будет способствовать открытию новых путей сотрудничества и послужит делу сплочения физкультурно–спортивного движения разных стран.

Желаю участникам Конгресса успехов и плодотворной работы.

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Dr hab. prof. AWF Michał Lenartowicz - Chair of the Organising Committee

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Prof. Shodi Safarov
Tajik State Institute of Physical Education

Prof. Sergei Seiranov
Moscow State Academy of Physical Education, Russia

INFORMATION FOR PARTICIPANTS

VENUES:

Józef Piłsudski University of Physical Education in Warsaw
34 Marymoncka St
00-968 Warsaw

Bus stop: AWF
Bus line: 103
Tram stop: AWF
Tram lines: 6, 17
Subway (M1) station: Stare Bielany (walking distance – approximately 10 min. to the University)

Olympic Centre (Polish Olympic Committee)
4 Wybrzeze Gdynskie St.
01-531 Warsaw

Bus stop: Centrum Olimpijskie (bus stop on demand)
Bus lines: 114, 118, 185
Subway (M1) station: Plac Wilsona (walking distance – approximately 15 min. to the Olympic Centre)

MEDICAL ASSISTANCE:

Szpital Bielański (Bielanski Hospital)
80 Cegłowska St.
01-809 Warsaw

GENERAL EMERGENCY NUMBER FOR MOBILE PHONES: 112

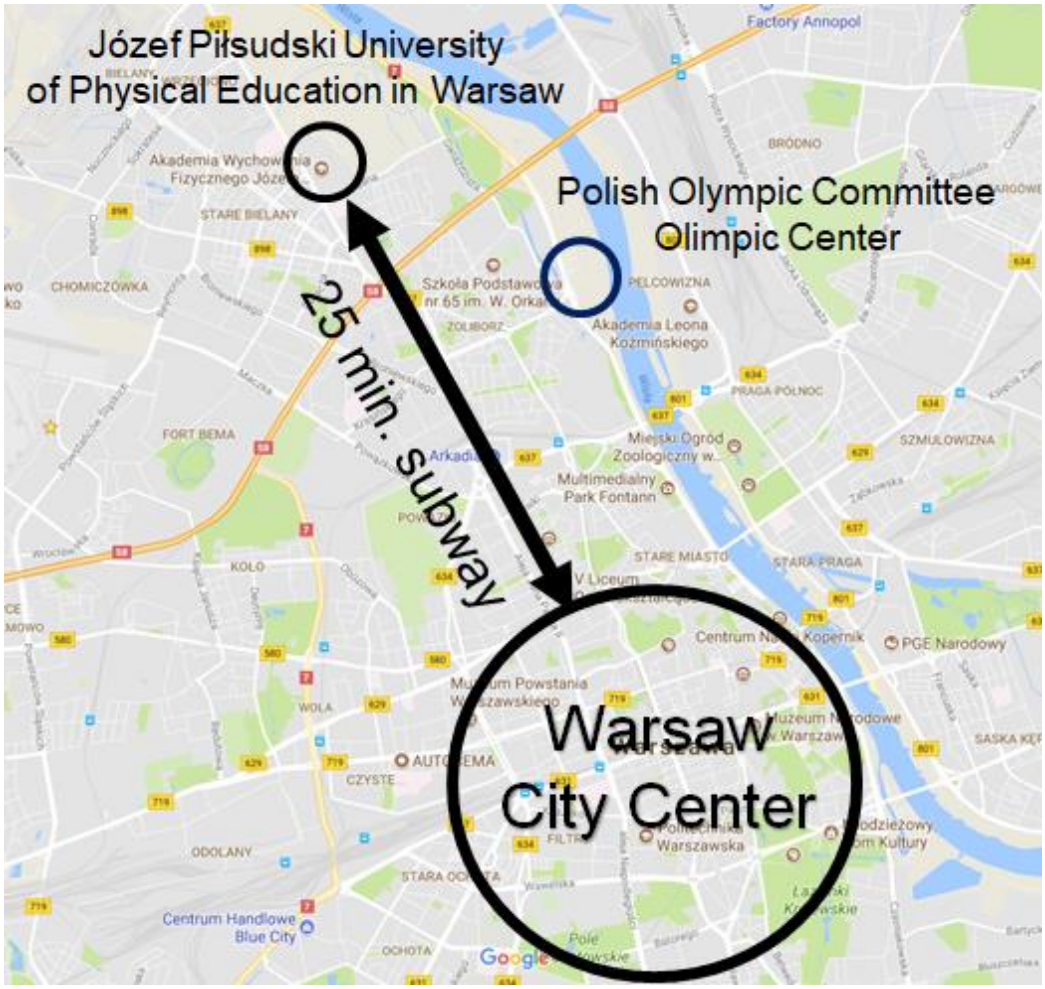
ATM AT THE CAMPUS: male dormitory entrance

DELEGATES ASSISTANCE PHONE NUMBER: +48 22 834 04 31 (ext. 297)

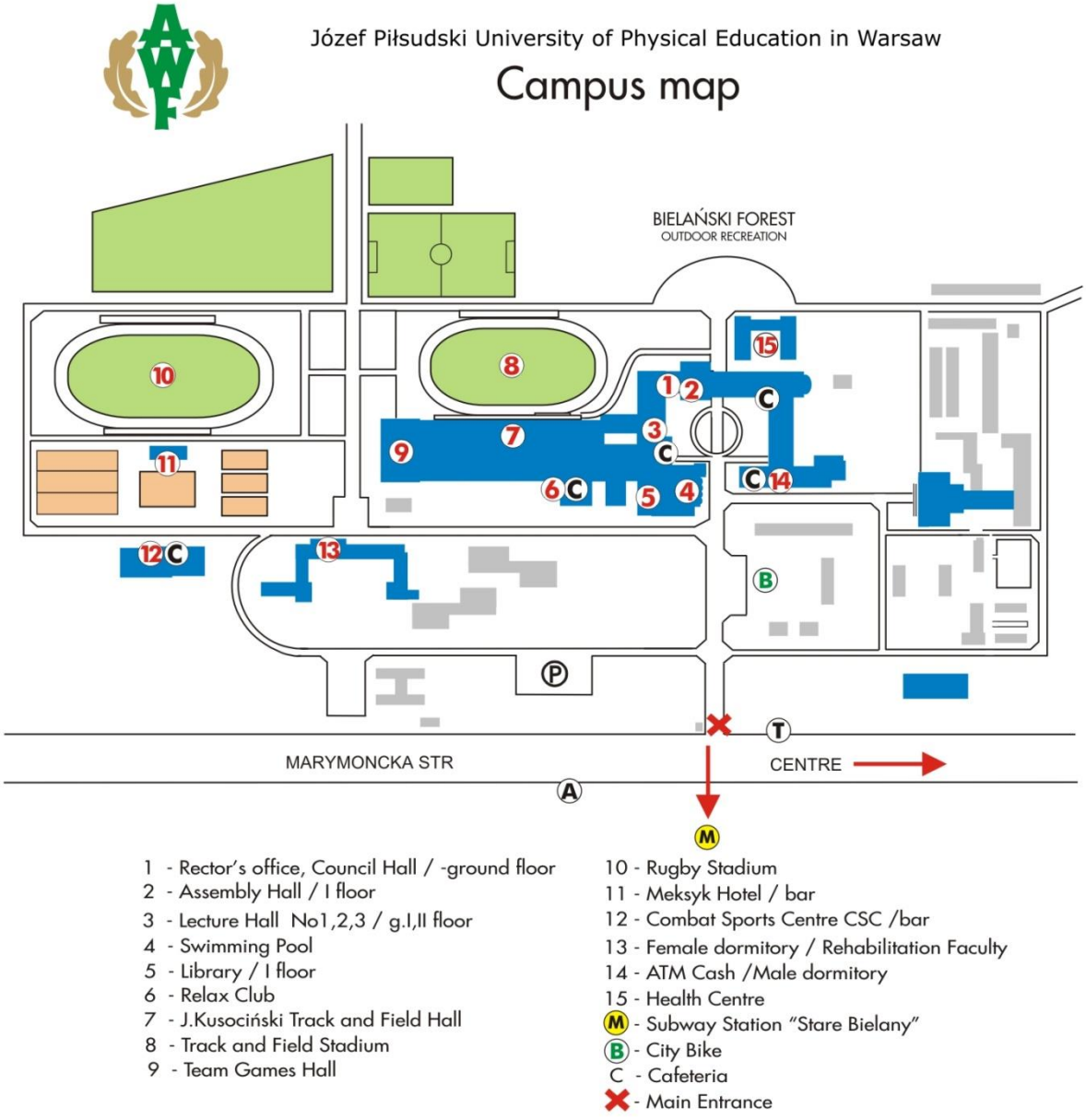
Power Point presentations should be uploaded at the Congress reception or directly at the lecturing room prior to the relevant session.

MAPS AND LOCATIONS

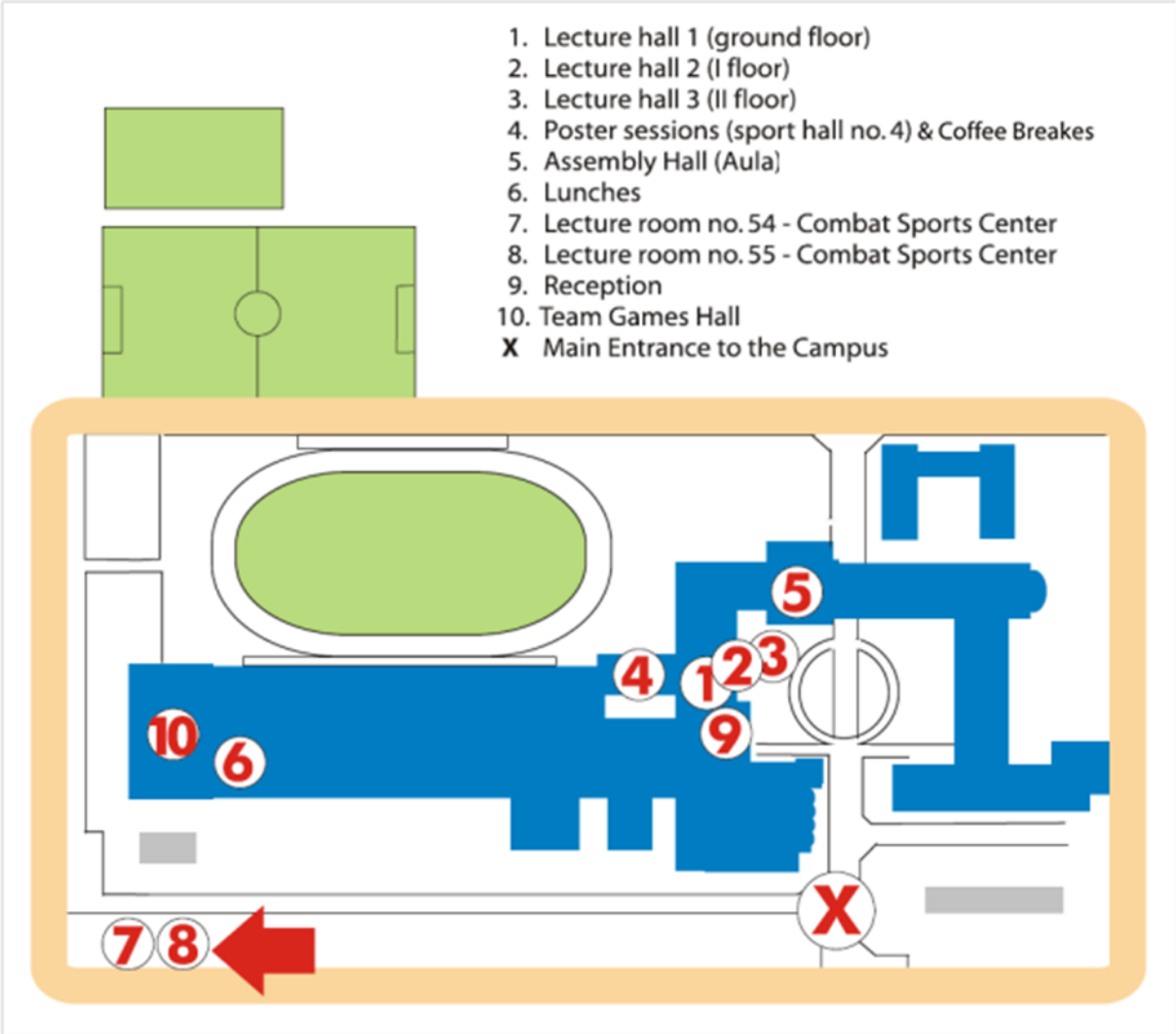
Map 1 Location of Conference Venues



Map 2 Józef Piłsudski University of Physical Education in Warsaw – Campus



Map 3 Józef Piłsudski University of Physical Education in Warsaw - Main Building



KEYNOTE SPEAKERS

Prof. Jan Blecharz

University of Physical Education in Krakow, Poland

Lecture title: The role of mental preparation in elite athletes' training

Prof. Jan Blecharz is an associate professor at the University of Physical Education in Krakow, in the Department of Psychology. He has over 30 years of experience as a researcher in the field of sport psychology, the psychology of physical injuries in sports, mental preparation for the highest rank competitions, psychosomatic regeneration and techniques of coping with stress. He is a certified Master Class Sport Psychologist of Polish Psychological Association. He was a psychologist of Polish team at the Olympic Games in Albertville and Salt Lake City. From 1998 to 2003 he was a psychologist of Polish team in ski jumping. He also collaborated with champions of many individual sport disciplines. Member of the Board of Sport Psychology Section of the Polish Society of Physical Culture, the Polish Psychological Association and the Association for the Advancement of Applied Sport Psychology.

Prof. David Howe

Loughborough University School of Sport, UK

Lecture title: Parasport: an antidote for inclusive practice?

Prof. David Howe is a social anthropology of sport in the School of Sport, Exercise and Health Sciences at Loughborough University with research interests in disability sport and leisure cultures. David's ethnographic research focuses on unpacking the embodied socio-cultural milieu surrounding inclusive physical activity and disability sport. His publications on the co-constitution of disability and medicine in sport mark him out as the leader in the socio-cultural investigation of disability sport. With reference to the culture of disability, ethics of Paralympism, health and disability and medical discourse surrounding the Paralympic Games, David is concerned with his research highlighting ways and means of making sport and physical activity more empowering for marginalised populations. David holds a guest professorship at Katholieke Universiteit Leuven, Belgium and adjunct Professorships at Queen's University and Western University both in Canada.

Prof. Vesa Linnamo

University of Jyväskylä, Finland

Lecture title: Online monitoring and feedback for athletes and coaches

Professor Vesa Linnamo received his Ph.D. in biomechanics from the University of Jyväskylä, Finland in 2002. His research interests involve motor control and neuromuscular adaptation along with sports biomechanics, especially in Nordic winter sports. He has published over 60 original articles, over 30 books or book chapters and 140 congress abstracts of which the majority in recent years have been related to elite sports. His main co-operation international Universities at present are University of Salzburg (Austria), University of Freiburg (Germany), Politecnico di Torino (Italy), Katholieke Universiteit Leuven (Belgium), Mid Sweden University (Sweden) and Jozef Pilsudski University of Physical Education in Warsaw (Poland). In addition to scientific careeer, he has almost 30 years of experience in basketball, including 8 years in top league player and over 20 years as a coach in different adult and junior series. Prof Linnamo is currently working in the Faculty of Sport and Health Sciences (Biology of Physical Activity), University of Jyväskylä as a professor in sports technology in Vuokatti, Finland.

Prof. Vladimir Platonow

National University of Physical Education and Sport of Ukraine

Lecture title: The modern system of periodization in long-term athletes' preparation

Vladimir Platonov, Professor of the Department of History and Theory of Olympic Sports of the National University of Physical Education and Sports of Ukraine, Editor in Chief of the journal "Science in Olympic Sport", Doctor of pedagogical sciences, Professor, Honored Worker of Science and Technology of Ukraine, Laureate of the State Prize of Ukraine in Science and Technology. Vladimir Platonov has authored more than 500 scientific publications in the field of the theory of sport, theory and methodology of preparation of highly qualified athletes, and adaptation of the athlete's body to the training and competitive loads of the modern sports. His scientific publications has included more than 30 textbooks, monographs and encyclopaedic works published in many countries of the world: Spain, Italy, France, Germany, Romania, Poland, Venezuela, Colombia, Brazil, Argentina, Bulgaria, Romania, China, Japan, Ukraine, Russia, and the USSR. Vladimir Platonov work has been awarded numerous national awards and the Olympic Order, the highest award of the International Olympic Committee.

Prof. Mikhail Shestakov

Training Center of Russian National Team

Lecture title: Muscle-tendon mechanics anDd energetics with a view to enhancing sports performance of top sportsmen.

Professor Mikhail Shestakov has scientific interests in the field of biomechanics, motor control, computer simulation of learning processes. He published more than 120 scientific papers, 12 textbooks for institutes of physical culture. For more than 30 years, he has been involved in the training of athletes of national teams of Russia in various sports as a research fellow. From 1996 to 2000 he took part to trainees and testing the crewmembers of the International Space Station "MIR" 21-27 in a joint work with NASA specialists. For the last 8 years, he heads the Analytical Center of the Ministry of Sport of Russia, which carries out methodological work with athletes and coaches of the Russian national team to prepare for participation in the Olympic Games. Twice in 2000 and 2008 he was awarded by the European Association of Athletics for the best scientific work. Prof. Shestakov is a member of the Russian and European Association for Artificial Intelligence.

"OLYMPIC SPORT AND SPORT FOR ALL" 2017 WARSAW CONFERENCE SCHEDULE AT GLANCE

<table>
<tr><th></th><th>14.09.2017 Thursday</th><th>15.09.2017 Friday</th><th>16.09.2017 Saturday</th></tr>
<tr><td>Hour</td><td>Polish Olympic Committee</td><td>J. Pilsudski University of Physical Education</td><td>J. Pilsudski University of Physical Education</td></tr>
<tr><td></td><td></td><td>Registration: 08.00-16.30</td><td>Registration: 08.30-15.00</td></tr>
<tr><td>9.00-9.45</td><td rowspan="2">Registration 09.00-18.00</td><td>Keynote lecture
Vladimir Platonov, AULA</td><td>Keynote lecture
Mikhail Shestakov, AULA</td></tr>
<tr><td>10.00-10.30</td><td rowspan="2">PARALLEL SESSIONS 45'
III Biomedical Aspects of Sport (AULA)
IV Psychosocial Aspects of Sport (LH 2)
V Sport for All (LH 3)</td><td rowspan="3">PARALLEL SESSIONS 1,5h
& Symposium part I
X Sport Training (LH 2)
XI Psychosocial Aspects of Sport/Adapted Physical Activity (LH 3)
XII Varia (AULA)

"Symposium on Social Inclusion and Volunteering in Sport Clubs" (LH4), FR)</td></tr>
<tr><td>10.30-10.45</td><td rowspan="4">OPENING CEREMONY

Introductory lecture
Henryk Sozański, Jerzy Sadowski

Keynote lecture
David Howe</td></tr>
<tr><td>10.45-11.15</td><td>COFFEE BREAK 30' Sport Hall no. 4</td></tr>
<tr><td>11.15-11.30</td><td rowspan="3">Veolia's Sports Academy (SAV)
Young athletes: opportunities and challenges
Keynote lecture Vesa Linnamo
AULA</td></tr>
<tr><td>11.30-12.00</td><td>COFFEE BREAK 30'
Sport Hall no. 4</td></tr>
<tr><td>12.00-12.45</td><td rowspan="2">POSTER PRESENTATION 1h Sport Hall no. 4
& Symposium part II
"Symposium on Social Inclusion and Volunteering in Sport Clubs" (LH4, FR)</td></tr>
<tr><td>12.45-13.00</td><td rowspan="2">COFFEE BREAK 30'</td><td rowspan="2">LUNCH 45' (next to the Team Games Hall)</td></tr>
<tr><td>13.00-13.15</td><td rowspan="2">LUNCH 45' (next to the Team Games Hall)</td></tr>
<tr><td>13.15-13.30</td><td rowspan="3">Session I
Olympism 75'</td><td rowspan="3">PARALLEL SESSIONS 1,5 h
VI Biomedical aspects of Sport (AULA)
VII Sport for All (LH 3)
VIII Sport Performance (LH 2)
IX Improvement of Sports Technique (LH 4, FR)</td></tr>
<tr><td>13:30-13.45</td></tr>
<tr><td>13.45-14.30</td><td>CLOSING CEREMONY (AULA)</td></tr>
<tr><td>14.30-15.00</td><td>COFFEE BREAK 30''</td><td rowspan="2">COFFEE BREAK 30' Sport Hall no. 4</td><td rowspan="6"></td></tr>
<tr><td>15.00-15.30</td><td rowspan="4">Keynote lecture
Jan Blecharz

Session II Olympism 75'</td></tr>
<tr><td>15:30-16.15</td><td>Scientific Workshop 45' LH 20
Recreational Games/AWF Tour</td></tr>
<tr><td>16.15-16.30</td><td></td></tr>
<tr><td>16.30-17.00</td><td rowspan="3">WARSAW EXCURSION
Departure from University Campus
(app. 4 hours)</td></tr>
<tr><td>17:00-18:00</td><td rowspan="2">RECEPTION</td></tr>
<tr><td>18:00-19:00</td></tr>
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</table>

CONGRESS PROGRAMME

Thursday, 14 September 2017

9.00-18.00 Registration

10.30-12.45 **Opening Ceremony**

Venue: Olympic Center (4, Wybrzeże Gdyńskie St.)

Intoductory lecture:
Prof. Henryk Sozański, prof. Jerzy Sadowski
Józef Pilsudski University of Physical Education in Warsaw
Title: Sport training of children and youth in 21th century

Keynote Speaker:
Prof. David Howe, Loughborough University School of Sport, UK
Title: Parasport: an antidote for inclusive practice?

This paper highlights the need to explore the excessive significance given to the Paralympic Games as a vehicle for the encouragement of participation of people with a disability within sport. The media spectacle around the games that the International Paralympic Committee (IPC) has worked tirelessly to develop has become, for policy-makers and the public alike, a sufficient outlet for disability sport provision. Through the ethos of Paralympism, the IPC's values have been assumed to be valid for all people with a disability, yet in terms of widening participation, their utility is limited.

For two generations disability rights advocates have highlighted the need for people with disabilities to be included in society without restriction of any kind. Within the world of sport this principle of inclusion has also been gaining momentum and contemporary national and international sport policy highlight its importance. Today social inclusion and the principles of universal design are lofty goals that are championed by the disability sport industry and they are celebrated for it. However, I will suggest the disability sport industry has both championed inclusion on the one hand and used its rhetoric to feather its own nest on the other. Rather than inclusion I will argue that society needs to celebrate difference within sport. Because of the calling card of inclusion disability discrimination is still seen as insignificant compared to issue of racism and homophobia where large public platforms of awareness are now the norm. This paper first illuminates the relationship between the International Olympic Committee and the IPC before turning our attention to the ethos of Paralympism. Highlighting the necessity for 'sport for all', we use a human rights lens, aided by a capabilities approach to facilitate better ways to educate the public about the need for equality of access to sporting participation opportunities.

12.45-13.15 **Coffee break**

13.15-14.30 **Session**
Venue: Olympic Center (4, Wybrzeże Gdyńskie)

Session I **OLYMPISM**

1. GOOD GOVERNANCE IN THE OLYMPIC MOVEMENT
   M. Bulatova, National University of Ukraine on Physical Education and Sport, Kiev, Ukraine
2. LEGAL BASES OF THE OLYMPIC GAMES
   N. Y. Melnikova, A.V. Treskin, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
3. ENCOURAGING OF THE POLISH ADOLESCENTS TO BEHAVE BETTER THROUGH OLYMPIC EDUCATION-COMPARISON OF THE RESULTS OVER THE YEARS
   A. Glapa, M. Bronikowski, University School of Physical Education in Poznan, Poland
4. TOURISM DEVELOPMENT IN THE CONTEXT OF THE OLYMPIC GAMES
   N.Y. Melnikova, A.Y. Nikiforova, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia

14.30-15.00 **Coffee break**

15.00-15.45 **Keynote Speaker:**
Prof. Jan Blecharz, University of Physical Education in Krakow, Poland

Title: The role of mental preparation in elite athletes' training

Psychological preparation is an integral part of the athlete's preparation to participate in the competition. It is particularly important for professional athletes. The optimal state of mental preparation can be achieved through mental training. In mental training - an athlete acquires skills necessary for optimal effectiveness of sport training, during competitions, psychosomatic recovery and building up a personal philosophy which determines the athlete's approach to sport activity and lifestyle. The most important mental skills are: emotional control, concentration despite the presence of distractors, imagery, and the ability to achieve the zone of optimal functioning. Mental skills are taught and therefore should be systematically practiced, just as physical skills.

The lecture will focus on the specifics of the mental training of professional athletes and the importance of individual psychological skills during the preparatory, pre-start, during and after the competition.

The psychological nature of the major sport events, with a special emphasis on the Olympic Games and the role of team members' mental preparation to support the athlete during major competitions, will also be presented. Finally, I will share my own experience in the use of mental training with Polish elite competitors.

15.45-17.00 **Session**

Session II OLYMPISM

1. CONCEPT OF SUSTAINABLE DEVELOPMENT: ENVIRONMENT AND SPORT
   Y. Imas, O. Yarmoliuk, National University of Ukraine on Physical Education and Sport, Kiev, Ukraine
2. THE ROLE AND OBJECTIVES OF INTERCULTURAL OLYMPIC EDUCATION DURING YOUTH OLYMPIC GAMES
   K. Płoszaj, Józef Piłsudski University of Physical Education in Warsaw, Poland; W. Firek, University of Humanities and Economics in Lodz, Poland; E. Malchrowicz-Mośko, University of Physical Education in Poznan, Poland
3. CONTENT ASPECTS OF THE DISCIPLINE «OLYMPIC EDUCATION OF CHILDREN AND YOUTH (PRE-SCHOOL, SCHOOL, UNIVERSITY)» DEVELOPED IN ACCORDANCE WITH FEDERAL STATE EDUCATIONAL STANDARD OF HIGHER EDUCATION OF THE PREPARATION DIRECTION 49.04.03 «SPORT»
   N.S. Leontieva, N.Y. Melnikova, V.V. Melnikov, M.V. Koreneva, L.S. Leontieva, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
4. OLYMPIC EDUCATION IN THE SYSTEM OF GENERAL SECONDARY EDUCATION IN UKRAINE
   V.L. Mazyuk, National University of Ukraine on Physical Education and Sport, Kiev, Ukraine
5. AMERICAN OLYMPISM-THE IMPORTANCE OF THE 1932 SUMMER OLYMPICS
   M. Mazurkiewicz, The Jan Kochanowski University in Kielce, Poland

17.15-19.00 **Reception**

Venue: Olympic Center (4, Wybrzeże Gdyńskie St.)

Friday, 15 September 2017

08.00-16.30 Registration

09.00-09.45 **Keynote Speaker:**
Prof. Vladimir Platonov, National University of Physical Education and Sport of Ukraine

Title: The modern system of periodization in long-term athletes' preparation

Venue: Józef Pilsudski University of Physical Education in Warsaw - Aula

A rationally designed system of multi-year training consists of two stages differing in the targeted focus and content.

The first stage covers the period from the beginning of sports activity to the transition of the athlete to the level of the highest achievements and includes four phases: initial training, preparatory basic training, specialized basic training, and preparation for the highest achievements. The targeted focus and content of the preparation in this stage are subject solely to the systematic preparation for highest achievements. The second stage covers the period from the time when athlete reaches the level of the higher performance to the end of the sports career. This one also consists of four phases: the phase of maximum realization of individual capabilities, the phase of maintenance of the achieved performance, the phase of gradual decline in performance, and the phase of completion of athletic career. The targeted focus and content of the preparation are related to active competitive activity along with exploitation, further development or maintenance of the achieved sports mastery.

One of the two following strategies is implemented to build the process of preparation at the first stage. The first is focused on systematic preparation and achievement of the highest possible individual performance within the age range optimal for a particular sport. It is built on solid scientific foundations both in terms of duration and specific content, which takes into account the peculiarities of age and pubertal development of an athlete and complies with the regularities of the formation of various components of sports mastery. Athletes, who implement this strategy in their preparation, not only fully exploit their natural potential, but also, with high probability, provide themselves with a successful career in the second stage of multi-year training.

The second strategy is focused on intense competitive activity throughout the multi-year training (successful performance in competitions for children, adolescents, youths, competition of age groups, Youth Olympic Games, etc.). Athletes implementing this strategy are successful in the system of competitions in children's and youth sports. However, due to the inevitable acceleration of the training and ignoring of the regularities of age development,

they are not able to fulfill the natural potential and early finish their career as a result of the stabilization or decrease of athletic performance or because of the overtraining and injuries.

It should be noted that whereas the knowledge system pertaining to the first stage is well developed, consistent and based on solid scientific foundations, the available knowledge relevant to the second stage is based on the data of practical experience, which are often ambiguous and contradictory. This necessitates intense scientific research, especially given the exceptional significance of justifying the ways of extending the career of outstanding athletes as the most important factor of popularization and attractiveness of the sport.

10.00-10.45 **Three parallel sessions**

Venue: Józef Pilsudski University of Physical Education in Warsaw

Session III **BIOMEDICAL ASPECTS OF SPORT** - Aula

1. CONSERVATIVE INTERVENTIONS FOR DELAYED ONSET MUSCLE SORENESS. AN EVIDENCE SYNTHESIS STUDY
   M. Płaszewski, Józef Piłsudski University of Physical Education in Warsaw, Poland
2. THE EFFECT OF DIFFERENT BIOFEEDBACK METHODS DURING PRECISION MOVEMENTS TRAINING
   A. Pukhov, S. Ivanov, S. Moiseev, R. Gorodnichev, State Academy for Physical Culture and Sports of Velikie Luki, Russia
3. EXERCISE HEAT ACCLIMATION EFFECTS ON CYTOKINE RESPONSES AFTER STRENUOUS EXERCISE IN ATHLETES AND RECREATIONALLY ACTIVE MEN
   Sz. Wiecha, A. Tyka, T. Palka, W. Pilch, Z. Szygula, A. Tyka, Józef Piłsudski University of Physical Education in Warsaw, Poland

Session IV **PSYCHOSOCIAL ASPECTS OF SPORT** - Lecture hall 2 (1st floor)

1. CLASS DETERMINANTS OF SPORT SOCIALIZATION PRACTICES AND SPORT CONSUMPTION IN POLAND
   M. Lenartowicz, Józef Piłsudski University of Physical Education in Warsaw, Poland
2. 'A WAR BETWEEN POLISH FOOTBALL FANS AND THE GOVERNMENT' FROM THE PERSPECTIVE OF HERBERT BLUMER'S COLLECTIVE BEHAVIOUR THEORY
   M. Jasny, Józef Piłsudski University of Physical Education in Warsaw, Poland
3. GENDER AND NATIONALITY IN SPORTS COVERAGE OF THE TWO LARGEST POLISH NEWSPAPERS DURING THE OLYMPIC GAMES IN 2010-2016
   Z. Mazur, N. Organista**,** Józef Piłsudski University of Physical Education in Warsaw, Poland

Session V **SPORT FOR ALL** - Lecture hall 3 (2nd floor)

1. SPORT FOR ALL – INCLUSIVE AND UNIVERSAL URBAN PLAYGROUNDS IN THE OUTDOOR PUBLIC SPACE
   H. Nałęcz, Institute of Mother and Child, Warsaw, Poland
   A. Ostrowska-Tryzno, A. Pawlikowska-Piechotka, Józef Pilsudski University of Physical Education in Warsaw, Poland

2. DIRECT AND INDIRECT ASSESSMENT OF PHYSICAL ACTIVITY OF WOMEN OVER 60 YEARS OLD DEPENDING ON THEIR AGE
   A. Ogonowska-Słodownik, A. Kosmol, N. Morgulec-Adamowicz; Józef Piłsudski University of Physical Education in Warsaw, Poland
3. CLASSIFICATION OF YOGA POSES IN BASE OF POSTURAL STABILITY
   M. Błażkiewicz, A. Miąsik; Józef Piłsudski University of Physical Education in Warsaw, Poland

10.45-11.15 **Coffee break** (SH no. 4)

11.15-12.45 **Veolia's Sports Academy Symposium I**
Keynote Speaker: Prof. Vesa Linnamo, University of Jyväskylä, Finland

Title: Online monitoring and feedback for athletes and coaches

Venue: Józef Pilsudski University of Physical Education in Warsaw, Aula

In research complex measurement and analyzing systems often take lots of time and effort before the final reports can be written. In everyday coaching situation this is not, however, possible and the results should be received almost immediately or preferably even online. In order to decide what are the most important variables from coaching point of view extensive research is normally done beforehand. This may include sophisticated devices, large number of athletes and statistical analysis.

During recent years we have put a great deal of effort into both developing new measurement systems and building an online feedback system. The idea behind our "Coachtech" system is that several analog signals from different sources can be synchronized together with video data to be viewed online (Ohtonen et al. 2016). The data is also saved to a server to which coaches and athletes get personal id access numbers. The system has been developed for cross-country skiing in which parameters such as cycle length, cycle frequency and force impulses can be calculated online. Data from force transducers and accelerometers is transmitted wirelessly using small nodes. The system allows viewing the signals and videos in slow motion and comparing different trials with each other. Other sports that the Coachtech system is currently used for are running and ski jumping and we also use it for balance measurements. An overview of the system and how it has been utilized by Finnish national biathlon, cross-country skiing and ski jumping will be presented during the Congress.

About the "Veolia's Sports Academy" Programme

Veolia's Sports Academy (SAV) is an educational programme aimed at sportsmen aged 14-18 whose core goal is to prepare the beneficiaries and graduates for conscious building of their professional career and inform them of the benefits of simultaneous educational and sports development. During one year-long co-operation the young people receive a dose of valuable knowledge about sports marketing, public relations, sports psychology, social media,

TV production, sports law, and professional coaching. The trainings for young sportsmen are provided by experts in their individual fields.

To this day, more than 140 beneficiaries participated in the SAV Programme, representing various individual disciplines, including but not limited to swimming, canoeing, track and field sports, diving, fencing, and judo. Our graduates include Gerard Kurniczak – cadet wrestling world champion (2016), Kacper Majchrzak – Olympic swimmer in London (2012) and Rio de Janerio (2016), Marta Lubos – winner of 13 gold, 14 silver, and 14 bronze medals in international juniors' and seniors' karate championships. Kamila Lićwinko, the Programme's ambassador and a distinguished Polish athlete, shares her extensive experiences with the young sportsmen.

SAV currently operates in five cities: Warsaw, Łódź, Poznań, Chrzanów, and Tarnowskie Góry. The project received an honourable mention during the prestigious SABRE Awards as one of four best CSR projects in the world, and it was announced a Good Practice 2015 by the Responsible Business Forum.

Veolia group in Poland has been a reliable partner of cities and industry in Poland for 20 years offering services tailored to its clients' needs, constantly developing business in the country. At this time, Veolia is consistently investing in the expansion and modernization of its production and distribution infrastructure to ensure the highest quality of service and environmental protection. Veolia is one of the leading service providers in the area of energy management, water and sewer management, as well as waste management. It employs approximately 4,500 employees. Veolia develops and implements cost-effective and environment-friendly solutions. New business models created by the group meet the assumptions of circular economy, and contribute to sustainable development of cities and industry.

Veolia Group in Poland runs business in 75 cities, managing district heating systems in 41 of them. Veolia operates through the following Companies: Veolia Energia Polska (holding), seven main operating companies – Veolia Energia Warszawa, Veolia Energia Łódź, Veolia Energia Poznań, Veolia Energia Poznań ZEC, Veolia term, Veolia Industry Polska, Przedsiębiorstwo Wodociągów i Kanalizacji in Tarnowskie Góry and their subsidiaries. www.veolia.pl

Veolia Energia Warszawa manages the largest district heating network in the European Union, supplying system heat and domestic hot water to 80% of the buildings in Warsaw. While following the assumptions of the Group's sustainable development policy, the Company develops and implements energy efficiency solutions that are optimal for the environment and local communities. The Company ensures safety and reliability of heat supplies, taking care of proper operation of almost 1,800 km of the municipal district heating network and thousands of substations. www.energiadlawarszawy.pl

12.45-13.30 **Lunch** (hall next to the Team Games Hall)

13.30-15.00 **Four parallel sessions**

Session VI **BIOMEDICAL ASPECTS OF SPORT** - Aula

1. EFFECTS OF MANUAL LYMPH DRAINAGE VS PASSIVE RECOVERY ON INFLAMMATORY MEDIATORS FOLLOWING STRENUOUS ECCENTRIC EXERCISE
   Sz. Wiecha, M. Wiecek, M. Maciejczyk, J. Szymura, K. Ochalek, Z. Szygula, Józef Piłsudski University of Physical Education in Warsaw, Poland
2. EFFECTS OF MAGNETOTHERAPY ON PERIPHERAL CIRCULATION IN ELDERLY WOMEN (60+) COMPLAINING ON A COLD HAND SYNDROME
   B. Wysoczański, Józef Piłsudski University of Physical Education in Warsaw, Poland
3. DO LOW LEVEL LASER THERAPY (LLLT) IRRADIATIONS ALLEVIATE DELAYED ONSET MUSCLE SORENESS FOLLOWING A SINGLE INTERVENTION OF NEUROMUSCULAR ELECTRICAL STIMULATION? A DOUBLE BLIND, CROSSOVER TRIAL
   M. Cieśliński, M. Płaszewski, E. Jówko, T. Sacewicz, I. Cieśliński, Józef Piłsudski University of Physical Education in Warsaw, Poland
4. DO LOW LEVEL LASER THERAPY (LLLT) IRRADIATIONS ALLEVIATE DELAYED ONSET MUSCLE SORENESS FOLLOWING A NEUROMUSCULAR ELECTRICAL STIMULATION TRAINING SESSION? A DOUBLE BLIND, RANDOMISED PARALLEL TRIAL
   M. Cieśliński, M. Płaszewski, E. Jówko, T. Sacewicz, I. Cieśliński, Józef Piłsudski University of Physical Education in Warsaw, Poland
5. ANAEROBIC THRESHOLD IN ATHLETES OF DIFFERENT AGES
   E. Feroyan, Georgian State Teaching University of Physical Education and Sport, Ybilisi, Georgia; L. Kokaia, S. King Tamar University of Georgian Patriarchate, Tbilisi, Georgia
6. FEATURES OF ADAPTATION TO TRAINING LOADS, YOUNG ATHLETES WITH SIGNS OF UNDIFFERENTIATED CONNECTIVE TISSUE DYSPLASIA
   A. N. Nalobina, O. N. Ivashenko, T. N. Fedoriva, Siberian State University of Physical Education and Sport, Omsk, Russia

Session VII **SPORT FOR ALL** - Lecture hall 2 (1st floor)

1. ACTIVE NOT JUST ON-LINE. CAN GOAL SETTING STARTEGY GET THE YOUTHS MOVING?
   M. Bronikowski, A. Glapa, M. Ludwiczak, J. Grzesiak, University of Physical Education in Poznan, Poland
2. COTSWOLD OLIMPICK GAMES AS "THE FIRST STIRRINGS OF EUROPE'S OLYMPISME"
   P. V. Nesterov, J. Glembockaja, Moscow State Academy of Physical Education, Moscow, Russia
3. ONTOKINEZIOLOGICAL APPROACH AS METHODOLOGY OF SPORTIZATION OF PHYSICAL EDUCATION IN EDUCATION SYSTEM
   L. I. Lubysheva, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
4. MODERN CONCEPTION OF HIGHER SPORT EDUCATION IN RUSSIA
   T. Mikhaylova, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
5. CRITERIA, INDICATORS AND TECHNIQUES OF MEASUREMENT OF THE LEVEL OF DEVELOPMENT OF STRUCTURAL COMPONENTS OF SPORTS CULTURE OF THE STUDENTS
   E.V. Burtseva, F.R. Zotova, V.A. Burtsev, Volga Region State Academy of Physical Culture, Sport and Tourism, Kazan, Russia

Session VIII **SPORT PERFORMANCE** - Lecture hall 3 (2nd floor)

1. SPORTS PERFORMANCE OF SINGLE FIGURE SKATING LEADERS IN FREE PROGRAM
   L.K. Dmitrievna, Siberian State University of Physical Culture and Sports, Omsk, Russia
2. PROFESSIONAL TENNIS: PROBLEMS AND DEVELOPMENT PROSPECTS
   O. Borysova, Y. Imas, D. Nikonorov, National University of Ukraine on Physical Education and Sport, Kiev, Ukraine
3. THE DEVELOPMENT OF THE RESULTS IN SELECTED MALE AND FEMALE ATHLETIC DISCIPLINES IN THE OLYMPIC CYCLE 1992-2016
   I. Maruszyńska, Józef Piłsudski University of Physical Education in Warsaw, Poland
4. ANALYSIS OF THE PERFORMANCE OF THE RUSSIAN FEDERATION ATHLETES AT THE GAMES OF THE XXXI OLYMPIAD IN RIO DE JANEIRO IN 2016
   N.S. Leontieva, M.V. Koreneva, L.S. Leontieva, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
5. URGENT TRAINING EFFECT OF REMOTE, INTERVAL AND COMPETITION TRAINING METHODS FOR QUALIFIED SWIMMINGERS
   V. R. Solomatin, N. Zh. Bulgakova, A. Zhuravik, Yu.V. Filimonova, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
6. ANALYSIS OF RUSSIAN ATHLETES PERFORMANCE AT THE MILITARY WORLD GAMES
   N.Y. Melnikova, A.V. Treskin, A.Y. Nikiforova, E.A. Samoilova, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia

Session IX **IMPROVEMENT OF SPORTS TECHNIQUES** - Lecture hall 4 (Faculty of Rehabilitation)

1. KEY ELEMENTS OF SPORTS TECHNIQUE OF DYNAMIC LINKING OF FRONT HANDSPRING AND TUCK SOMERSAULT
   M. Nogal, M. Biegajło, T. Niźnikowski, W. Wiśniowski, Józef Piłsudski University of Physical Education in Warsaw, Poland
2. IDENTIFICATION OF CHOSEN VARIABLES OF THE RUN-UP TECHNIQUE AFFECTING RESULTS IN POLE VAULT
   A. Gębski, Joint Sport Schools No. 50 in Warsaw, Poland; K. Perkowski, Józef Pilsudski University of Physical Education in Warsaw, Poland
3. BIOMECHANICAL ANALYSIS OF SALTO BACKWARD STRETCHED AFTER THE ROUND-OFF-FLICK-FLACK ON THE BALANCE BEAM
   T. Niźnikowski, W. Wiśniowski, E. Niźnikowska, M. Biegajło, M. Nogal, Józef Pilsudski University of Physical Education in Warsaw, Poland
4. IMPROVING TECHNIQUE OF BACK DOUBLE SOMERSAULT DISMOUNTS OFF THE UNEVEN BARS BASED ON BIOMECHANICAL INDICATORS
   V. Potop, Ecological University of Bucharest, Romania; V. Boloban, National University on Physical Education and Sport, Kiev, Ukraine; V. Grigore, National University of Physical Education and Sport, Bucharest, Romania
5. KINEMATIC ANALYSIS OF YURCHENKO VAULT IN WOMEN'S ARTISTIC GYMNASTICS
   M. Biegajło, M. Nogal, T. Niźnikowski, Z. Bujak, Józef Piłsudski University of Physical Education and Sport in Warsaw, Poland
6. COMPUTER MODELLING OF THE EQUILIBRIUM OF A HUMAN BODY FOR IMPROVING SPORTS RESULTS
   K. Moistsrapishvili, A. Egoyan, Georgian State Teaching University of Physical Education and Sport, Tbilisi, Georgia

15.00-15.30 **Coffee break** (SH no. 4)

15.30-16.15 **WORKSHOP**

Workshop

Theme: "THE KEEP THE BALANCE" PROGRAMME
Authors: R. Czarniecka, E. Olszewska, J. Charzewska, Józef Piłsudski University of Physical Education, in Warsaw, Poland
Venue:

16.30-20.00 **Warsaw Excursion** (meeting in front of the main building); app. 4 hours

Saturday, 16 September 2017

08.30-15.00 Registration

Venue: Józef Pilsudski University of Physical Education in Warsaw, Aula

09.00-9.45 **Keynote Speaker : Prof. Mikhail Shestakov, Training Center of Russian National Team**

Title: Muscle-tendon mechanics and energetics with a view to enhancing sports performance of top sportsmen

The utilization of tendon elastic energy is essential in various movement tasks, in particular to minimize the energetic cost of muscular contraction or to amplify the power output of the muscle-tendon unit (MTU). Hence, different tendons with particular sets of mechanical properties may influence MTU behavior and, ultimately, mechanical output and muscular efficiency (Wilson and Lichtwark, 2011).

Within the concept of tendon elasticity, two elastic mechanisms that promote efficiency can be distinguished. The first is the tendon storage and reuse of elastic energy during movement and the other is a 'catapult' mechanism that increases power.

The software complex received input data of real movement from by the Qualisys Motion Capture System. 24 cameras Oqus 5 (Qualisys, Sweden) were set to record athletes' of vertical standing jumps and running with various speed. Jumping exercises were performed on two force plates AMTI 6000 (AMTI, USA), a running test was performed on a treadmill-mounted force plate (Treadmetrix, USA). The data were processed with the help of the software package OpenSim (Delp et al., 2007). The software package permitted to develop an individualized musculoskeletal model of every athlete and identify specific features of his/her movement technique. The model includes geometric representations of the bones, kinematic descriptions of the joints, and Hill-type models of 44 muscle–tendon compartments. The model allows calculation of muscle–tendon lengths and moment arms over a wide range of body positions. The model also allows detailed examination of the force and moment generation capacities of muscles about the ankle, knee, and hip. The model includes 35 muscles of the lower limb, of which 10 were analyzed in this study. We calculated normalized fiber length, normalized fiber velocity, active force along the tendon, and activation from simulations of each subject.

The results demonstrated strong effect of sport specialization on characteristics of motor control in top athletes. Specific features of movements similar to the competitive exercise by their structure were found in performance of different exercises. Simulation results help coaches elaborate individual programs for technique development and perfection.

10.00-11.30 **Three parallel sessions and Symposium**

Venue: Józef Pilsudski University of Physical Education in Warsaw

Session X **SPORT TRAINING** - Lecture Hall no 2 (2nd floor)

1. NEW CONCEPT-MODEL OF PLAYING ACTIVITY IN THE THEORY AND METHOD OF SPORTS GAMES
   V. Guba, A. Rodin, Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
2. SPECIFICITY OF MORPHOFUNCTIONAL STATUS OF HIGHLY QUALIFIED PILOTS AND ACCELERATORS IN BOBSLED
   I. Y. Gorskaya, N. V. Sergeeva, Siberian State University of Physical Culture and Sports, Omsk, Russia
3. COMPLEX CONTROL IN THE PREPAREDNESS OF QUALIFIED GYMNASTS
   I. Syvash, National University of Ukraine on Physical Education and Sport, Kiev, Ukraine
4. THE THEORY OF MOTOR ACTIONS OF THE ATHLETE: THE NEED FOR NEW APPROACHES
   V. Manolachi, N. Vizitei, State University of Physical Education and Sport of Moldova, Chisinau, Moldova
5. A METHOD OF SPECIALIZED PHYSICAL PREPARATION FOR A FORMATION TEAM IN DANCESPORT: EXPERIENCE OF APPLICATION IN THE REPUBLIC OF BELARUS
   D. Bialiauski, Belarusian State University of Physical Culture, Minsk, Belarus

Session XI **PSYCHOSOCIAL ASPECTS OF SPORT / ADAPTED PHYSICAL ACTIVITY**- Lecture hall 3 (2nd floor)

1. PSYCHOLOGICAL SUPPORT IN THE SYSTEM OF TRAINING OF HIGHLY QUALIFIED SPORTSMEN IN OLYMPIC SPORT
   N. Vysochina; National University of Physical Education and Sport of Ukraine, Kiev, Ukraine
2. ATHLETES' NEEDS AND EXPECTATIONS REGARDING COACHES' BEHAVIOURS
   N. Koperska, Józef Piłsudski University of Physical Education in Warsaw, Poland
3. COMPARATIVE ANALYSIS OF LIFE MEANING ORIENTATIONS OF STUDENTS-SPORTSMEN AND STUDENTS OF NON-PHYSICAL TRAINING SCHOOLS
   O. N. Savinkova, G. V. Bugaev, A. V. Sysoev, I. V. Smotrova, Voronezh State Institute of Physical Culture, Voronezh, Russia
4. SPORTS RESULTS IN MEN'S SPRINT EVENTS AT THE PARALYMPIC GAMES BETWEEN 1992 AND 2016
   A. Kosmol, B. Molik, N. Morgulec-Adamowicz, Józef Piłudski University of Physical Education in Warsaw, Poland
5. EVALUATION OF LEVER DRIVE WHEELCHAIR PROPULSTION AND MANUAL WHEELCHAIR PROPULSION DURING FIELD TEST
   J. Marszałek, A. Mróz, B. Molik, I. Grabarek, K. Fiok, A. Kosmol, Józef Piłsudski University of Physical Education in Warsaw, Poland
6. DIFFERENTIATION AND CONDITIONS OF GROSS AND FINE MOTOR SKILLS AND A SPECIAL SKILLS IN FLOOR HOCKEY PLAYERS POLISH REPRESENTATIVES TO THE WORLD WINTER SPECIAL OLYMPICS IN AUSTRIA 2017
   W. Skowroński, G. Bednarczuk, I. Rutkowska, J. Lencse-Mucha; Józef Piłsudski Univesity of Physical Education in Warsaw, Poland

Session XII **VARIA** - Aula

1. THE LONDON 2012 OLYMPIC AND PARALYMPIC GAMES AS AN EXAMPLE OF SUSTAINABLE DEVELOPMENT IN SPORT
   J. Jastrząbek, Poznań University of Economics and Business,Faculty of Economics, Poland
2. SPORTS SOCIETIES OF SAINT-PETERSBURG PROVINCE IN LATE XIX – EARLY XX CENTURIES (FROM THE HISTORY OF SPORT IN RUSSIA)
   D. Beliukov, Velikiye Luki State Academy of Physical Education and Sport, Russia
3. EVALUATION OF FIELD BASED TEST FOR PROFESSIONAL FIREFIGHTERS
   B. Molik, J. Marszałek, I. Rutkowska, A. Wójcik, A. Nowak, S. Nowacka - Dobosz, C. Urbanik; Józef Piłsudski University of Physical Education in Warsaw, Poland
4. REALIZATION OF HARDWARE-SOFTWARE SYSTEM FOR CONTENT ANALYSIS AND DIAGNOSTIC EVALUATION OF SUCCESS OF TRAINING IN THE PROCESS OF SPORTS SELECTION IN GYMNASTIC SPORTS
   T. Morozevich-Shiluk; N. Matsius, Belarusian State University of Physical Culture, Minsk, Belarus
5. THE USE OF COMPUTER TESTS FOR IMPROVEMENT OF VISUAL REACTION OF SPORTSMEN
   A. Egoyan, I. Khipashvili, Georgian State Teaching University of Physical Education and Sport, Tbilis, Georgia
6. ENERGY – THE MARATHONERS', RUNNERS' AND WALKERS' EVERLASTING DILEMA. THEORETICAL CONSIDERATIONS BASED ON GRAPHICAL APPROACH
   W.Szeligiewicz, Józef Piłsudski University of Physical Education in Warsaw, Poland

10.00-11.30 **SYMPOSIUM II, 1**

Symposium on Social Inclusion and Volunteering in Sport Clubs

Venue: Lecture hall 4 (Faculty of Rehabilitation)

11.30-12.00 **Coffee break (Sport Hall no 4)**

12.00-13.00 **SYMPOSIUM II, 2**

Symposium on Social Inclusion and Volunteering in Sport Clubs

Venue: Lecture hall 4 (Faculty of Rehabilitation)

12.00-13.00 **POSTER SESSION**

Venue: Józef Pilsudski University of Physical Education in Warsaw, SH no. 4

1. NO BORDERS FOR EUROPEAN FOLK GAMES ON THE EXAMPLE ERASMUS+ SPORT PROGRAMME PROJECT “RECREAOLYMPIC”
   J. Kalecińska, Józef Piłsudski University of Physical Education in Warsaw, Poland
2. MOTIVES FOR AND BARRIERS TO PHYSICAL ACTIVITY PARTICIPATION IN LEISURE TIME DEPENDING ON AGE, GENDER AND EMPLOYMENT STATUS
   M. Zalech, Z. Bujak, J. Sołtan, Józef Piłsudski University of Physical Education in Warsaw, Poland
3. SOMATOTYPE OF FIRST-YEAR STUDENTS OF JÓZEF PIŁSUDSKI UNIVERSITY OF PHYSICAL EDUCATION IN WARSAW
   K. Gryko, A. Kopiczko, K. Perkowski, I. Maliszewska, Józef Piłsudski University of Physical Education in Warsaw, Poland
4. RELATIONSHIP BETWEEN COGNITIVE AND PHYSICAL FITNESS OF ELDERLY WOMEN
   J. Piotrowska, A. Leś, M. Guszkowska, E. Kozdroń, E. Niedzielska, B. Krynicki, I. Rutkowska, Józef Piłsudski University of Physical Education in Warsaw, Poland,
5. DIFFERENCES OF THE VALUE OF PROXIMAL AND DISTAL MUSCLE STRENGTH OF UPPER LIMB IN PHYSICALLY ACTIVE YOUNG AND OLDER MEN – A CROSS-SECTIONAL STUDY
   D. Drabarek, Józef Piłsudski University of Physical Education in Warsaw, Poland; J. W. Błaszczyk, The Jerzy Kukuczka Academy of Physical Education in Katowice, Poland
   J. Jaszczuk, A. Kędra, J. Zaradkiewicz, R. Golanko, B. Tyszkiewicz-Gromisz, Józef Piłsudski University of Physical Education in Warsaw, Poland
6. INFLUENCE OF PREOPERATIVE PHYSICAL ACTIVITY OF ELDERLY PEOPLE ON RECOVERY AFTER MAJOR ABDOMINAL SURGERY
   P. Czyżewski, Józef Piłsudski University of Physical Education in Warsaw, Poland
7. EVALUATION OF CHANGES IN AN ABILITY IN MANTAINING BALANCE OF BLIND PEOPLE DURING 4- YEARS PERIOD
   I. Rutkowska, G. Bednarczuk, W. Skowroński, J. Lencse-Mucha, Józef Piłsudski Univesity of Physical Education in Warsaw, Poland
8. STATIC BALANCE OF VISUAL IMPAIRED TANDEM CYCLISTS
   G. Bednarczuk, I. Rutkowska, I. Wiszomirska, W. Skowroński, Józef Piłsudski University of Physical Education in Warsaw, Poland
9. USE OF UNSTABLE PLATFORMS IN THE TRAINING PROCESS
   A. Vorobiova, National University of Physical Education and Sport of Ukraine, Kiev, Ukraine
10. DUAL CAREER IN SPORT
    T. Iancheva, National Sports Academy “Vasil Levski”, Sofia, Bulgaria
11. SOMATIC PROFILE OF AN ITF TAEKWON-DO MALE CHAMPION TEAM AND THEIR RELATIONSHIPS WITH THE SPORTS RESULTS
    T. Poliszczuk, I. Czachowska, D. Poliszczuk, Józef Piłsudski University of Physical Education in Warsaw, Poland
12. TECHNICAL SKILLS OF ELITE FEMALE AND MALE FREESTYLE WRESTLERS
    D. Gierczuk, D. Czubak, Z. Bujak, I. Cieśliński, Józef Piłsudski University of Physical Education in Warsaw, Poland
13. CONTROL FOR TECHNICO-TACTICAL FITNESS OF ELITE EPEE FENCERS

26. ATTITUDES TOWARD THE PRINCIPLE OF FAIR PLAY IN TERMS OF EQUAL OPPORTUNITIES IN SPORT AND LIFE IN THE OPINION OF LODZ JUNIOR HIGH SCHOOL STUDENTS
J. E. Kowalska, University of Lodz, Poland

27. SOCIAL VALUES OF SPORT IN THE OLYMPIC EDUCATION PROGRAMS
A. Kazimierczak, University of Lodz, Poland

28 DYNAMICS VARIABILITY OF WORLD PERFORMANCE IN TRIATHLON
T. Socha A. Maszczyk, S. Rzepka, R. Roczniok, The Jerzy Kukuczka Academy of Physical Education, Katowice, Poland

29 MODERN PARADIGM OF HEALTH-ENHANCING PHYSICAL ACTIVITY: THE BASIC CONCEPTS AND THE WAYS TO IMPLEMENT IT IN UKRAINE
M. Dutchak, M.Movchan, National University of Ukraine on Physical Education and Sport

30 FEATURES OF PREPARATION OF SPECIALISTS IN PHYSICAL DUCATION AND SPORT TO WORK WITH PERSONS WITH DISABILITIES
I. Kogut, S. Matvieiev, V. Marynych, National University of Ukraine on Physical Education and Sport

31 LEVEL OF GROUND REACTION FORCE DEPENDING ON LOCOMOTION VELOCITY, EXTERNAL LOAD AND AGE OF SUBJECTS
P. Tabor, M. Karczewska-Lindinger, D. Iwańska, I. Wyszomirska, Cz.Urbanik

13.00 – 13.45 - LUNCH (next to the Team Games Hall)

13.45-15.00 CONFERENCE CLOSING CEREMONY - Aula

SESSION LOCATION

Time	Session number/name	Venue
14.09.2017 Thursday		
10:30-12:45	Opening & Keynote 1 (D. Howe)	Olympic Center
13:15 - 14:30	I	Olympic Center
15:00 - 15:45	Keynote 2 (J. Blecharz)	Olympic Center
15:45 - 17:00	II	Olympic Center
15.09.2017 Friday		
9:00 - 9:45	Keynote 3 (V. Platonov)	Aula
10:00 - 10:45	III	Aula
	IV	LH2
	V	LH3
11:15 - 12:45	Keynote 4 (V. Linnamo) Symposium I, Veolia	Aula
13:30-15:00	VI	Aula
	VII	LH2
	VIII	LH3
	IX	LH 4 (FR)
15:30 - 16:15	Workshop	
16.09.2017 Saturday		
09.00 - 9:45	Keynote 5 (M. Shestakov)	Aula
10:00 - 11:30	X	LH2
	XI	LH3
	XII	Aula
	Symposium II, p. 1	LH 4 (FR)
12:00 - 13:00	POSTER SESSION	SH4
	Symposium II, p. 2	LH 4 (FR)
13:45 - 15:00	Closing Ceremony	Aula

LH – Lecture Hall
SH – Sport Hall
FR - Faculty of Rehabilitation

ABSTRACTS

SESSION I

GOOD GOVERNANCE IN THE OLYMPIC MOVEMENT

M. Bulatova

Olympic Academy of Ukraine, IOC Commission on Culture and Olympic Heritage; National University of Ukraine on Physical Education and Sport, Kiev, Ukraine

The beginning of the twenty-first century has been marked by new challenges to the world civilization, which are engendered by aggravated political and socio-economic problems in many countries. In such a situation, humanity faces the important task of preserving and multiplying the influence on public life of phenomena that have an unconditional positive impact on its development.

One of these factors is the international Olympic movement, represented by a system of its organizational structures led by the IOC. One of the defining elements in this complex system is the National Olympic Academy, which operates in many countries under the auspices of the IOA and plays an important role in the global dissemination of the Olympic ideas by methods of Olympic education. The socio-political and economic conditions prevailing in the world make it difficult to realize the real potential of the NOA, which puts before their governing bodies increased requirements for the proper management of the activities of the academies, which make it possible to ensure the stable functioning of the academies. In 2008, the IOC defined its strategy for further development, focusing on the importance of compliance with the "Basic Universal Principles for Managing the Olympic and Sporting Movement":

- foresight, mission and strategy;
- structure, regulation and democratic process;
- the highest level of competence, integrity and ethical standards;
- reporting, transparency and control;
- solidarity and development;
- Involvement of athletes, participation and care;
- Harmonious attitude of state power while maintaining autonomy.

Recommendation 27 of the "Olympic Agenda 2020" (2013) states: "All organizations belonging to the Olympic movement must adopt and comply with the Basic Universal Principles for the effective management of the Olympic and sports movement ... with emphasis on the need for transparency, honesty and opposition to any form of corruption.", preparing young people for an informed choice of the sphere of life.

Good governance has eight major characteristics. It is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive.

LEGAL BASES OF THE OLYMPIC GAMES

N.Y. Melnikova, A.V. Treskin

Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia

The aim of the study was to analyze and classify the legal system of the International Olympic movement.

The methodological base is the theoretical analysis and generalization, analysis of literature and legal documents.

Analyzing the international acts containing the norms of the Olympic law, taking into account the features of the modern Olympic movement and its legal regulation, depending on the content, several groups of special principles of Olympic law were distinguished: 1) The core principles; 2) principles related to the right to do sports and to health care; 3) principles related to the International Olympic movement development; 4) principles regulating the international relations in terms of coaching and competition processes; 5) principles reflecting the self-governing system of the International Olympic Movement. Special principles of the Olympic law reflect the essence and objective laws of the development of international Olympism. These principles form the basis of the Olympic law and play a decisive role in the creation of its legal norms, codification and further development of this field. The principles and norms form the unity and systemic nature of the Olympic law as a specific regulatory and legal complex of international law in general and international sports law in particular.

Legal bases of the Olympic Law are a component of the general international sports law. In turn, the Olympic Law is the most important component of the International Olympic Movement. Basic principles provide regulation and interaction of links of its structure. It concerns problems of the organization and hosting the Games of the Olympiad and the Olympic Winter Games in the course of their evolutionary development and adaptation to modern conditions.

ENCOURAGING OF THE POLISH ADOLESCENTS TO BEHAVE BETTER THROUGH OLYMPIC EDUCATION - COMPARISON OF THE RESULTS OVER THE YEARS

A. Glapa, M. Bronikowski

University School of Physical Education in Poznan, Poland

The aim of the study is to examine the effectiveness of two similar Olympic education programs conducted in the city of Poznan, the first in 1997/1998 and the second in 2011/2012.

To evaluate the prosocial behaviors of students, the “My Physical Education Class” (Gibbons, 1995) questionnaire was used in both studies. In the study of Glapa (2017), there were 138 students examined all together, aged 13-14 from a junior school in Poznan. The experiment was carried out in the school year 2011/2012. While Bronikowski (1999), in the years 1997/1998, conducted a study on a group of 224 students aged 15-16 s from the secondary school in Poznan. The Olympic education programs were implemented as an annual pedagogical experiment based on specially selected original content. Just after the first study conducted by Bronikowski (1999), “The Olympic education program for middle school - Guide for teachers” was published (Bronikowski and Bronikwska, 2010) and used in the same way for the purpose of Glapa’s study (2017).

Making a comparative analysis of the results obtained in the studies of Glapa (2017) and Bronikowski (1999), we found that the students in the experimental group in the study of Glapa (2017) presented a lower level of pro-social behavior compared to other groups (both from Glapa and Bronikowski study). Comparing the differences in average results between pre- and post-test students from the experimental group, the highest increases of results were found in the study of Glapa (2017), which demonstrate the effectiveness of the experimental factor (Olympic education program).

The study shows that, in general, both Olympic education programs were effective and have caused positive changes in experimental groups and might assist in achieving social goals, especially in the present multicultural school setting, improving the quality of physical education.

TOURISM DEVELOPMENT IN THE CONTEXT OF THE OLYMPIC GAMES

N. Y. Melnikova, A. Y. Nikiforova

Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia

Tourism legacy of the Games of the Olympiad is a diversified phenomenon. The study of the interconnection between the Olympic Games and tourism helps to develop the tourism industry and build lasting Olympic legacy in the host country.

Aims are to determine the Games of the Olympiad influence on the host country tourism industry, the principals of the Games organizers interaction with the tourism industry and the tendencies of the Olympic tourism development.

Material and methods are the theoretical analysis and generalization, the analysis of literature and press.

The Games of the Olympiad contribute to strengthening the host country tourism position in long-term and short-term prospects. Short-term planning includes tourist activity during the Games. The main aim within long-term planning is to use worldwide attention to the Games for popularization of city and country images, mainly through working with mass media (strategy employed by Sydney with 11% increase in tourist visits in 2000). Another important aspect is the cooperation between the IOC TOP-partners and the local tourism industry. TOP-partners can use traditional images associated with certain country, while the local marketers can use marketing capabilities of TOP-partners to emphasize the destination attractiveness. In after-Games period it is important to consolidate the Olympic capital position on the international tourism market (case of Barcelona with 1.7 million tourist visits in 1990 and 3.4 million in 1995). Another issue is inability of some national tourism agencies to develop diverse routes, which is solved by expanding the cooperation between host and foreign agencies.

The study of the Olympic tourism shows its forming as a separate aspect of the Olympics in the late 1980s. The landmark Games were Barcelona-1992 and Sydney-2000, when a new type of tourism planning was presented, including cooperation with mass media, IOC TOP-partners, etc.

SESSION II

CONCEPT OF SUSTAINABLE DEVELOPMENT: ENVIRONMENT AND SPORT

Y. Imas, O. Yarmoliuk

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The aim was to analyze the legislation basis for implementation of the sustainable development into the sport in Ukraine.

Methods: systematic analysis, comparison methods and analogies.

In 2015, the 193 member states of the United Nations reached consensus on the outcome document “Transforming our World: The 2030 Agenda for Sustainable Development” defining 17 goals. The third was to ensure healthy lives and promote well-being for all at all ages. In 2015 the Strategy of sustainable development “Ukraine-2020” was adopted by the Decree of the President of Ukraine. This Strategy states the vectors, priorities and indicators of the relevant socio-economic, institutional, political and legal conditions for the establishment and development of Ukraine in order to implement the European standards of living.

Sports community is taking part in solving ecological problems at various levels and forms. Nature protection policy is one of the IOC’s priorities. Being an active member of the Olympic movement, Ukraine is also integrating the sustainable development in the Olympic values. The mission of NOC of Ukraine Sport and the Environment Commission created in 1999 is to promote and engage Ukrainian citizens through sport to the nature protection, preserving the environment, education and cultural respect for the nature.

The adoption of Decree “On sustainable development of physical culture and sports in Ukraine in the context of decentralization of power” by the Parliament of Ukraine the in 2016 is the clear evidence of the importance of implementation of sustainable development strategy.

In general the positive trends of implementing of the concept of sustainable development into the sphere of physical culture and sport in Ukraine could be pointed out. The principal position is the logically grounded transition from greening of scientific knowledge to the socio-economic development of society as a whole.

THE ROLE AND OBJECTIVES OF INTERCULTURAL OLYMPIC EDUCATION DURING YOUTH OLYMPIC GAMES

K. Płoszaj[1], W. Firek[2], E. Malchrowicz-Mośko[3]

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[2]University of Humanities and Economics in Lodz, Poland
[3]University of Physical Education in Poznan, Poland

The Youth Olympic Games were not created as a goal in themselves. From the very beginning, they have had an instrumental character and are an aid in the process of spreading and propagating Olympic values and initiating the young generation into conscious participation in the games.

The main issue of our work is contained in the following questions: What values does the YOG initiate, instill and strengthen in the personalities of active and passive participants? What educational potential is provided by the Olympic Stadium and the relations occurring between subjects inside the stadium? What is the potential of creating YOG values? How do the YOG inspire participants? Which educational tools and methods should be used in order to be most effective?

The study will consider the subject of the YOG as an asylum and inheritor of de Coubertin's modernist age in the post-modern era. Thus, we are going to write about the existence of two parallel worlds: the Olympic world promoting universal and intercultural objective values as well as the post-modern world, whose constitutive characteristic is the overwhelming relativism of values. In the Olympic Stadium, one can find a clearly defined ideal person, whom we will not find outside the stadium. We will take under consideration the intercultural concept in Olympic Education, as the Olympic idea is intended to be a global project and therefore must be adapted to various cultures. Thus the process of spreading Olympic values must have an intercultural character.

The undertaking of this research will allow for a description of the purposes and tasks of contemporary Olympic education, understood as stimulating the need for a custom of conducting intercultural dialogue, encouraging the understanding of cultural differences, and also preparation for interaction with representatives of other cultures.

CONTENT ASPECTS OF THE DISCIPLINE «OLYMPIC EDUCATION OF CHILDREN AND YOUTH (PRE-SCHOOL, SCHOOL, UNIVERSITY)», DEVELOPED IN ACCORDANCE WITH THE FEDERAL STATE EDUCATIONAL STANDARD OF HIGHER EDUCATION OF THE PREPARATION DIRECTION 49.04.03 «SPORT»

N. S. Leontieva, N. Y. Melnikova, V. V. Melnikov, M. V. Koreneva, L. S. Leontieva

Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia

Modern conditions of physical education and sports education implementation, created within the framework of innovative standards, form the need to reduce the hours of lectures and to increase the hours of the student's independent work. This determines a need of reviewing the structure and content of the academic disciplines of the basic educational programs for bachelor and master's degrees in sports universities.

The present study reveals actual issues, related to the main content aspects of the educational complex of the elective discipline «Olympic education of children and youth (pre-school, school, university)».

The methodological base is the theoretical analysis and generalization, analysis of literature and legal documents.

The present study reveals actual issues, related to the main content aspects of the educational complex of the elective discipline «Olympic education of children and youth (pre-school, school, university)», developed in accordance with the Federal State Educational Standard of Higher Education taking into account the Recommendations and Exemplary Basic Educational Programs of Higher Education of the preparation direction 49.04.03 «Sport», educational program «International sport and the Olympic Movement». Main components of the educational complex of the discipline «Olympic education of children and youth (preschool, school, university)» were shown and analyzed in the research: working program, methodical recommendations, assessment methods, developed in accordance with normative documents which regulate the organization of the educational process in the Federal State Institution of Higher Education in the Russian Federation of physical education and sports profile with the use of credits and the score-rating system.

The paper provides a detailed description of the structure and the content of the program materials of the discipline «Olympic education of children and youth (preschool, school, university)», taking into account the criteria of students' assessment of their final knowledge, showing the level of relevant competences formation.

OLYMPIC EDUCATION IN THE SYSTEM OF GENERAL SECONDARY EDUCATION IN UKRAINE

V. L. Mazyuk

National University of Ukraine on Physical Education and Sport, Kiev, Ukraine

The aim of the study was to determinate the role of the Olympic education in the system of general secondary education in Ukraine

Analysis of scientific and methodological literature and documentary materials and questionnaire were used.

The educational potential of the Olympic education, including humanistic, social, ethical, moral, patriotic and other aspects of influence on the formation of the child's personality is used in Ukraine in the process of implementing the general secondary school education. The first steps in introducing children to the Olympic movement were done first in children's sports, and then in general schools, their participation in “Kids’ Olympic games” with observance of Olympic ceremonies and rituals; later in the competitions named "Olympic Hope of Ukraine" which gained great popularity in the country. The successful implementation of the Olympic education was facilitated by signing in 2006 of the Agreement on Cooperation between the Ministry of Education and Science of Ukraine, the National Olympic Committee of Ukraine and the Olympic Academy of Ukraine. This act contributed to the inclusion of the Olympic issues in the curriculum of the PE grades 1 - 11. However, the students' lack of knowledge about Olympism, understanding of its values, and the teachers - the relevant knowledge and methods of introducing the Olympic education predetermined the creation of educational and methodological literature and didactic material for the participants in the educational process, the annual holding of scientific and practical seminars for teachers. In 2007, on the initiative of the OAU, a network of schools of Olympic education was established in Ukraine, which unites 271 schools, and in which educational work is based on the ideology of Olympism.

The study of the experience of these schools testifies to the positive impact of the integration of the Olympic education in the educational and upbringing process. This is evidenced by the increased motivation of students for sports involvement and in general to learning activity (on average by 5%), a decrease in the incidence of antisocial behavior (an average of 2.7%), a decrease in the level of colds (3.6% on average) To the artistic-aesthetic cycle (an average of 7%). The Olympic Academy of Ukraine owns the initiative and a leading role in scientific research, teaching and methodological support of the process of Olympic education in schools, and the professional development of teachers in various aspects of Olympic education.

AMERICAN OLYMPISM – THE IMPORTANCE OF THE 1932 SUMMER OLYMPICS

M. Mazurkiewicz

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The author of this paper analyses the historical and social importance of the 1932 Summer Olympics, officially known as the Games of the X Olympiad. The colourful decade of the Roaring Twenties (the golden age of American sports) was a thing of the past and the Games, organized during the time of the worldwide Great Depression, managed to fulfill their role – they showed that despite the economic crisis, sport still played an important role as a national identity builder.

The aim of the paper is to explore different interesting aspects of the Games, especially those phenomena which appeared for the first time, such as the creation of the Olympic Village (with kitchens, dining rooms, and other amenities), which was located in Baldwin Hills, a suburb of Los Angeles. Racial issues will be discussed as well, especially the question of ''Eddie'' Tolan, the first black athlete to win two Olympic gold medals (in 100 m and 200 m sprint events). Also women athletes, like Helen Madison and ''Babe'' Didrikson (later Zaharias) will occupy an important place in this analysis. As for technological aspects, uniform automatic timing and the photo-finish camera were used for the first time at the 1932 Games, which will be also demonstrated by the author.

After regaining independence in 1918, physical activity enjoyed great popularity in the awakening Polish state. Sport was definitely seen as a chance of broadly understood renaissance of the nation. The question of the successful participation of the Polish national team in the 1932 Games is another part of the paper. The author presents such sports heroes as Janusz Kusociński, but also takes a look at the art competitions which were part of the Games (great success of Józef Klukowski and Janina Konarska).

The methods of the research included: looking through sports history books, as well as archives (sports newspapers, magazines, and blogs, as well as interviews with athletes).

SESSION III

CONSERVATIVE INTERVENTIONS FOR DELAYED ONSET MUSCLE SORENESS. AN EVIDENCE SYNTHESIS STUDY

M. Płaszewski

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The delayed onset muscle soreness (DOMS) phenomenon is a major problem for elite and recreational athletes, leading to both pain and discomfort, and diminished performance and muscle fatigue adverse effects. Various interventions for preventing and treating DOMS have been introduced, but the evidence for their effectiveness is vague, while systematic and non-systematic reviews provide differing conclusions. Therefore, an umbrella review study is warranted.

This evidence synthesis report is aimed at synthesising current evidence regarding nonpharmacological interventions for preventing and treating DOMS, through systematically selecting, analysing, critically appraising and summarising data from relevant systematic and non-systematic reviews.

An umbrella review research synthesis method. The Preferred Reporting of Systematic Reviews, with the PRISMA flowchart and checklist, respectively. The PRISMA tool for reporting systematic reviews, AMSTAR ROBIS assessment tools will be used to analyse the reporting quality and for critical appraisal of the included reports, respectively. Relevant randomised controlled trials will be included unless appropriate systematic reviews are found. Inclusion criteria will be: population – elite and recreational athletes, any type of exercise; intervention – any nonpharmacological intervention for DOMS; comparator – any defined; outcomes – alleviation of DOMS signs and symptoms; study type – systematic or non-systematic review, or randomised controlled trial in absence of systematic reviews; other primary study types, as well as editorials and letters to the editor will be excluded. The author will invite a second researcher at the stages of study selection appraisal and consensus sessions if discrepancies are present.

The study is currently being conducted. The author is expecting this evidence synthesis study to be an in-depth best evidence regarding conservative and nonpharmacological prevention and treatment strategies of DOMS.

The first tertiary study collecting, appraising and synthesising evidence base for the use of various interventions addressing DOMS, as discrepant or conflicting recommendations are available.

THE EFFECT OF DIFFERENT BIOFEEDBACK METHODS DURING PRECISION MOVEMENTS TRAINING

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The purpose of the study was to increase the effectiveness of precision movements training using biofeedback methods.

The study involved 18 volunteers divided into 4 groups. The control group did not receive biofeedback; the second group used EMG-biofeedback of shoulder muscles; the third group received EEG-biofeedback; a fourth group got multibiofeedback (EEG+EMG). The subjects were trained for precision movement: elbow flexion at the 90 and 45 degrees. Working load was 50%, 70% and 90% of MVC. The movement precision and EMG of shoulder muscles were recorded before and after of 7-day training.

The analysis of EMG parameters of the control group showed an increase of reciprocity of the shoulder muscles. After the training period the most accurate 90 degrees elbow flexion under specified load was performed by subjects from EMG-biofeedback group. Following the EMG-biofeedback training session, the activity of shoulder muscles decreased for most trials. At the same time activity of these muscles increased during elbow flexion at 45 degrees under 50% of MVC load. Subjects of EMG-biofeedback group showed 45±1.02 degrees flexion precision. The average error of elbow flexion in EEG- and multibiofeedback groups was approximately 10 degrees. Subjects of these groups performed the most accurate flexion at 45 degrees under 50% of MVC load. EEG group showed a 45±2.07 degrees flexion and multi-biofeedback group – 48±2.14 degrees flexion. The EMG amplitude of the shoulder muscles compared to the background values significantly increased under the EEG-biofeedback influence. Multibiofeedback leads to decreasing of m. biceps brachii activity during 90 degrees flexion and to increasing of it during 45 degrees flexion. The EMG amplitude of m. triceps brachii increased in all experimental conditions.

EMG-biofeedback makes a positive effect during precision movements training. The most precise movements and optimal muscle activity of the agonist-antagonist system were observed in the EMG-biofeedback group.

EXERCISE HEAT ACCLIMATION EFFECTS ON CYTOKINE RESPONSES AFTER STRENUOUS EXERCISE IN ATHLETES AND RECREATIONALLY ACTIVE MEN

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Environmental heat stress or endurance exercise may evoke immune responses. The purpose of the study was to investigate the impact of exercise thermal acclimation on inflammatory responses in athletes and recreationally active men

The study group consisted of trained men (TR) (n=7, VO_2max 58,9 ± 8,7 $mL \cdot kg^{-1}$, BM 72,3 ± 7,2 kg) and recreationally active men (CON) (n=8, VO_2max 46,8 ± 2,7 $mL \cdot kg^{-1}$, BM 74,8 ± 5,2 kg), all of whom completed a series of 16 workout sessions in hot conditions (35°C, 60% RH). Blood samples were taken at session 1, 8, and 16 prior to the exercise (PRE), immediately (P1), 90 minutes (P2) and 24 hours after (P3) completion of the exercise. Plasma concentration of IL-6, IL-10, hsCRP and thermal stress indices PSI, CHSI were determined.

As a result of thermal acclimation, a significant decrease in PSI and CHSI was observed in both groups ($p < 0.05$). After 16 training sessions, the resting levels of IL-10 increased significantly in both groups. The increase in IL-10 was significantly higher after the 8^{th} and 16^{th} workouts in relation to workout 1 (P1). Significant increase in IL-6 ($p < 0.01$) was observed after workouts 1, 8 and 16 (P1) but exercise-induced increases (delta PRE-P1) in IL-6 were significantly reduced at workout 8 and 16, as compared to workout 1 ($p < 0.01$). A significant rise in CRP was observed for workouts 1, 8, and 16 (P2 and P3). No significant differences between the TR and CON groups were observed in IL-6, IL-10, and CRP concentration.

Exercise thermal acclimation has a significant impact on the change of pro- and anti-inflammatory body response. The level and direction of those changes are at a similar level in trained and recreationally active healthy men.

SESSION IV

CLASS DETERMINANTS OF SPORT SOCIALIZATION PRACTICES AND SPORT CONSUMPTION IN POLAND

M. Lenartowicz

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The paper focuses on the social diversity of sport socialization process and participation in sports from the perspective of Pierre Bourdieu's class theory. Empirical analyses were undertaken to test the theory of Bourdieu in the field of sport and to verify the distinctive potential of sport-related social practices in Polish society. We wanted to know, how after over 25 years of the collapse of communism and the ideology of workers' mass sport, parents equip their children in sport-related cultural capital, including whether they take into account social recognition of sport activities and how this is reflected in sport socialization practices.

In-depth interviews with parents (n=35; mean age 41) whose children practice horse riding (n=7), lawn tennis (n=8), soccer (n=12), and wrestling (n=8) and a representative nationwide survey of parents of children aged 7-16 who regularly practiced sports (n=309; face-to-face interviews) were applied. The sample mean age was 39. ATLAS.ti and SPSS software were applied for data analysis.

Different methodological approaches brought different images of class determinants of sport socialization and parents' sport practices and tastes. Class-based patterns of sport socialization, parental sport experiences and participation, and family leisure and sport consumption were observed in the „extreme cases" from qualitative research. Except for class-dependent sport consumption, this pattern was not confirmed in the survey.

Our research results support Domański's observations (2000) on lifestyles and social structure in Poland in 1990. He concluded that only those groups who occupied extreme positions in social structure had really specific and distinctive lifestyles. The wide space between the top and bottom of the social hierarchy remained undefined and undistinguishable in terms of a specific lifestyle.

‘A WAR BETWEEN POLISH FOOTBALL FANS AND THE GOVERNMENT’ FROM THE PERSPECTIVE OF HERBERT BLUMER’S COLLECTIVE BEHAVIOUR THEORY

M. Jasny

Józef Piłsudski University of Physical Education in Warsaw, Poland

This study uses Herbert Blumer’s theory of collective behaviour to analyse the media discourse about the hooligan activity in the community of Polish football fans that occurred prior to Euro 2012 football championships finals, in the first half of 2011, which the media termed as a ‘a war between the football fans and the government’.

Qualitative textual analysis of the media discourse was applied for 68 press articles that were part of the discourse in question and that were published in the first half of 2011 in *Przegląd Sportowy*, the largest independent sport newspaper in Poland.

The study presents an example of a public discourse where the football fans and Polish politicians were embroiled in a political rivalry. The study compares Blumer’s collective behaviour concept with the results of discourse analysis, following the subsequent stages of the collective social definition of a problem.

All five stages of the process were clear-cut during the analysed period of the political tension between the fans and the government, and that Blumer’s concept proves to be a viable mean of analysing the social problems related to contemporary sport fandom.

GENDER AND NATIONALITY IN SPORTS COVERAGE OF THE TWO LARGEST POLISH NEWSPAPERS DURING THE OLYMPIC GAMES IN 2010-2016

Z. Mazur, N. Organista

Józef Piłsudski University of Physical Education in Warsaw, Poland

The media, due to the way it refers to male and female athletes, is an institution that naturalizes male advantages in society. Many studies conducted in recent years in English speaking countries point to the fact that women are underrepresented in media coverage. Considering the different historical and cultural background, it can be interesting to examine sports media coverage with the view to gender and nationality inequalities also in other countries.

The fundamental goal of the study was to perform a quantitative and qualitative comparison of the press materials from the four Olympic Games. Specific objectives were concerning examine whether women and men get comparable press coverage and whether articles refer to the sports deemed appropriate for each gender.

Two largest Polish newspapers were compared: Gazeta Wyborcza and Gazeta Codzienna Fakt during the Olympics in 2010, 2012, 2014 and 2016. The chosen method was content analysis. Content analysis is currently one of the most important research methods in social sciences. The articles were coded on the basis of their length, author’s sex, and sports discipline. In the qualitative part, categories of coding were delineated: appearance and sexuality of athletes, referring to out-of-sport roles and tasks, language and comments, manner of description of the nationality of athletes.

The analysis of 712 articles has revealed that the amount of coverage devoted to women was smaller than the composition of the Polish representation. Results also indicate that more articles were written about football than about women competing at the Olympic Games as well as major overrepresentation of articles about Polish representatives during the Olympics. The qualitative analysis point to the areas of marginalization when portraying women's sports.

The presented results suggest that the two of Poland's most widely read dailies still follow the practice of excluding women.

SESSION V

SPORT FOR ALL – INCLUSIVE AND UNIVERSAL URBAN PLAYGROUNDS IN THE OUTDOOR PUBLIC SPACE

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While in the past playgrounds were usually designed for children, today we can observe more sport and recreation sites dedicated to all age groups, including senior adults. Traditional playgrounds have recreational equipment such as the seesaw and merry-go-round, while playgrounds of universal character have also facilities for adults, such as basketball court or a chess ground. These facilities enable families to play together, develop physical coordination, strength, flexibility self-esteem and social skills, as well as providing recreation and enjoyment.

On the base of public playgrounds located in Warsaw the authors tried to answer the following questions: which facilities help to stimulate and develop social, mental and physical skills and what are the users' suggestions for improvements. With the use of the field survey (participant observations, structured and semi – structured interviews*)* a number of subjective and objective factors which might determine the 'inclusive urban playground' potentials were indentified. They include strong and weak points of the facilities and their layout design, their safety level as well as the correlation between sex, age group, physical and mental stimulation - which were identified. This survey is continuation of ds-114 project (AWF Warsaw, on the base of MNiSW grant).

Universally designed, inclusive playgrounds (for all age groups) should be accessible to the all community members, including seniors and persons with disabilities (as wheelchair users). To achieve these there are some basic components to be observed: physical accessibility, age and developmental appropriateness, physical, social and sensory-stimulating activity. As the evidences show, exciting, engaging and challenging playground equipment is important to encourage physical activities for all age groups and help to enhance several skills (social, mental and physical).

DIRECT AND INDIRECT ASSESSMENT OF PHYSICAL ACTIVITY OF WOMEN OVER 60 YEARS OLD DEPENDING ON THEIR AGE

A. Ogonowska-Słodownik, A. Kosmol, N. Morgulec-Adamowicz

Józef Piłsudski University of Physical Education in Warsaw, Poland

The aim of this study was to compare the direct and indirect measurement of physical activity of women over 60 years old. Secondary objective was to determine if age has an impact on the association between direct and indirect measurement of physical activity.

201 women took part in the study. Women were divided into three groups according to their age. There were 71 women in first group (age 60-65 years), 72 in second group (age 66-70 years) and 57 in third group (>70 years). Physical activity was measured with ActiGraph GT3-BT. To assess self-reported physical activity International Physical Activity Questionnaire – short version (IPAQ) was used.

There was statistically significant difference in the parameters of direct physical activity assessment (low, moderate and high intensity physical activity, MVPA/day and steps) between the age groups. There was no correlation between direct and indirect measurement of physical activity regardless of the age of the participants.

This study supports results of previous research indicating lack of agreement between direct and indirect measures of physical activity in older adults. Interestingly, younger women were more physically active than older woman only in direct physical activity assessment. Thus, researchers should be cautious when choosing measures for physical activity in older adults that are appropriate for their research questions.

CLASSIFICATION OF YOGA POSES IN BASE OF POSTURAL STABILITY

M. Błażkiewicz, A. Miąsik

Józef Piłsudski University of Physical Education in Warsaw, Poland

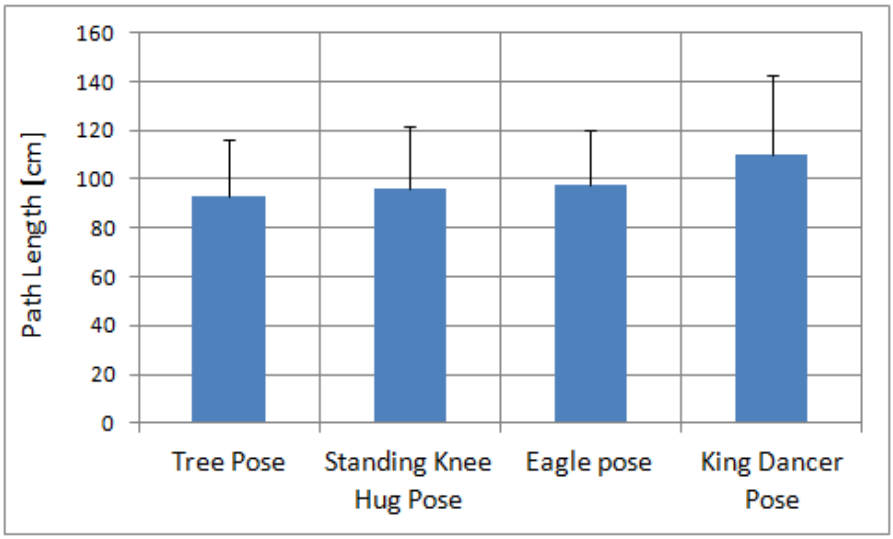
Yoga is promoted as a safe and effective exercise program, capable of increasing the strength, flexibility, and functional capacity of all adults including those in robust physical condition as well as those with musculoskeletal disorders. For beginners, instructors and from scientific point of view, it may be important to know which positions are easier and which are the most difficult in terms of stability.

The aim of this study was to set four the most common yoga positions from the easiest to the most difficult based on the results of the stability analysis.

Twenty two women (28.2 ± 3.05 years old, 59.77 ± 8.55 kg, 165 ± 0.07 cm) participated in this study. All individuals have been yoga instructors from about 2 years. Balance measurements were made in the upright position in four different conditions: Standing Knee Hug Pose, Tree Pose, Eagle Pose and King Dancer Pose. Each position was lasting 20 seconds on AMTI force platform. The following parameters were analyzed: path length for the duration of trial and the maximum displacement in the sagittal and frontal plane. Statistical analysis was carried out using Statistica software at the level of significance set at 0.05.

All parameters had normal distribution. In term of path length the Tree and King Dancer Poses were significant different ($p = 0.00492$) from each other. The classification of the difficulty of poses execution is as in the figure. The greatest body sway were in the sagittal plane for King Dancer Pose (2.07 ± 0.61 cm). This sway were almost two times higher than in other positions.

Based on this results and Yoga knowledge, we were able to make classification of yoga position from the easiest to the most difficult. This results can help to make design of yoga classes.



SESSION VI

EFFECTS OF MANUAL LYMPH DRAINAGE VS PASSIVE RECOVERY ON INFLAMMATORY MEDIATORS FOLLOWING STRENUOUS ECCENTRIC EXERCISE

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The aim of the study was to determine the effect of manual lymph drainage (MLD), used during the regeneration of eccentric exercise (downhill running – DHR) in order to reduce subsequent inflammation.

Ten healthy physically active men (VO_2max 54,4 ± 4,9 ml.kg^{-1} aged 21,5 ± 0,85 years, BH 176,8 ± 3,74 cm; BM 74,1 ± 8,45 kg, LBM 61,7 ± 5,75 kg, Fat 16,4 ± 3,33%). The respondents carried out two 60-minute downhill runs (two weeks apart) with a constant intensity of 60% VO_2max at a 10% decline. After the exercise, the respondents randomly used a passive rest in the supine position (CON) or a whole-body manual lymph drainage (MLD) lasting 40 minutes. MLD and CON were used directly after the exercise and repeated after 24h and 48h. Blood samples were taken from the examined individuals for markers of CK, LDH, IL-10, IL-6, and Mb prior to exercise (PRE), 3 minutes after completion (POS1), 60 minutes after completion (POS2) and 24 hours (POS3), 48 hours (POS4), and a week (POS5) post exercise.

In the CON and MLD groups at the PRE stage, levels of IL-6 and Mb increased significantly ($p<0,01$) after POS1 and POS2 physical exercise, LDH concentration was higher ($p<0,01$) immediately after exercise (POS1), a significant increase in CK was observed after 24 hours ($p<0,01$). Significant differences between CON and MLD were not observed for IL-6, Mb, LDH and CK. A significant increase in the concentration of IL-10 was observed only in subjects undergoing MLD (PRE vs POS3, $p <0.01$). There were no significant differences in the level of hsCRP for time and intervention.

We concluded that MLD could potentially affect the reduction of inflammatory processes through a significant increase in the release of inflammatory mediators in the body, such as IL-10.

EFFECTS OF MAGNETOTHERAPY ON PERIPHERAL CIRCULATION IN ELDERLY WOMEN (60+) COMPLAINING ON A COLD HAND SYNDROME

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Does the magnetic field will change the blood pressure, sensory threshold and quality of feeling in hands of elder women? Do the eventual changes will affect the change of reaction on cold?

The study covered 47 women aged 60-76 years. A questionnaire about possible accompanying illnesses, pain in hands and cold sensation has been written. It was also the basis for the qualification of patients to the survey.

The main part of the survey consisted of: checking the radial and ulnar arteries with the Doppler Ultrasound; measurement of oxygen saturation with a pulseoximeter; innervations of the hand with WEST device, measuring the quality of feeling (QF) and a sensory threshold (ST) marked on a five-point scale; thermographic examination of the dorsal part of the hand with FLIR A325 Camera, and were taken in the line of the guidelines of IACT. Then the patients hand (dominant) was cooled for one minute in 14°C cold water. After another one minute another thermogram was taken. After a series of 10 treatments using magnetic field (MF) (50Hm, 10mT, 15 min.), the whole procedure test was repeated.

After the 10 day treatment ST has improved by 1 in 41 patients. There were no change in 6 cases regarding ST, but 3 of those patients have increased of their QF. The difference in hand temperature measured before and after cooling was on average 1.84°C. After surgery, the difference has decreased to 0.91°C. In one case the temperature after cooling the hand was lower by 2.1°C compared to the period before the treatment. There were no significant changes in the results of Doppler ultrasound or oxygen saturation after MF.

The magnetic field does change the ST and OFin hands of elder women. The magnetic field does improve the reaction of hands of elderly women for cold.

DO LOW LEVEL LASER THERAPY (LLLT) IRRADIATIONS ALLEVIATE DELAYED ONSET MUSCLE SORENESS FOLLOWING A SINGLE INTERVENTION OF NEUROMUSCULAR ELECTRICAL STIMULATION? A DOUBLE BLIND, CROSSOVER TRIAL

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Neuromuscular electrical stimulation (NMES) is a recognised method of muscle strengthening. It may, however, lead to adverse events, including muscle damage and the delayed onset muscle soreness (DOMS) symptoms. Low level laser therapy (LLLT) is one of the novel methods for preventing DOMS. In contrast to volitional activities, no studies have been conducted as regards LLLT for preventing DOMS following NMES. This study was aimed at assessing metabolic reactions and muscle fatigue following a single, strenuous NMES session of the quadriceps femoris muscle, proceeded by LLLT, in healthy men.

A double-blind, randomised, crossover trial, in 24 healthy men, 20-23 years of age, of moderate physical activity; BMI 20-25 and 26-28 (19 and 5 participants, respectively). LLLT, shower probe, 30J to 6 areas over the quadriceps femoris muscle, and then NMES – pulsed, 400 μs, 50 Hz, symmetrical, biphasic current, 5/15 sec. on/off time, 45 isometric contractions, below pain level, were administered. Maximal voluntary and electrically evoked contractions (torques measured using a Biodex 4 device), muscle soreness (VAS scale) were measured and assessed, and blood samples were collected for creatinine kinase and lactate dehydrogenase serum activities, prior to LLLT, immediately, 24, 48, 72 and 96 hours after NMES. The procedure was identical for sham LLLT, except the irradiation was simulated.

NMES led to significant DOMS. The NMES, proceeded by sham LLLT, led to increased CK levels in serum after 96 hours, which differed significantly from the baseline, as well as the levels immediately, 24 and 48 hours post NMES ($p < 0.05$). However, the differences in pain levels and MVC for the LLLT and sham LLLT sessions did not differ significantly.

LLLT did not prevent DOMS, following NMES. Further studies, both as regards LLLT and NMES parameters, time and sites of irradiations, are warranted to allow generalisations.

DO LOW LEVEL LASER THERAPY (LLLT) IRRADIATIONS ALLEVIATE DELAYED ONSET MUSCLE SORENESS FOLLOWING A NEUROMUSCULAR ELECTRICAL STIMULATION TRAINING SESSION? A DOUBLE BLIND, RANDOMISED PARALLEL TRIAL

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Neuromuscular electrical stimulation (NMES) is a method of muscle strengthening, applied, among others, in elite athletes. It may lead to adverse events, including the delayed onset muscle soreness (DOMS). Low level laser therapy (LLLT) is a considerably novel method for preventing DOMS. Unlike in volitional exercises, LLLT was not studied as a method of preventing DOMS following NMES. The purpose of this study was to assess metabolic reactions and muscle soreness following a NMES strength training programme of the quadriceps femoris muscle, proceeded by LLLT, in young, healthy, recreationally active men.

A controlled, double-blind, randomised, parallel trial, in 23 healthy men, 21-22 years old, moderate physical activity, BMI 20-25. Fourteen volunteers underwent a three-week, two sessions a week, NMES training, with a pulsed, 400μs, 50Hz, symmetrical, biphasic current, 5/15 sec ON/OFF, 45 isometric contractions, below pain level. LLLT with a shower probe, the doses of 30J to 6 areas over the quadriceps muscle, preceded each NMES session. Maximal voluntary and electrically evoked contractions, muscle soreness (VAS scale), and blood samples for creatinine kinase (CK) and lactate dehydrogenase (LDH) serum activity analyses, were assessed or collected prior to LLLT, immediately after first and immediately, 24, 48, 72 and 96 hours after last NMES sessions. The controls (nine subjects) participated in an identical training, except the LLLT was simulated.

NMES led to significant DOMS manifested in serum enzyme levels (mean LDH and CK levels increased from 100 to 125 u/L and from 200 to 1500 u/L 96h post the first session, respectively) and apparent muscle soreness (mean VAS score 3.8 72h post the first session). Nonetheless, LLLT group did not significantly differ from controls.

LLLT irradiations were shown ineffective in preventing DOMS following strenuous, three-week NMES training. Further studies, with different parameters and applications, are warranted.

ANAEROBIC THRESHOLD IN ATHLETES OF DIFFERENT AGES

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Dynamics of anaerobic threshold indices in cyclists of various age was studied. The survey involved 83 cyclists (highways) aged 13-14, 15-16 and 20-25 years old of various qualifications. The studies were conducted in the transitional, preparatory and competitive stages of training. The cyclists performed a step-increasing load on the bicycle ergometer to the point of failure in the laboratory. The duration of each stage - 2 minutes. It was measured - pulmonary ventilation (VE(l.)BTPS), heart rate (HR), percentage of O2 and CO2 in the gas-analyzer, blood analyses (the samples were taken from the finger before the load and after each stage). Anaerobic threshold (AT) was defined by a non-invasive method for the characteristic changes (breaks) in the dynamics of various cardio-respiratory parameters and lactate concentration in the blood with a stepwise-increasing load.

The gain of HR(AT) in the annual cycle of training was 1-3%. Among young athletes AT comes at greater sizes of HR, than among adult athletes. A decrease in HR(AT) indicates a great economy in working of cardiovascular system according to the age and increasing training. AT in the competitive period among athletes aged 13-14 comes at a power of 2.73 ± 0.43 W/kg^{-1}, in 15-16 year-old-athletes - 2.88 ± 0.47 W/kg^{-1}, while among adult athletes - at a power of 4.10 ± 0.37 W/kg^{-1}.

It was revealed that the indices of anaerobic metabolism threshold increased proportionally to the age of sportsmen which is expressed in terms of more economic consumption of energetic potential.

FEATURES OF ADAPTATION TO TRAINING LOADS, YOUNG ATHLETES WITH SIGNS OF UNDIFFERENTIATED CONNECTIVE TISSUE DYSPLASIA

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The study of indicators of heart rate variability in young athletes with signs of undifferentiated connective tissue dysplasia (UCTD).

Connective tissue dysplasia (CTD) are divided into differentiated (Marfan, MASS syndrome, osteogenesis imperfecta, hypermobility of joints, mitral valve prolapse) and undifferentiated. UCTD is a set of phenotypic characteristics that are not differentiated in hereditary diseases.

36 children aged 7 – 11 were examined. All athletes were divided into two groups, taking into account the presence or absence of signs of UCTD. Group 1 (n = 22) consisted of children without signs of UCTD. Group 2 (n = 14) - with signs of UCTD. A comparative evaluation of vegetative homeostasis was carried out according to the indices of mathematical and spectral analysis of heart rate variability (HRV).

In the study of HRV in a state of relative calm, significant differences between the groups were observed. All children of the 1st group, the index LF/HF was characterized by eutony or vagotonia (0,57±0,25), which is typical of people involved in sports. In the 2nd group LF/HF was higher (0,94±0,87). In orthostatic position, in athletes, 2 groups, the activity of the sympathetic regulation of the channel were significantly lower parasympathetic regulation of the channel was higher (table).

Indicators of autonomic reactivity of young athletes

Indication	1 group	2 group
TP, ms²	2526,32±1644,77	3560,07±1710,02*
Amo, %	48,65±12,79	41,31±10,61*
VAR, s	0,22±0,08	0,27±0,09*
SI, c.u.	250,38±188,64	164,99±126,32

The prevalence of NDST in young athletes was 39%. In young athletes 2 groups of low growth SI and Amo when performing functional tests combined with high rates in a state of relative calm. This is evidence of incipient failure of both Central and local mechanisms of regulation of heart activity in the process of adaptation to physical load and indicates low adaptive reserves of the body.

SESSION VII

ACTIVE NOT JUST ON-LINE – CAN GOAL SETTING STRATEGY GET THE YOUTHS MOVING?

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Decline in physical activity (PA), specifically in youth raises concerns. Different goal strategies are used to increase level of moderate-to-vigorous physical activity (MVPA) to meet recommended levels. Recently also modern technological devices with step counting as a method of measuring the load (distance and intensity) of PA were introduced. The aim of the study was to investigate the association between PA and different goal setting strategies in school youth, taking into consideration the different sources of support as well as variations by gender and age categories.

Classmate and Teacher support scales were used to evaluate support in physical education (PE) classes, and MVPA was reported. Garmin Vivofit activity trackers were used (8 weeks intervention) to count daily steps. Data was collected from 91 adolescents (mean age 17.2±0.2), 103 young adolescents (mean age 15.3±0.2), and 90 children (mean age 11.5±0.4). Experimental design was employed, using 'goal', 'do your best' and control groups given different step goal strategies based on recommended steps per day.

Results suggest 'do your best' strategy to be more efficient, especially with younger adults and children. Late adolescents reacted the same to both strategies ('goal set' and 'do your best'). Classmate support in PE was reported to be reasonably high, and findings show that it does not play such a significant role in increasing MVPA behaviors of youth. But significantly lower support of PE teachers to adolescent girls should be embedded into the teaching context of PE students and counteracted in school setting realities.

This study indicates that PE teacher support is more efficient than a goal strategy. The results highlight the importance of perceived teacher support to motivation in PA and pointed at PE teachers as the agents of behavior change, specifically in girls.

COTSWOLD OLIMPICK GAMES AS "THE FIRST STIRRINGS OF EUROPE'S OLYMPISME"

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The aim is to show the significance of the ideological and organizational experience of the Cotswold Olimpick Games for the formation of modern Olympism. The idea of reviving the best socio-pedagogical traditions of antiquity in the new cultural and historical conditions always excited the minds of major public figures in Europe, but objective prerequisites for the implementation of such projects were formed only in the era of modern times. The global successes of the modern Olympic movement sometimes overshadow the achievements of Pierre Coubertin's predecessors, which is not entirely just. Cotswold Olimpick Games, organized by R. Dover, should be considered one of the most significant undertakings, which were an important prerequisite for the subsequent design of modern Olympic ideology. The ideological basis of the Cotswold Olympic Games, as well as their organizational experience and a number of social factors that have made possible the more or less regular holding of games for 400 years deserve the most thorough study. Among other things, the study of the Cotswold Olympic Games as an alternative to modern global Olympism will allow a deeper understanding of the social processes taking place in the modern international Olympic movement.

The following scientific methods of research were used in the work: study and analysis of literary and archival sources, theoretical analysis and generalization (including comparative analysis), system approach, sociological survey, mathematical-statistical method.

In accordance with the system approach, Olympism is regarded by us as an integral social and pedagogical system, which is in interaction with culture, economy, health and other sectors. At the preliminary stage of the research, in order to increase the objectivity of the data obtained, social survey methods and expert interviews were used. Works of Russian and foreign authors were as the methodological basis of the research. To obtain empirical data, archival documents were studied.

Olympism in the modern world is an important social, social and pedagogical phenomenon, directly related to people's health, their physical and moral development. An effective solution of these important practical problems requires carrying out further complex (pedagogical, sociological, cultural) scientific research on this subject.

ONTOKINEZIOLOGICAL APPROACH AS METHODOLOGY OF SPORTIZATION OF PHYSICAL EDUCATION IN EDUCATION SYSTEM

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Aims was to justify ontokinesiological approach as a method of sportization of physical education in education system.

Theoretical analysis of scientific literature sources, simulation and interpretation of methodological approaches were performed.

Man's kinesiological potential is the result of his psychomotor development, physical fitness and motor skills mastery level. It was outstanding scholar V.K. Bal'sevich who introduced the concept of man's "kinesiological potential" into the physical culture theory. Man's kinesiological potential is a psychologically, morfofunctionally and biomechanically supported complex of skills to execute purposeful motor actions of specific quantity and quality. We specified some components in the structure of man's kinesiological potential: psychological, motor-coordination, biomechanical and morphofunctional, to judge on the level of kinesiological potential in general.

Innovative practice shows that the sportizated technologies implemented in various educational institutions have repeatedly proved highly efficient. So, the RF Ministry of Education has supported the sports teachers' initiative to actively implement the innovative projects "Chess in School!" and "Sambo in School!" According to the FSES, the elective courses were introduced into the structure of Physical Education, so every pupil could master favorite sport at compulsory lessons. When organizing sportizated physical education, one should act with regard to the integrative unity of the biological and social in a person, which is seen in the kinesiological potential. One should develop mainly the person's value-semantic sphere using anthropic educational technologies treated with regard to pedagogical kinesiology.

Anthropic technologies (focused on personality as a biosociocultural entity) for mastering physical culture and sport values provide for creation of a kinesiological education system, which is a set of specially structured physical culture and sports resources of an educational institution so a pupil could be developed as a subject of conscious transformative motor activity.

The new goals of pedagogical kinesiology are: to explain the goals and meanings of motor actions; to explain certain judgments, conclusions; to develop technologically rational ways of movement systems in the teaching process; to encourage pupils to think, to search, analyze and control themselves whilst learning.

The ontokinesiological approach to organization of physical education, implemented based on the anthropic technologies, facilitates activation of the person's axiological sphere needed to master the values of sports culture.

MODERN CONCEPTION OF HIGHER SPORT EDUCATION IN RUSSIA

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The aim of the study was to consider and improve the conception of higher sports education in Russia.

The scientific problem is development of a holistic conception for the training of trainers in the context of integrated education of the system of Russian sports institutes and is as follows:

a) To justify the set of the provisions, which determining theoretical-methodical aspects of training of coaches in specialized (profile) university, in particular: determined different organization aspects of vocational orientation with institute sport applicants, their pre-university training, vocational orientation of students and graduates. These aspects are effective factors of readiness to master coaching profession. To characterized social aspects of effective coaching activity in modern social-economical conditionals, coach`s duties and influence of social-pedagogical factors on coach`s motivation. To described professional successful coaching activity in modern social-pedagogical conditionals of system “children's and youthful - student - semi-professional - professional sports”.
b) To develop the conception of modern training coaches in integrated educational system of Russian sport institutes. This conception uses modern views and approaches: to clarified the conceptual-categorical research apparatus. To determined social-legal status of coach in modern social-economical conditionals. To identified features of formation and management of the sport institute. To characterized social-pedagogical base of affairs between coaches and sportsmen.
c) To develop a complex program of training coaches in sport profile universities. This program ensures the effectiveness of forming students' readiness for coaching.
d) Technology of effective formation of skills (competences) was justified, described and integrated to the educational process of the Institute of Sport and Physical Education of the Russian State University of Physical Education, Sports, Youth and Tourism.

The proposed concept of higher sport education in Russia has shown its effectiveness. Applied methods which are being used at sport-pedagogical faculties, fully complies with modern pedagogical principles. These principles have to take into account individual abilities of students.

CRITERIA, INDICATORS AND TECHNIQUES OF MEASUREMENT OF THE LEVEL OF DEVELOPMENT OF STRUCTURAL COMPONENTS OF SPORTS CULTURE OF THE STUDENTS

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In recent years the term ‘personal sports culture’ is widely used in research literature. In considering the essence and content of the concept, we proceeded from the concept of sports culture as systematically organized personal characteristics (systemic approach), its conditionality by objectives and content of sports activity (activity approach) as well as by personal traits (personality-centered approach).

Based on these methodological guidelines, we perceive personal sports culture as holistic, system-organized and personal-conditioned human characteristics where a person is a subject of sports activities, adequate for its purpose and content, and providing personal assignment and creation of values of sport as a social and cultural phenomenon.

Conative, creative, axiological, motivational, physical, information, operational, reflexive structural components of personal sports culture are considered to be significant and sufficient ones. Each of these components plays the key role in functioning of personal sports culture and each one is characterized by the corresponding specific content. Development level of each structural component of personal sports culture is determined through integrated assessment of its constituent criteria, and development level of sports culture in general is determined through integrated development evaluation of its structural components. In accordance with selected structural components, criteria, development indicators and measuring methods we distinguish three development levels of personal sports culture which are reproductive, optimization and creative.

Thus the formation problem of personal sports culture stays actual, and it demands elaboration of appropriate objective, informative, organizational, methodical, technological as well as legal support for personally oriented physical education of students based on chosen kinds of sport.

SESSION VIII

SPORTS PERFORMANCE OF SINGLE FIGURE SKATING LEADERS IN FREE PROGRAM

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Modern single figure skating characterized by significant complication of technical components for short and free programs. It requires a comprehensive study of sports and technical indicators for skilled figure skaters to identify the champion model characteristics.

Aim was to define parameters of sports performance for highly qualified single-figure skaters when implementing a free program.

Material and methods was video analysis of free program on World championships 2017 among girls 14-16 years old. Sports performance indicators of leaders (first ten) and outsiders (second ten) were study.

Highly qualified single-figure skaters win free program due to the highest indicators of technical elements – jumping and step sequence. Best values of representation and tie-up steps were also marked (table 1).

Table 1. Sports performance indicators of highly qualified single-figure skaters in free program

№	Indicators	Leader values $X \pm \sigma$	Outsider values $X \pm \sigma$
Technical elements			
1	Jumping	44,20 ± 8,64*	34,89 ± 7,21*
2	Rotating	10,90 ± 1,03	10,29 ± 1,63
3	Step sequence	4,22 ± 0,66*	3,48 ± 0,57*
4	Elements total	59,32 ± 9,36*	48,65 ± 7,12*
Components of program			
5	Skating Skills	6,98 ± 0,72	6,09 ± 0,97
6	Transitions	6,57 ± 0,78*	5,64 ± 0,69*
7	Representation	6,75 ± 0,78*	5,87 ± 0,65*
8	Composition	6,86 ± 0,75	5,99 ± 1,03
9	Interpretation	6,90 ± 0,81	5,97 ± 1,12
10	Components total	34,05 ± 3,78	29,55 ± 4,92
Notation: * - differences between leaders and outsiders are reliable at $P \leq 0,05$			

Parameters of sports performance for single figure skating leaders are represent standard of free program execution. During technical and tactical training of figure skaters the jump elements, step sequence and representation standard must be modeled. Further research will be devoted to individualization of training management of highly qualified single-figure skaters taking into account morphofunctional parameters, sports and technical indicators.

PROFESSIONAL TENNIS: PROBLEMS AND DEVELOPMENT PROSPECTS

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The aim of the study was theoretical-methodological substantiation of formation and development of professional sports.

Sociological methods, analysis, synthesis and theoretical generalization as well as comparison and analogy were used.

The lack of tennis in the Olympic program for more than 60 years contributed to its effective development in accordance with the requirements of the time, not only the Olympic Charter, the creation of an organizational and management system, the main feature of which is compromise. Today, the Olympic movement has a lot of unresolved problems that are settled in tennis: changing the values of athletes, their social adaptation, legal regulation issues, preparation of the reserve. And if the IOC has just started to work in this direction, in tennis various educational programs are mandatory for all tour participants already implemented, beginning in the 1990s. Legal aspect of sports, rights of athletes, their status and interaction with other market players are considered in detail. Individual membership in professional associations (ATP, WTA), the position of the International Tennis Federation (ITF) can remove questions of dictate from the national federations. Tennis players not only are the creators of the sports show, but also take an active part in the management of the tour, owners of tournaments, etc.

Analysis of the best sports practices of the strongest Western professional clubs, positive organizational experience of centralized integrated training and modern sports management mechanisms suggest that the development of sports in the context of internationalization, integration into the world community is not only a general trend in the development of sports at the present stage, but also the most powerful stimulus for the development of sport in the country. The most important component of this system is the functioning of international sports training centers, which give their advantages both for individual athletes and for the state as a whole.

DEVELOPMENT OF THE RESULTS IN SELECTED MALE AND FEMALE ATHLETIC DISCIPLINES IN THE OLYMPIC CYCLE 1992-2016 - COMPARATIVE ANALYSIS

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Civilization progress is also of great importance in the competitive sport, especially for women. It was therefore decided to provide a retrospective comparative analysis of the results of males and females obtained during the Olympic Games 1992-2016 in selected athletic competitions.

The results of the following competitions were analyzed : 100m, 400m, 800m, 5000m flat races, marathon and hurdles: 400m high jump and discus throw. The selected competitions expose respectively: speed, endurance, strength and power. IO scores were referred to the World record, Europe record, Poland record and the average results of the Olympic finals. The results obtained by women are statistically closer to the results of men, mostly in the competitions: high jump (14.85%) 5000 m run (12.37%) the least in the discus throw (3.19%) and in the 100 m sprint race (9.20%)

The development of women's performance in competitive sport is much more dynamic than men’s and unveils statistically valid tendencies to permanent difference reduction.

ANALYSIS OF THE PERFORMANCE OF THE RUSSIAN FEDERATION ATHLETES AT THE GAMES OF THE XXXI OLYMPIAD IN RIO-DE-JANEIRO IN 2016

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Nowadays the Russian Federation is one of the leaders of the international Olympic movement, as evidenced by the results of the Olympic Games in recent years. The organization of major sports competitions, including the Olympic Games in Russia, has led not only to positive trends in physical education and sports development, but also to the improvement of the national team results in the international competitions. The aforementioned facts actualize the current study.

The present study reveals the actual questions, related to the main aspects and the results of the team's performances of the Russian Federation at the Games of the XXXI Oympiad in Rio-de-Janeiro.

The research was based on the analysis of statistical data and reports on the results of national team's performances at the Games of the XXXI Olympiad in 2016 in Rio de Janeiro.

Athletes of the Russian national team ranked fourth based on the number of medals won at the Games of the XXXI Olympic Games in Rio de Janeiro (56 medals overall – 19 gold, 18 silver and 19 bronze). Among other things, the medals were won in sports, in which Russian athletes were not among the world leaders. Russian athletes became champions and prize-winners in the following sports: boxing, wrestling, cycling, water polo, handball, gymnastics, rowing, judo, sailing, swimming, synchronized swimming, modern pentathlon, shooting, archery, tennis, taekwondo and fencing.

Thus, the athletes of the Russian team fulfilled the main task - they successfully performed at the Games of the XXXI Olympiad in 2016 and created a serious competition in the international Olympic arena.

URGENT TRAINING EFFECT OF REMOTE, INTERVAL AND COMPETITION TRAINING METHODS FOR QUALIFIED SWIMMINGERS

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The study was conducted with the aim: 1. Studying the characteristics of physiological effects, continuous and interval training methods in swimming; 2. Determining the dependence of the urgent training effect of continuous and interval swimming on the individual level of development of aerobic and anaerobic abilities of young swimmers; 3. Systematization of competitive distances according to the nature and magnitude of physiological responses of the organism to the load, and also from the level of development of the maximum aerobic and anaerobic capabilities in swimmers of high class.

Young swimmers were asked to perform continuous and interval swimming with a critical (1.6 m/s) and subcritical (1.5 m/s) velocities in the hydrochannel. Qualified adult swimmers were offered to swim the distances of 50, 100, 200 and 400 m with the most accessible speed ways to croche on the chest and back, dolphin and breaststroke. The nature and depth of the training effect of each exercise was determined by the parameters of gas exchange (the level of oxygen consumption, pulmonary ventilation, nonmetabolic "surplus" of carbon dioxide).

As a result of a comparative analysis of the functional shifts in the body of swimmers of boys and girls of high class it is established that the greatest training impacts are achieved when swimming in the ways krol on the chest and dolphin.

The urgent training effect depends on the level of individual functional capabilities of the body of swimmers. With the development of anaerobic abilities for young swimmers who have high absolute values of maximum consumption of O_2 and $ExCCO_2$, the use of a continuous method of training with a critical and subcritical swimming speed will be effective, while for young swimmers in which low values of these parameters are effective continuous swimming with velocities not lower than the critical value.

For the development and perfection of aerobic abilities, one-time swim of distances from 100 to 400 m with maximum speed by all sports methods of navigation can be effectively used. To develop and improve anaerobic abilities, swimmers with relatively high values of VO_2max and $ExcCO_2$ can swim only one distance from 50 to 400 m in all sports methods, adult swimmers with relatively low values of these indicators, it is expedient to perform these exercises at distances of 100 and 200 m. For a parallel increase in functional and power capabilities, swimming by a dolphin at distances from 50 to 400 m is recommended.

ANALYSIS OF RUSSIAN ATHLETES PERFORMANCE AT THE MILITARY WORLD GAMES

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Military World Games is the largest multi-sport event for military athletes, organized by the International Military Sports Council (CISM). Until now, no thorough analysis of Russian atheletes' performance at these Games was conducted despite the high potential of Russian military sports.

The aim of the study is to analyze the performance of the Russian national team at the Military World Games

The methods were the theoretical analysis and generalization, analysis of literature.

Currently CISM unites 134 countries and is the largest sports organization after the International Olympic Committee and the International Federation of University Sports. It organizes such international sporting events as Military World Games and World Military Cup. The supreme body of CISM is the General Assembly. It consists of delegations from member states of the CISM. It meets once a year and makes all the key decisions on CISM activities. The Armed Forces of the USSR (later the Russian Federation) were admitted to the CISM in 1991. Since that time the athletes of its Armed Forces took part in the 171 World Championship CISM in 25 sports. Russia hosted the CISM world championships in modern pentathlon in 1992, fencing in 1993, swimming in 1994 and 2001, orienteering and tennis in 1996, judo in 1998 and 2005, basketball in 2005 and parachuting in 2006 and in 2016 as well as a number of regional championships CISM and the women's European Championship in military pentathlon.

Currently Russia holds the record on the number of medals won at the Summer (243) and Winter (272) World Military Games. At Summer Games the Russian team experienced results downgrade in the early 2000s, however, managed to top the medal table at the last Games. At Winter Games a steady improvement of the Russian team results is noted.

SESSION IX

KEY ELEMENTS OF SPORTS TECHNIQUE OF DYNAMIC LINKING OF FRONT HANDSPRING AND TUCK SOMERSAULT

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One of important factors that condition effective study of sports technique is a phase structure analysis of single exercise movement and entire complex coordination routines. It aims to identify the most important and the most characteristic key elements of particular phases of the exercise as well as linking these exercises into routines. Only on the basis of such analysis is it possible to create modern teaching and training technologies. The study sought to determine the key elements of sports technique of dynamic linking of front handspring and tuck somersault.

The research included female gymnasts (n=10, age 20±3.3 years, body mass 52.4 kg±2.3 kg, height 162 cm±3.2 cm), members of the Polish Junior and Senior National Team in artistic gymnastics. Acrobatic routine analysis was conducted using modular analyser APAS 2000. Trajectory of movement of body biolinks, centre of mass (CM), joint angles, resultant velocities, the execution time of exercises and individual phase performance, body arrangement and position were analysed in this research.

On the basis of kinematic analysis of front handspring and tuck somersault, the following key elements were identified: starting body position, “pick” position and its multiplication– body position change during free of support rotation, and final body position. It was established that a gymnast, after performing the resultant body position after handspring, transforms it into the starting body position of the front somersault tuck. All body positions were characterised by values of joint angles.

The determination of the key elements of front handspring and tuck somersault will contribute to performance improvement during training, which will allow gymnasts to perform more complex and more difficult routines during competitions. Kinematic factors of transforming the body position at the final body position of front handspring into the starting body position of tuck somersault determine efficient sports technique of dynamic linking of exercises.

Acknowledgements

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IDENTIFICATION OF CHOSEN VARIABLES OF THE RUN-UP TECHNIQUE AFFECTING RESULTS IN POLE VAULT

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Final sports result is a component of many parts determining its level. Establishing the actual influence of even a few factors significantly affecting its development, can increase the effectiveness of sports training. Some of these factors are measurable and possible to assess their impact on the outcome.

The aim of the study was to identify the biomechanical parameters influencing the pole vault score, developed by the competitors on the run-up in real sports competition conditions.

Studies have been carried out during the Polish Athletic Association indoor athletics meetings in Spała in January and February 2017. This study included best jumps of 12 athletes the Youth Polish National Team (16–23 years) with different levels of sports. Optojump technology and the Witty measurement system were applied to analyse the following technical parameters: run-up speed before and during the plant of the pole, length and flying time of the two last run-up steps, grip height, time of the take-off, distance between the take-off point and the box, specific end total energy, height of centre of body mass and factor of pole hardness. The obtained data were compared to the pole vault result.

As a result of the correlation analysis of the obtained data, there was a statistically significant relationship between the pole vaulting score and the running speed before and during the plant of the pole, the take-off place and the take-off time. It is also important to distinguish a significant effect on the result of the pole vault of the parameters characterizing technical skills: the height of grip and the index of hardness of the pole. The result in pole vault is affected by: run-up speed and the location take-off point, resulting in grip height and index of hardness of the used pole.

BIOMECHANICAL ANALYSIS OF THE SALTO BACKWARD STRETCHED AFTER THE ROUND-OFF – FLICK-FLACK ON THE BALANCE BEAM

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The aim of this study was to gain knowledge about the key elements of sports techniques in the phase structure which allow athletes to perform a gymnastic routine on the balance beam.

Ten top level gymnasts participated in the study. Mean values of body height, mass and age had a value of: 162±3.2 cm, 52.4±2.3 kg, 20±3.3 years, respectively.

Digital video camera (240 Hz) and APAS 2000 (Ariel Dynamics Inc.) were used in the study. Biomechanical analysis the salto backward stretched, performed after the round-off – flick-flack on the balance beam, resulted in establishing and studying the motion phase structure, and pointing out the key elements of sports techniques as the signal points (postures) of motions. The motion phase structure in studied control tasks was considered as structural-and-functional integrity, causative-consecutive conditionality of gymnastic exercise performance.

Key elements of round-off – flick-flack – salto backward stretched with stable landing were outlined and studied. The multiplication of stretched position determines the contents of motions in the main phase of back salto. In the phase of salto backward stretched with stable landing, concluding actions of the key element of sports techniques, i.e., final position - landing to stop or to transition to perform another jump of the composition was outlined.

It looks like the establishment of the key elements of the gymnastic exercise sports techniques, their biomechanical analysis and the utilization of obtained results during training and educational process are the reason for further increase in exercise complexity and improvement of mastery.

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IMPROVING TECHNIQUE OF BACK DOUBLE SOMERSAULT DISMOUNTS OFF THE UNEVEN BARS BASED ON BIOMECHANICAL INDICATORS

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The main purpose of this paper is the improvement of technique key elements of back double somersault dismounts off uneven bars on the basis of the kinematic and dynamic indicators during the training basic specialization stage.

This case study is an advanced stage of the pedagogical experiment of the post-doctoral thesis and is included in the research plan of the National University of Physical Education and Sport of Ukraine. The research was conducted from 2012 to 2014 and monitored the performances of 12 gymnasts (aged 12 to 15 years) of the Romanian junior national team during three national competitions in uneven bars event. The following methods were used: theoretical and methodical analysis of artistic gymnastics literature; video-computerized method - using ”Pinnacle Studio”, ”Kinovea” and ”Physics ToolKit” programs; method of movement postural orientation and algorithmic analysis of technique; statistical method using ”KyPlot” program.

The results of the spatial – temporal characteristics of technique key elements of back double somersault dismounts off uneven bars highlight the phasic sequence of execution, namely the preparatory movement - spring under bar – Sub-phase 1; body launching posture Sub-phase 2 – moment of release of the bar, multiplication of body position – somersault rotation and concluding posture of the body – landing in conformity with the technical requirements of FIG Code of Points.

The use of the video-computerized method consistent with the movement postural orientation method and the algorithmic analysis of the technique used in back double somersault dismounts off uneven bars contributed to the more effective development of the contents of long-term learning programs, the improvement of technical execution and the achievement of better performances in competition, which confirms the paper hypothesis proposed.

KINEMATIC ANALYSIS OF YURCHENKO VAULT IN WOMEN'S ARTISTIC GYMNASTICS

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One of important factors that condition effective study of sports technique is a phase structure analysis. It aims to identify the most important, the most characteristic key elements of particular phases of the exercise. Only on the basis of such analysis is it possible to create modern teaching and training technologies.

The aim of this study was to define and kinematically describe the key elements of sports technique of Yurchenko vault in women's artistic gymnastics.

In the research took part female gymnasts (n=10, age 20±3.3, body mass 52.4 kg±2.3 kg, height 162 cm±3.2 cm) who belong to the Polish Junior and Senior National Team in artistic gymnastics. Kinematic analysis of the Yurchenko vault has been conducted using modular analyser APAS 2000. Trajectory of movement of body biolinks, center of mass (COM), joint angles, resultant velocities, the execution time of exercises and individual phase performance, body arrangement and position were analysed in this research.

On the basis of kinematic analysis of Yurchenko vault, the following key elements were identified: 1st starting body position, multiplication of body position in 1st flight phase, 2nd starting body position – multiplication of straight body position in 2nd flight phase with preparation to landing, and final body position – landing. All body positions were characterized by values of joint angles and resultant velocities.

The detection of the key elements of Yurchenko vault will contribute to performance improvement during training, which will allow gymnasts to perform more complex and more difficult vaults during competitions. Kinematic factors of key elements of Yurchenko vault determine efficient sports technique of performing these exercises.

COMPUTER MODELLING OF THE EQUILIBRIUM OF A HUMAN BODY FOR IMPROVING SPORTS RESULTS

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The main purpose of the present project is the use of computer modelling for optimization of a sportsman's body position in such sports where results depend considerably on the stability of the body equilibrium. Being in the state of stable equilibrium allows to a sportsman to save his energy and achieve a better result.

The program creates a three-dimensional model of the sportsman's body which can be viewed from different angles. The special attention is paid to the position of the center of gravity of the body and its projection on the base of support: the most stable position is achieved when the center of gravity of the body is exactly above the geometrical center of the base of support. The program allows us to fix some joints of the sportsman's body model and calculate optimal positions for the rest joints to achieve higher stability. It is possible to use photos or videos made during competitions for correction of the sportsman's body position.

We have studied the equilibrium of a human body standing in positions typical for skiing, boxing and athletics and calculated the maximal allowed angles of leanings backward and forward and the optimal angle of leaning. We have also estimated how these angles depend on the body's anthropometric proportions and relative positions of its parts. The results of our analysis are represented in diagrams and tables.

It is very important to find in time and correct defects in sportsmen's performance. On the basis of our diagrams and tables and computer analysis of photos or videos made during competitions coaches can make recommendations to sportsmen how they can improve their skills. Our software may be also used in educational purposes for explaining to sportsmen and coaches the basic issues concerning body equilibrium.

WORSHOP

"THE KEEP THE BALANCE" PROGRAMME[1]

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"The Keep the Balance" programme was a project intended to implement proper nutrition and increasing physical activity in children and adolescents as well as establish the healthy environments and close cooperation between pupils, teachers and parents.

The Programme was implemented in 100 schools and kindergartens in each of 16 polish voivodeships in years 2013 – 2015.

It had two main themes, each with its own criteria:

1. Healthy Nutrition includes changing range of products available in school shops, healthy and nutritious foods being provided in school/ pre-school canteens, breakfast break, and many others enabling young people to make informed decisions about healthy food.
2. Physical activity. The main goal in this area was to encouraging young people in every possible way to be physically active, especially by improving PE curriculum with a wide range of activities and changes in grading system.

The Nutrition and Physical Activity Friendly School/ Pre-School Status (in form of prestigious Certificate) is an award made under the scheme to schools/kindergartens which have achieved the all necessary criteria of programme. To get status and certificate school/pre-school must firstly undergo a self-validation. Once it believes it meets the criteria, the school sends in self-validation form signed by the school Leader of the programme and Headteacher. The Team of the project undergo final validation and confirm of achievements of The School /Pre-school Friendly Nutrition and Physical Activity Certificate.

The main goal of the workshop is to share our experience, achievements and give the general information about project as well as to give a try of validation samples of real documentation.

[1] Project supported by a grant from Switzerland through the Swiss Contribution to the enlarged European Union (the Lider of the Project: prof. dr hab. Mirosław Jarosz).

SESSION X

NEW CONCEPT-MODEL OF PLAYING ACTIVITY IN THE THEORY AND METHOD OF SPORTS GAMES

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The aim was to develop a modern conceptual model of playing activity in the theory and methods of sports games.

Activity in a general sense is defined as the active interaction of a living being with the surrounding world, In the course of which it purposefully influences the object and thereby meets it needs. In the private understanding, this is the implementation of a set of certain actions that are subordinate to private goals that can be allocated from a common goal.

The concept of activity has significant value for modern pedagogy, however its definition does not provide a systematic understanding of the phenomenon of gaming activity, being in part a separate link of a complex interconnected system based on the knowledge of pedagogy, psychology, sociology and biomedical disciplines, allows it to state only the pedagogical part of the process.

The particular importance in the theory and methodology of sports games are the concepts of "playing action" and "game trick." However, in our opinion, there is a necessity of expand the concretization to form a single theoretical basis in the interpretation of sports games, which we tried to undertake in the context of this research. The model of gaming activity in relation to "hand-held" sports games, assumes a logical structure with a consistent interweaving of four levels and internal interrelationships, system-forming, both general and particular tasks of the process of training athletes of various qualifications, in which each level solves a specific problem, and those entering into it system elements solve the game activity problems in the analysis of theory and the methodology of sport games. In the theory and methods of sports games, it is necessary to deeper consider to term game activity as compliance with its methodological structure in the preparation of athletes of various qualifications in order to meet the modern conditions for the development of professional and amateur sports.

The study of game activity should be carried out at the general pedagogical (interdisciplinary-multifunctional) level of significance, using a single conceptual framework and set out apart, allowing to bring the sport science to a common denominator, and therefore the training system and the effective realization of the potential capabilities of athletes of different levels of preparedness in official competitions of any scale.

SPECIFICITY OF MORPHOFUNCTIONAL STATUS OF HIGHLY QUALIFIED PILOTS AND ACCELERATORS IN BOBSLED

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The motor activity of pilots and drivers in the bobsleigh has its own specifics, which is due to the difference in the technical and tactical tasks being solved. The requirements for the morphofunctional, psychophysical status and physical fitness of pilots and dispersers in the bobsleigh are also not the same.

The aim was to identify the specificity of morphofunctional status for highly qualified bobsledders of different roles**.** Anthropometry, pedagogical testing, methods of mathematical statistics were used. The study involved members of the Russian bobsleigh team in the number of 20 people (mean age 27.9 years).

Results: The analysis of the morphofunctional status of bobsleigh players of high qualification made it possible to identify both the features of similarity and the differences in the analyzed parameters of pilots and dispersers. In particular, when comparing morphological parameters, no significant differences were revealed in most indices, whereas significant differences were revealed when comparing most functional parameters of pilots and accelerators (Table 1.).

Table 1. Indicators of physical condition in male bobsleighists of high qualification

Indicators	X ± σ	
	pilots	accelerators
Sprint 50 m, s	5,98±0,33	5,69±0,10*
Leap from the place, m	2,92±0,23	3,17±0,16*
Height of jump, cm	52,65±5,91	60,08±5,43*
Jump power, W	5482,33±280,61	6054,0±410,04*
Weight gain, kg	126,0±8,22	135,5±12,74*
Prize with barbell, kg	193,0±27,75	207,0±11,60*
Bench Press, kg	136,0±23,02	145,5±12,05*
Notation: * - differences between pilots and accelerators, atP≤0,05		

The data obtained in the study served as the basis for developing model characteristics of morphofunctional parameters of bobsleighists of high qualification.

The model characteristics of the morphofunctional status of bobsleigh players of high qualification are taken into account, which are expedient for use in the staffing of national teams, specification of roles, selection for participation in competitions. In addition, the model characteristics can be used to control (current and terminal) the functional state of bobsleighists of high qualification, and also to apply at earlier stages of long-term sports training as a benchmark.

COMPLEX CONTROL IN THE PREPAREDNESS OF QUALIFIED GYMNASTS

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It is impossible to achieve reliability and stability of sports skills in group exercises of rhythmic gymnastics in the process of preparation without improving the preparation of the entire team. It is necessary to form general athletic technique skills in team, to take into consideration the interpersonal relations of gymnasts, to include appropriate means and methods of training, and to formulate selection criteria for the team. Therefore, a complex control is valid, as a tool for managing the training process during gymnasts' preparation in the system of training of high qualification gymnasts.

The goal is to ground the use of complex control in the period of preparation and competitive activity of the gymnasts' team of high qualification because of an objective rating of various aspects of training skills and functional capabilities of the organism. The work process used analysis of thematic literature and Internet sources, systematization and generalization, professional remarks.

The rating of each indicator of training process and the use of step by step training influence can ensure achievement of the planned results. The control process includes: all-inclusive diagnosis and rating of general and special physical performance; determination of reserve level of each gymnasts' potential; determination of the level of functional qualification, taking into consideration the level of health and correction in the individual training plan; effectiveness control of competitive activities; the schedule achievement of sports training and correction events. The use of modern methods and diagnostic equipment on the examination and testing of gymnasts during the preparation period make it possible to introduce recommendations in the correction of the training process.

The planned complex control over the training process of the athletes during the preparation of Ukrainian team of rhythmic gymnastics in group exercises helped to optimize the training and competitive loads of each gymnast and the team as a whole.

THE THEORY OF MOTOR ACTIONS OF THE ATHLETE: THE NEED FOR NEW APPROACHES

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Motor action is one of the main subjects of theory of sport. At the same time, philosophical anthropology shows the considerable interest in it. There is a significant gap between the conceptual understandings of action in each case. The theory of sport needs to attract philosophical approaches which is reflected in particular in an attempt to create a new discipline – kinesiology.

In our opinion, the following provisions form the basis of this theory:

a) Motor action is an integral act of human behavior and has a tripartite structure: external, internal and transcendental;
b) This action is implemented, primarily, in the moral and psychological space that ultimately defines the character of the processes that constitute the functional basis of actions;
c) The action is not driven by the "ready" consciousness, consciousness is formed in the process of this action;
d) Psychosomatic unity of "sense of environment" and "sense of body" is the main task of volitional efforts of the person in the performance of motor actions, aimed at a high practical result.

The use of ideas of philosophical anthropology in the theory of sport opens new opportunities for understanding the social and cultural potential of sport and its practical implementation.

A METHOD OF SPECIALIZED PHYSICAL PREPARATION FOR A FORMATION TEAM IN DANCESPORT: EXPERIENCE OF APPLICATION IN THE REPUBLIC OF BELARUS

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The aim was to prove that in training program of a formation team in dance sport it should be included a peculiar method of specialized physical preparation (MSPP).

Questionnaires (Belarus, European countries, China) allowed to define primary qualities of a dancer: coordinative abilities and special endurance. Team dancers must have a higher level of primary qualities than couples. Common and specialized sources show that MSPP for formation doesn't exist.

To formulate key demands of physical preparation of a formation dancer were examined: essential peculiarities of formation, models of formation functioning, state governing of Belarusian formation, dance sport normative documents.

Key demands of physical preparation of a formation dancer are:

1. A high level of coordinative abilities (to adapt to the rhythm, character and tempo of dances, to perform the geometrical scheme).
2. Duration of the routine and repeatedly performance during a day require a special endurance.
3. Speed-strength abilities must be developed as the adjudicators are placed at a distance.
4. Formation in Belarus is excluded from governmental funding. This requires a highly effective MSPP to be applied, allowing to arrange all the types of preparation within limited time of evening rehearsal.
5. MSPP must quickly level physical preparedness of all sportsmen.
6. Versatile means of physical preparation must motivate for trainings in conditions of low national and high international competition.
7. Tournaments' schedule is irregular, so MSPP must lead to cumulative effect and synchronize the top of team's preparedness with the moment of competition.

The specialized MSPP was applied with Belarusian formation team "Univers" in 2009-2016.

The specialized MSPP gives good results due to the synergetic effect of different sport techniques. The effectiveness of it is proved by:

- Quick growth in 2009-2010 and constant high results of "Univers";
- Low impact of new members for the readiness of the team for the competition.

SESSION XI

PSYCHOLOGICAL SUPPORT IN THE SYSTEM OF TRAINING OF HIGHLY QUALIFIED SPORTSMEN IN OLYMPIC SPORT

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The aim was to develop and substantiate the general algorithm for psychological support of highly skilled athletes.

The modern Olympic sport experiences continuous increase of sports achievement level. The number of competitions is increased, while training and competitive loads tend to enhance. The above constitutes the prerequisite for the search of the new methods of preparation organization for the competitions as well as the new sources of athletes' reserve capacities. Means of athletic preparation psychological support become rather important in handling this problem. Knowledge in the field of athlete psychological support necessitates an integration into complex system of general preparation. The notion of "psychological support" envisages creation of integral and system description of psychological support in the process of highly skilled athlete training and competitive activity. Insufficient volume of information in the area of psychological support is especially evident in elite sport. Therefore, the concept of psychological support in the Olympic sport should be developed and systematized.

Two principal directions of work may be identified within the structure of athletic preparation psychological support. The first is the psychodiagnostics of mental cognitive processes, personality traits and emotional states of an athlete. The second is the psychocorrection that includes learning and developing training programs, psychotherapeutic techniques, rehabilitative actions, consulting, etc. Psychocorrection is performed with application of advanced methods of psychological impact. They include sports coaching, suggestive psychotechniques, gestalt therapy elements, those of body-oriented and behavioral therapy, psychoanalysis, etc. Elaboration and introduction of psychological support general algorithm in the system of athlete preparation in the Olympic sport will reveal their additional psychological reserves.

Rational usage of system approach to psychological support on the basis of individualization of mental state evaluation and correction will contribute to enhancement of the efficiency of highly skilled athlete competitive activity.

ATHLETES' NEEDS AND EXPECTATIONS REGARDING COACHES' BEHAVIOURS

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The aim of this research is to describe Polish athletes' needs and expectations regarding coaches' behaviours.

Coach is the most important person in a sports team (Czajkowski, 2003). He can influence on mental wellbeing (Sivanathan et al., 2007) and athletes' self-confidence, motivation (Isoard-Gautheur et al., 2012), the feeling of competence or help to reduce stress. The behavior of coaches influences the psychological response of athletes (Price and Weiss, 2000). Training instructions, social support, positive feedback, democratic behavior, and low autocratic behavior are positively correlated with positive psychological reactions (such as athlete's sense of competence and satisfaction with sports), negatively correlated with negative psychological reactions (such as anxiety and sports burnout). Coach can build a relationship in the team with the leadership style. Transformational leadership is one of the most inspiring leadership styles and it seems to be the most effective. Transformational leadership means individual approach to a player, taking care of good communication and a good coach-player relationship and athletes' needs (Callow, Smith, Hardy, Arthur and Hardy, 2009). Transformational leadership is based on coaches' behaviours that meet individual athletes' needs. Studies on coaches' behaviors are increasingly focused on how these behaviors are perceived by athletes (Wang et al 2009, Siekanska et al., 2013).

Participants 80 athletes (40 women and 40 men) who practiced: swimming, shooting, archery, athletics, gymnastics, judo, fencing, kendo, sumo, karate. The average age of the respondents is 23 years. The participants filled questionnaires: Leadership Scale for Sports and Coaching Behaviour Scale for Sport Questionnaires regarding athletes' expectations of coaches' behaviour and their coaches' real behaviour. The research is in progress.

COMPARATIVE ANALYSIS OF LIFE MEANING ORIENTATIONS OF STUDENTS-SPORTSMEN AND STUDENTS OF NON-PHYSICAL TRAINING SCHOOLS

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The purpose of this study was to carry out a comparative analysis of meaningful orientations (i.e. goals in life, saturation of life and satisfaction with self-realization) of students of the Voronezh State Institute of Physical Culture and Voronezh State Technical University at different stages of studying. We also studied the dynamics of value orientations as indicators of the semantic attitude to the process of learning and self-identification with the subject of future professional activity

Material and methods: 114 students of the 1st-5th year of the Voronezh State Institute of Physical Culture and 115 students of the Voronezh State Technical University took part in the present study. The results obtained reflect the dynamics of the functioning of the personal meanings system and value the orientations of the student's personality throughout the entire period of studying. An important subject of psychological research is value orientations. They occupy a place at the intersection of two large subject areas - motivation and world outlook structures of consciousness - and are an indicator of the direction of personal meanings. The choice of this particular technique is due to the methodological compatibility of the concept of M. Rokeach with the goals and objectives of our study.

During the analysis and interpretation of the results from the obtained groups one can draw a conclusion about the formation of a system of value orientations and, accordingly, the level of meaningfulness of the goals and means in a given life situation.

When analyzing various courses, the unevenness of the formation and development of a system of personal senses in the process of university education was discovered. Students - athletes are distinguished by higher results on the graduate course. This indicates that the sport helps the early formation of the personality, the comprehension of the life goals and the focus on the result.

SPORTS RESULTS IN MEN'S SPRINT EVENTS AT THE PARALYMPIC GAMES BETWEEN 1992 AND 2016

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The purpose of this study was to analyse the results of Paralympic sprint performance (100m and 200m) among athletes of different classes between 1992 and 2016, with particular focus on the impact of the technologically advanced prostheses and wheelchairs on the athletes' performance.

The results of the Paralympic finalists for the 100m and 200m were collected for the following classes: T11, T42, T43/T44, T35/T38 and T54. In order to compare the results, corresponding Olympic performance results were used for the same sprint distances and in the same time period. The average values were calculated from the race times, and the percentage change in performance during the Paralympic Games between 1992 and 2016 was evaluated. The level of the results achieved by finalists was described by the competition density (CD).

For 100m sprint, the biggest performance changes between 1992 and 2016 were observed in the following classes: T42 (19.6%), T35 (15.2%) and T44 (13.1%). For 200m sprint, the biggest performance changes were observed in the classes T42 and T44 (respectively 22.3 and 16.9%). These values were significantly different for both distances, compared to the other classes (T11, T54 and T35). Among Olympic athletes the performance changes did not exceed 2%.

Conclusions

- The biggest differences when it comes to the percentage change in performance between 1992 and 2016 were observed in the classes T42 and T44 (from 13 to 23%). In the other classes the performance changes did not exceed 10%. This may suggest that the impact of using the technologically advanced prostheses by the athletes is considerable.
- The competition level, measured with the competition density (CD) during the Paralympic Games finals, which most closely corresponds to the performance during the Olympic Games, i.e. 25.2, is represented by the finalists of the class T11 (100m – 16.7). In other classes the value of the competition density was low and varied between 1 and 9.

EVALUATION OF LEVER DRIVE WHEELCHAIR PROPULSION AND MANUAL WHEELCHAIR PROPULSION DURING FIELD TEST

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A wheelchair is basic equipment for people who have problems with locomotion and walking. There are different types of wheelchairs in terms of type of propulsion. The most popular wheelchair is an active wheelchair and people are wheeling by push-rims (manual propulsion). Lever-drive wheelchairs start to be an appropriate substitute to manual wheelchairs. There are only some studies about lever-drive wheelchairs in which authors obtained positive results of those types of wheelchairs and recommend strongly a need to continue research in this field. Thus, the aim of this study was to check physiological parameters during lever-drive wheelchair propulsion and manual wheelchair propulsion during the field test.

Fifteen able-body men participated in this study. All participants were similarly in terms of anthropometrical parameters. All of them drove a lever-drive wheelchair and on a manual wheelchair in the multistage field test, which was developed to evaluate physical fitness and predict peak oxygen consumption (VO_2). Heart rate and breath parameters during each wheelchair driving were measured by Cosmed K5. Test U-Mann Whitney was used to compare distance and results of physiological parameters in driving of two different types of wheeling. Moreover, the energy expenditure was calculated to show differences between moving by each of wheelchairs.

Results confirmed statistical differences between two types of wheelchair propulsion in the multistage field test in physiological parameters (oxygen consumption, carbon dioxide output, maximal oxygen consumption) in a favor of lever-driving. Moreover, participants obtained statistically significant bigger distance owing to driving a lever-drive wheelchair ($p<0,05$). Also, energy expenditure of this driving proved to be less than energy cost of manual wheelchair propulsion ($p<0,05$).

Individuals in driving via levers in the multistage field test could drive longer with less energy expenditure in comparison to manual driving. The multistage field test is an appropriate test to obtain differences between driving in two different ways of wheelchair propulsion.

This research has been supported by grant DS 261 from the Polish Ministry of Higher Education and Science.

DIFFERENTIATION AND CONDITIONS OF GROSS AND FINE MOTOR SKILLS AND A SPECIAL SKILLS IN FLOOR HOCKEY PLAYERS POLISH REPRESENTATIVES TO THE WORLD WINTER SPECIAL OLYMPICS IN AUSTRIA 2017

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The degree of motor differentiation among people with intellectual disabilities is high. It is expected that the hockey team is also significant. The trainer is responsible for preparing for play, training, strategy development and tactics. He should know the players from the psychosocial determinants but primarily the technical-tactical ones. Coaches' decisions about how to use the player's potential should be based on objective factors.

The aim was to assess the differentiation and the conditions of a gross and fine motor skills, and specific fitness players floor hockey team. We sought answers to the following questions:

1. What is degree of differentiation motor skills and specific fitness in floor hockey team?

2. Are there conditions motor skills and specific fitness to the construction of the body, age and training practice?

In research 15 players with disability - members of the Special Olympics Poland team in floor hockey aged 17.7 to 36.7 years participated. The gross and fine motor skills was based on the Bruininks-Oseretsky Test of Motor Proficiency, Second Edition and special floor hockey skills was based on Individual Skills Contest in Floor Hockey. We used also couches ranking of players.

The results of degree of differentiation gross motor skills was lower (15%) than fine motor skills (17%). The differentiation of Specific fitness in floor hockey national team, reached bigger degree in Defense (60%), Pass (59%), and Shoot for Accuracy (52%) than in Stickhandling (15%) and Shoot Around the Goal (3%). The strongest correlations with the Individual Skills Contest were with body height (0.69).

Age, training practice and somatic parameters were less varied than technical skills and small and large motors. The results pointed to the strengths and weaknesses of the team may be help to create tactical solutions during the floor hockey tournament.

SESSION XII

THE LONDON 2012 OLYMPIC AND PARALYMPIC GAMES AS AN EXAMPLE OF SUSTAINABLE DEVELOPMENT IN SPORT

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The major aim of the paper is to indicate and analyse the London 2012 Olympic Legacy as an example of sustainable development in sport, along with emphasis on the socio-economic and infrastructure impact of the Olympics on West London development. The London's case has proved that efficient and harmonious public and private sectors' cooperation guaranteed organisational success of the Olympic Games. Additionally, sustainable development issue refers to the necessity of establishing a reasonable budget for the Olympics.

The main research method is the analysis of Polish and English literature, monographs and reports published by The Organising Committees of the Olympic Games, government agencies and international institutions. Many publications consider issue of sustainable development; e.g. [Zabłocki 2013] describes sustainable development as a new Olympic philosophy. [Zimbalist 2016] examines London's Olympic legacy effects. [IOC 2013] published a brochure describing an array of legacies within a host city. [UK Government and Mayor of London 2015] delivers information about areas of London's Olympic legacies and its principal assumptions and results.

The 2012 London Olympic Games could be regarded as an example of good realization of sustainable development idea in sport. It has brought positive impact on the city and communities development. The London authorities and Organising Committees had a complex, ambitious plan and strategy to turn the event and Olympic infrastructure into success in the field of socio-economic development and urban renewal of the most deprived West London areas. The London case appeared that the Olympics still have a great potential to change the character of the most neglected and underdeveloped parts of host cities.

The London's 2012 Olympic Games organisational success delivered a case of completed coordination of actions and responsibilities, creating best practice of governance standard – management process of global sporting event as the Olympic Games.

SPORTS SOCIETIES OF SAINT-PETERSBURG PROVINCE IN LATE XIX – EARLY XX CENTURIES (FROM THE HISTORY OF SPORT IN RUSSIA)

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In the late XIX – early XX centuries in Russia the individual kinds of sports originated, the first sports societies were created, the first sports competitions took place.

The analysis of archival documents from the funds of the Central State Historical Archive of St.-Petersburg was performed.

There were several dozens of sports societies on the territory of St.-Petersburg province. One of the peculiarities of their activities was season character, as the capital's suburbs became a place of active country life in summer. Since 1894 in the suburbs of St.-Petersburg Strelna the Society of Strelna cyclists-amateur was founded. The activity of the society was high in summer time of the year, as the members of the Society were gardeners of the population of St. Petersburg. According to the Charter the purpose of the Society was defined as – «to be of a center to draw together of living in Strelna and its surrounding area cyclists-amateurs, to promote the use of bicycle as a convenient and pleasant means of transport». The society has spread and other types of sports: gymnastics, lawn tennis, football, fencing. The Society organized public events in Strelna and its surrounding. There was a Race Committee consisting of knight commander and three candidates. The Commission made and followed racing rules and programs of events. There were 300 members in the Society in 1899. In 1906 the members of the Society living in the capital and deprived of opportunities of year-round communication has transformed the Society of cyclists-amateurs into St. Petersburg Strelna sports society. The Board of the society was located in the capital, and the facilities of the Society were in Strelna (in summer) and St.-Petersburg (all year round). In total, the Society numbered 86 people.

The Strelna cyclists-amateur society was one of the first sports organizations in Russia.

EVALUATION OF FIELD BASED TEST FOR PROFESSIONAL FIREFIGHTERS

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The aim of study was identification of physical fitness level of professional firefighters. Second aim of study was evaluation of different field based tests for professional firefighters.

One hundred seventy seven firefighters participated in this study. All participants were divided into three age groups: A (under 25 years), B (25-44 years), and C (above 44 years). Twelve different field based test were used for this study for firefighters physical fitness evaluation.

Results conformed statistical differences between all three age groups in four from twelve field based tests. Four field based tests confirmed significant differences between two oldest groups of firefighters.

Only handgrip test did not show any significant differences between age groups. Strong correlation was confirmed between field based tests.

Physical fitness professional firefighters depends on age of individuals. However, firefighters older than 25 years old present similar physical fitness level.

This research has been supported by grant No PB-84/NCBiR/DOB-BIO6/05/54/2014 from the Polish Ministry of Higher Education and Science.

REALIZATION OF HARDWARE-SOFTWARE SYSTEM FOR CONTENT ANALYSIS AND DIAGNOSTIC EVALUATION OF SUCCESS OF TRAINING IN THE PROCESS OF SPORTS SELECTION IN GYMNASTIC SPORTS

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The aims was to develop a hardware-software complex for content analysis and diagnostic evaluation of success of learningabillity of basic exercises in the process of sports selection at the stage of initial training in gymnastic sports.

Methods were as follows: theoretical and bibliographic analysis of literature; pedagogical observation; testing; stating pedagogical experiment; expert evaluation method; methods of mathematical statistics; video recording (Simulcam, Stromotion); expert video analysis

The hardware-software complex for content analysis and diagnostic evaluation of success of learningabillity of basic exercises of young gymnasts and acrobats is developed. The complex includes a computer database, consisting of three blocks: block for collecting information about the initial level of physical qualities of young athletes; block of their morpho-functional characteristics. The main block of the complex is also the data of the performance of basic exercises and their combinations, necessary for mastering the initial training in gymnastics and acrobatics. The developed program gives the opportunity to determine the dynamics of learningabillity at different stages of long-term sports career, to identify the optimal periods and rates of mastering the exercises. The indicators presented in the database in accordance with the developed scales can be converted into points. It allows identifying the dependencies for all the parameters given by the hardware-software complex. The novelty of the research is the ability to determine the influence of the manifestation of individual physical qualities on the learningability of exercises of young gymnasts and acrobats. It gives the possibility for coaches to identify the most promising group of athletes, to make adjustments in the content of their training process, to increase and improve the level of preparation of athletes behind on the platform of objective criteria.

Active development of modern sports and gymnastics in particular, requires optimization of the sports selection system by searching the most optimal criteria. The conducted research allows us to identify the optimal periods and rates of mastering certain basic exercises, to establish the correlation between the learningability of young gymnasts and acrobats with individual indicators of their level of physical preparation. Introduction into practice of the developed hardware-software complex ensures the implementation of fundamentally new approaches to the organization of sports selection in gymnastics sports and increases the effectiveness of the training process. It is confirmed by the results of the pedagogical experiment conducted on the bases of the specialized sports schools and specialized sports schools of Olympic reserve in the Republic of Belarus.

THE USE OF COMPUTER TESTS FOR IMPROVEMENT OF VISUAL REACTION OF SPORTSMEN

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Scientists have proved that computer games during 10-15 minutes daily have a good effect on sportsmen attention concentration, coordination and reaction. It is also well known that choice reaction time, reaction symmetry and peripheral vision can be improved by practice and training. In this work, we present a new program for computer testing and training of sportsmen's visual reaction.

The testing program represents computer interface which studies the speed of the sportsman's reaction upon the virtual sportsman's position change on the computer screen. There are four positions available on the screen. The positions lie on the horizontal line symmetrically from the left to the right and are separated by equal distances. We use two tests: the first one is simple - the tested sportsman should react by pressing one button, while the second one is more complicated - the tested sportsman should pass a virtual ball to the virtual sportsman by pressing one button out of the four buttons corresponding to the position of the virtual sportsman. The number of passes varies from 40 to 100, the time interval between passes lies in the interval 0.5-2.0 seconds. The design of the program is perfectly fitted to reality which contributes to more effective and persistent changes in the sportsmen reaction skills. Besides football we include tests for basketball, rugby and handball.

On the example of the group of ten 17-19 years old football players with medium qualification we demonstrate the improvement of reaction time by 15% on an average after one month special training including our computer tests for about 5-10 minutes daily.

Our tests have proved to be effective for improving sportsmen reaction, attention concentration, coordination and peripheral vision and should be taken by athletes regularly to develop fine motor skills.

ENERGY – THE MARATHONERS', RUNNERS' AND WALKERS' EVERLASTING DILEMA. THEORETICAL CONSIDERATIONS BASED ON GRAPHICAL APPROACH

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The adequate energy allocation between various modes of gait is one of the major challenges facing marathoners, runners and walkers since energy expenditure for locomotion may be high, e.g. exceeding many times basal metabolic rate. Therefore the primary issue is the minimization of energy for walking and running. However other questions may arise, e.g. how to cover the prescribed distance at the greatest average speed with an assumed amount of energy.

The aim was to show a graphical approach facilitating the qualitative answers to questions mentioned above

The graphical approach deals with the graph representing metabolic energy rate curves for locomotion (running and/or walking in this case) as a function of speed for various investigated environmental conditions (and/or body states). A simple graphical construction on this graph enables visually to assess: optimal speed, average speed, momentary and average energy expenditure per unit distance. It is assumed that the above curves approximately keep their shapes over the time considered.

To demonstrate how the approach works the walking and running cost curves for going uphill and downhill are presented. Qualitative effects are shown for various admitted scenarios of the overcome the hill. E.g. if the player invests into his locomotion a certain surplus energy with respect to the minimum required to overcome the distance in question and the surplus is allocated to 1) uphill or 2) downhill or 3) partially to uphill and partially to downhill movement. It appears that e.g. the average speeds can be greater in the third case than in the remaining cases.

The proposed approach gives an intuitive insight into interrelationships among above quantities. It could be applied to any cost curves and to any modes of locomotion.

POSTER SESSION

NO BORDERS FOR EUROPEAN FOLK GAMES ON THE EXAMPLE ERASMUS+ SPORT PROGRAMME PROJECT "RECREAOLYMPIC"

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The poster presents the results of scientific and organization work done within the framework of the project Erasmus+ Sport Programme, „Not-for-profit European sport events" related to the European Week of Sport 2016 – submitted to and approved by the European Commission. The general objective of the project was to establish a network of contacts between scholars and students of eight universities, including universities from five countries neighboring Poland and three Polish ones[2], the mission of which is to promote physical activity in the context of personal growth and social and professional development. In this aspect, the project supports the implementation of sports for all related to the specific cultural heritage of countries and regions, represented by its participants, and this providing the conditions for social integration in the cross-border context.

In the project process, a number of interesting conclusions were formulated. The most important of them refers to attributing the "copyright" of a given game or fun activity to the cultural traditions of a specific country. Changes in the structure of borders of Central European countries that have taken place over the last three hundred years make it practically impossible to do this. That is why it seems justifiable, although not fully verified, solution is to seek the origin of a given game or fun activity in the space of traditional geographical or cultural regions.

As an example of this thesis in the poster will be presented three games:

- "Wieko" (the lid- Eng.) from the Podkarpackie Region,
- "Sztekiel" from Wielkopolska Region,
- Tlučení špačka (starling – Eng.) from Czechoslovakian Region.

[2] Jozef Pilsudski University of Physical Education in Warsaw-Poland; Faculty of Physical Education at the University of Rzeszow–Poland; Faculty of Tourism and Recreation at the University of Physical Education in Poznan–Poland; Lithuanian Sports University in Kaunas-Lithuania; Culture University of Presov in Slovakia; Masaryk University in Czech Republic; Institute of Sport Science, Department of Sport Pedagogy and Sport Sociology, Otto-von-Guericke University in Magdeburg, Germany; Gerlev Sports Academy P.E. & Playpark. The first European Regional Traditional Sports and Games Centre recognized by TAFISA in Denmark.

MOTIVES FOR AND BARRIERS TO PHYSICAL ACTIVITY PARTICIPATION IN LEISURE TIME DEPENDING ON AGE, GENDER AND EMPLOYMENT STATUS

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A high level of physical activity is a very important factor in preventing the increases in weight. Interventions to promote physical activity in various populations may require using different motivational strategies. Therefore, our aimed to define motives and obstacles to participation in spare time physical activity in relation to gender, age and employment status in inhabitants of Lublin Voivodeship.

The research was realized on a sample of 672 inhabitants of Lublin Voivodeship. We administered our own close-ended question questionnaire to compile data on criteria which hinder or coax physical activity. The respondents were able to give more than one answer. We analyzed the data according to formerly set following criteria: gender (feminine or masculine), age (under 30 or over 30 years old), and employment status (employed or unemployed). We employed χ^2 test and set the p level at 0.05 for all analyses.

The most common reason quoted for non-participation in physical activity was time limitations (50.0%), whereas respondents quoted wellbeing improvement as the most coaxing criterion for physical activity (54.5%). Frequency, with which particular motives and obstacles determine participation in physical activity, differ depending on gender, age and employment status. Those variables also differentiate the number of criteria which hinder or coax physical activity. The obstacle which significantly differentiated women from men, younger respondents from older respondents, and employed from unemployed was ‘willingness to spend more time with family or friends’.

It is necessary to select relevant arguments while elaborating health promotion programs which aim to increase physical activity in spare time. For example, promoting physical activity among employed people required both arguments showing the benefits of spending time together with family and time management skills. Messages that are put across various groups of people should consider both their social and demographic background as well as number of arguments produced.

SOMATOTYPE OF FIRST-YEAR STUDENTS OF JÓZEF PIŁSUDSKI UNIVERSITY OF PHYSICAL EDUCATION IN WARSAW

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Research has shown that a period of study is a time where academic youth are exposed to a non-harmonious lifestyle, indulge in a habit (Huang et al., 2003; Maaroos & Landor, 2001) and prevalence of overweight and obesity among students is high (Truter et al., 2010; Phaswana et al., 2015). Body size, proportion, body composition are all important factors that affect physical performance and are of interest to researchers (Brničević et al., 2014; Kaźmierczak et al., 2012; Nikbakht, 2011; Peterson & Koskel, 2006; Raschka & Aichele, 2014; Tzarova, 2013; Vedat, 2013).

The main objective of the study was to evaluate anthropometric characteristics and determine somatic characteristics of first-year students of Józef Piłsudski University of Physical Education in Warsaw. The somatic profiles of students were also presented, depending on the students' degree course and sex.

The group of participants comprised 394 students of Physical Education (n = 316) and Sports (n = 78). The study was conducted in October 2015. Both the students of Physical Education and Sport were separated by a group of women (n = 85 and n = 20 respectively) and men (n = 231 and n = 58, respectively). The main research method applied included the anthropometric measurements. The Heath – Carter method has been used for the evaluation of the somatotype. In order to determine the significance of differences of the values describing the anthropometric and somatic features between studied groups variance analysis ANOVA/MANOVA (post hoc Tukey tests) was used, assuming the value $p<0,05$ as a significantly differentiating.

On the basis of the anthropometric measurements the somatotypes of women in the first-year were were characterized by somatotype 4.1-4.0-2.3 (Mesomorph/Endomorph somatotype) and men were characterized by the 2.7-4.8-2.6 (Balanced Mesomorph somatotype). There was a significantly greater proportion of the ectomorphic component in the Physical Education field than in the Sport ($p <0.05$). There were no statistically significant differences in the values for WHR (Waist to Hip Ratio), BAI (Body Adiposity Index) and BF (Body Fat), depending on the field of study.

The value of anthropometric indicators in this study was mostly in the range of normal values. The conducted studies show that the anthropometric evaluation of the body structure and the analysis of the structure types can be helpful tool in choosing the type of physical activity students.

RELATIONSHIP BETWEEN COGNITIVE AND PHYSICAL FITNESS OF ELDERLY WOMEN

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Perceptual efficacy deteriorates with age. The information provided to the brain from the outside world is limited in scope and less detailed. Attention selectivity and concentration are reduced, resulting in a decrease in decision-making ability and longer response time in the cognitive stage. All these changes worsen the contact with reality and the orientation in the environment. For these reasons, it is important to know these factors related to the perception and attention, which could be the subject of planned interventions aimed at reducing the pace of involution changes. Physical activity can be one of them. The aim of the study was to determine a. the relationships between cognitive indices (speed of perception, errors of perception and attention) and physical fitness among women; b. changes in these cognitive indices that occurred during 3 months of systematic exercise.

The study involved 114 women aged between 50 and 88 years old participating in U3A lectures and physical activity program for seniors. Perception ability was investigated using Attention and Perception Test (APT). Physical fitness was assessed with the Fullerton Fitness Test and the Romberg Test. In the group of 27 women APT was conducted twice: at the beginning of the study and after 3 months of systematic physical exercise

The perception speed was positively correlated with static balance and lower body strength; there were no significant correlations between physical fitness and errors of perception and attention. After three months of regular physical activity the significant increase of perception speed was observed. The indices of perception and attention errors didn’t change.

Regular physical activity can be used to maintain the cognitive efficiency of the elderly.

The study was supported by Ministry of Science and Higher Education of Poland, project no. AWF DS 256.

DIFFERENCES OF THE VALUE OF PROXIMAL AND DISTAL MUSCLE STRENGTH OF UPPER LIMB IN PHYSICALLY ACTIVE YOUNG AND OLDER MEN – A CROSS-SECTIONAL STUDY

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Age-related reduction of muscle strength is widely considered one of the major causes of physical disability in instrumental activity of daily living and functional limitation. Systematic physical activity can delay and slow down muscular atrophy. The strength of distal and proximal muscles in upper limb in groups of people of different ages, who are physically active, has not been tested yet.

The purpose of the study was a comparison of the strength of proximal muscles – expressed in maximal torques of extension of the arm [ArmExt] and distal – expressed in maximal value of the handgrip strength [HGS] in the group of older and young men.

The study included 50 people who are physically active without illness or medical condition of motor organ and the nervous system. The study included 25 older men [OM] (average age: 68,3±5,5). Control group 25 young men [YM] (average age: 21,2±1,5). Strength measurements of upper limb, which dominates in actions, were done under isometric contraction. The ArmExt measurement was done using Set Measurement Forces ZPS4-P. HGS measurement using a hand dynamometer DR 5.

Statistically insignificant differences in values were found of ArmExt [Nm] and ArmExt standardized for body weight [ArmExt/kg] [Nm/kg] in OM group in relation to YM group. Statistically significant lower values were found of HGS [N] and HGS standardized for body weight [HGS/kg] [N/kg] in OM group in relation to YM group.

It appears that regular physical activity can delay the onset of age-related changes in the area of strength of proximal muscles.

INFLUENCE OF PREOPERATIVE PHYSICAL ACTIVITY OF ELDERLY PEOPLE ON RECOVERY AFTER MAJOR ABDOMINAL SURGERY

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Influence of physical activity on the elderly people quality of life is well documented. Ageing is a risk factor for the development of abdominal diseases. Most of them request surgery. An important component of a comprehensive treatment is perioperative physiotherapy, focused on reducing the risk of complications and improving functional status. The aim of the study was to determine the importance of daily physical activity level, preoperative in physiotherapy elderly after major abdominal surgery.

Material: 34 patients over 65 years old, undergoing elective major abdominal surgery. They were divided into two groups, based on scale of the physical activity UCLA, with high or low preoperative physical activity level. Forced spirometry (FVC, FEV1, PEF) , timed up and go test, 20 meters gait speed test and postoperative autonomy (SAP scale) was measured before the surgery, and in the fourth day after major abdominal surgery. For analyzing the results of the test have been applied t-Student test. P values <0.05 were considered significant

The time of gait speed test ($t(30) = 5,97$; $p < 0,001$) and up and go test ($t(30) = 4,60$; $p < 0,001$) after major abdominal surgery was significant longer than preoperative value. Ventilation values was decrease FVC%($t(32) = 7,85$; $p < 0,001$), FEV1%($(32) = 6,79$; $p < 0,001$), PEF%($t(32) = 5,60$; $p < 0,001$). Level of physical activity had influence on results in evaluated tests of walking and lung ventilation. For up and go test($p= 0,098$) although PEF% ($p=0,064$) values was no significant changes after surgery to preoperative value in high physical activity group. High active group had better results on SAP scale than low activity group($p=0,002$).

Speed of gait and lung ventilation patients 65+ in the early postoperative period after major abdominal surgery is significantly lower. High physical activity of elderly patients before major abdominal surgery, has a beneficial effect on the level of postoperative autonomy, efficiency and independence in gait and ventilation efficiency of the lungs.

EVALUATION OF CHANGES IN AN ABILITY IN MANTAINING BALANCE OF BLIND PEOPLE DURING 4- YEARS PERIOD

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The aims of this study were twofold: to assess the level of balance of blind girls in 4-years period against the BOT-2 standard scores for the able-bodied, and to identify in which trials subjects had the greatest difficulties in maintaining balance.

The study was conducted on 27 girls 13-16 years old from the Educational Center for Blind Children in Laski. Participants were blind, category 4 and 5 according to WHO criteria. Functional balance assessment repeated twice during 4-years period was made using the balance subtest from the Bruininks-Oseretsky Test of Motor Proficiency, Second Edition (BOT-2). Subjects' body height and mass were measured using an electronic height and weight scale in accordance with generally accepted principles.

The results of the research have shown the development of the subjects' balance during 4-years period was significantly delayed in comparison to able-bodied peers' developmental changes of the ability. The observed changes were not significant, none of subjects improved their balance. The ability to maintain balance did not depend on age, body mass and body high.

The blind participants' balance level was below or well-below the average values determined for the population of able-bodied peers. A detailed analysis of the results obtained in each task could help people who are involved in improving physical fitness of children and adolescents with VI, with deficiencies identification and proper selection of exercises that improve balance in both, static and dynamic conditions.

STATIC BALANCE OF VISUAL IMPAIRED TANDEM CYCLISTS

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Sight is a part of the system that determines level of balance. Visual impairment (VI) affects the balance and ability to take physical activity. Level of VI play also an important factor influencing on sports results, thus aim of the study was to evaluate the static balance level of men with VI practicing tandem cycling. One used the stabilometry to assess this ability. The results obtained by cyclists were related to the results of able bodied students. The level of static balance referred to the sport class (level of impairment), disability experience, training experience and training loads of subjects.

The study involved 16 Polish tandem cyclists with VI (71,2kg; 174cm; age: 38,2) and 23 physiotherapy students (77kg; 174cm; age: 22,3). To assess the level of balance one used AccuSway AMTI platform with a stable surface.

Cyclists were characterized by a significantly lower level of static balance in trials with eyes open standing on one leg compared to the students. Both groups presented similar level of balance with eyes closed. Sport class of cyclists didn't differentiate them in terms of the balance level. There was no statistically significant difference in the level of the above mentioned parameter due to their training experience and amount of training hours per week (training loads). However, observed trends, pointed at the importance of these factors.

The studies indicate about the nature of the eye for balance mechanisms. Visual impairment had a negative impact on the level of postural stability. The appropriate level of postural stability is essential for every human being, whether it be athletic, able-bodied or disabled person. Training experience and proper training loads could be possible factors determining static balance of VI athletes, which may be an indication to the practice of coaching.

USE OF UNSTABLE PLATFORMS IN THE TRAINING PROCESS

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In modern sport the role of using innovative equipment and methods of training for achieving good results in competitions has increased, the same situation in fitness. One of such equipment is unstable platforms, which are also often used in rehabilitation process.

Well known effectiveness of programs on unstable surface for coordination training, for activation of deep stabilization system, postural and joint stability, the body's ability to maintain center of mass and for proprioceptive system. In such trainings are widely used: Gym Ball, Dyna Disc, BOSU-ball, Cando Balance Stones, Rocker or balance boards and others. Most of them are too small to make exercises in different initial positions (mostly it's standing on one or two legs and sitting) and include various exercises with changing positions from the floor to the unstable platform.

The aim was to explore innovative sport and fitness programs with float-platforms or SUP. Analyze of literature and biomechanical tests (on SportKat and Stabilan) were used.

Now in fitness become more popular training on SUP (Stand Up Paddle) or Floats – unstable platforms for fitness or yoga on the water. Size of such platforms approximately 2,2×0,8 m, what allows using much more exercises in all possible initial positions and influences not only on lumbar-pelvic complex, but also on shoulder girdle stability. Water is using as additional external factor for instability. The effectiveness of such training programs is increased by using exercises for neuromuscular coordination (especially without visual control) and oculomotor exercises, which is highly recommended.

After 2 months of training on float-platforms women (21-35 years old) improved their dynamic stability (the body's center of mass has become more evenly distributed by the sides, the efficiency of the equilibrium function improved by more than 20%). The indicators of static equilibrium improved by only 10%.

Training on float-platforms allows increasing number of various exercises, which influence on deep and superficial muscles-stabilizators, postural, foot and ankle stability, neuromuscular coordination and overall physical condition depending on aims of training. Such training improved mostly dynamic stability and in some way static.

DUAL CAREER IN SPORT

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The current report deals with the issue of the dual career in sport. Recently the elite players, due to the growing professional orientation in sport, have faced serious challenges, connected to their successful combining their sports and education, and more rarely professional activities. Upon analyzing the issue of dual career in sport we establish the need to review the overall successful career through the prism of the holistic perspective and we take the bio-ecological theory of Bronfenbrenner as a starting point (Bronfenbrenner, 1995; Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006). We study the development of the sports career in the context of the athlete’s interactions with the specific environment by emphasizing on the underestimated in literature and the modern programs for career development issue of an athlete’s own personal activity in the development process and including another topological structure – “inter ego system”. In the context of career development the issue of building two types of competences arises – “sports competence” and “complex competence”, connected with the requirements arising from the “second career” and providing optimal balance between them with a view to the development of the overall sports and life career. Some key factors in the career development have been established as well.

SOMATIC PROFILE OF AN ITF TAEKWON-DO MALE CHAMPION TEAM AND THEIR RELATIONSHIPS WITH THE SPORTS RESULTS

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The somatic diversification of sportspersons results from selection for a particular discipline on the basis of genetic predispositions. Having a specific and optimal somatic build for a given discipline is, therefore, one of the most important determinants of success in sport.

The aim of this study was to characterise physique and body composition of a Taekwon-do ITF male champion team and to determine the common components of body composition and physique that influence sport results.

Study participants comprised the Polish National ITF Taekwon-do Team of men (n=32). The Heath-Carter typological classification was used to assess participants' somatotypes. Body composition was measured using bioelectrical impedance analysis.

A statistically significant difference was determined for only one component: ectomorphy ($p<0.01$). The juniors had a higher share of ectomorphy in their physique than the seniors. The seniors had a higher share of endomorphy and mesomorphy; however, the differences were not statistically significant. Ectomorphy was predominant in the juniors, while mesomorphy was predominant in the seniors. It was determined that the studied components of physique are related to the sports results of elite taekwondo practitioners. A significantly positive and large correlation was revealed for the width of the hips ($r =0.61$) and shoulders ($r =0.52$). A moderate correlation was observed for the upper limb length ($r=0.40$), shoulder width ($r =0.47$), pelvis width ($r =0.49$), thigh length ($r =0.48$) and foot length ($r =0.44$).

High-ranking taekwondo practitioners of the same weight class differ in somatotype. The seniors had a symmetrical physique and body composition. The juniors and seniors displayed common traits in the components of body composition and physique that determine success in the international sport rivalry. This study was performed under the statutory research grant DS. - 281 financed by the Ministry of Science and Higher Education in Poland.

TECHNICAL SKILLS OF ELITE FEMALE AND MALE FREESTYLE WRESTLERS

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Numerous studies point to changes in plans and programmes of technical training as well as concepts of technical and tactical preparation that stem from changes in wrestling rules and fight-related behaviours of current champions. Differences between winners and defeated competitors most frequently result from the lack of experience and technical skills. The aim of the study was to gain knowledge about the effects of technical skills on high-level wrestling performance.

The study included 30 female and 30 male elite freestyle wrestlers aged 18-23. The subjects were divided into medallists of the Polish senior championships and wrestlers who won 5^{th}-8^{th} places in these championships. Technical skills were assessed taking into account the quality of performing three elements in a vertical posture: *hip throw with an arm and neck grip, hand grip tackle* and *leg grip tackle* and three in a horizontal posture: *grip gut wrench (right and left side)* and *reverse distal thigh throw*. Five wrestling experts assessed technical skills.

Female and male wrestlers demonstrated similar levels of technical skills. Compared to non-medallists, medallists exhibited higher-level performance of technical skills in a vertical posture: *hand grip tackle* and *leg grip tackle* ($p<0.01$) and in a horizontal posture: *grip gut wrench* (left side) and *reverse distal thigh throw* ($p<0.05$). As for female wrestlers, the greatest differences between medallists and non-medallists were mainly noted in technical skills performed in a vertical posture ($p<0.05$).

The findings made it possible to try to identify technical factors of success in elite wrestling. Further research should focus on seeking various success factors (somatic, conditioning or mental factors) in the context of weight class and the level of sports competition.

The research was financed from grant number N RSA4 03154.

CONTROL FOR TECHNICO-TACTICAL FITNESS OF ELITE EPEE FENCERS

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Control for technico-tactical fitness of epee fencers in the process of the competitive activity is of tremendous practical significance, as it allows to evaluate objectively the athlete technical and tactical actions in the face of opponent's actions, and to map out the ways of their improvement.

The aim was to develop practical recommendations on the usage of the data of analysis of technico-tactical fitness under conditions of the competitive activity.

Observations, notational registration of athletes' fighting actions, analysis of video recording and score-sheets, expert evaluation, statistical data processing were used. Eleven elite epee fencers participated in studies.

Studies of technico-tactical actions of epee fencers have demonstrated that 70% of all fighting actions (double attacks including) constituted attacking actions, of which 26,6% were simple attacks, 20,9% feint attacks and 22,5% those by prise-de-fer. Counter-attacks (17,3%) constituted the next large group of characteristic fighting actions. Then came defensive-riposte actions – 10,8% followed by performance of counter-defenses and counter-ripostes – 1,9%. Analysis of the efficiency (with account for only those actions that resulted in hit award) is characterized by the following data: attacks – 58,0%, counter-attacks – 57,9%, defense-ripostes – 47,5%, counter-defenses and counter-ripostes – 13,6%.

Therefore, improvement of elite epee fencer competitive activity envisages the expansion of the content of countermeasures to opponent's attacks at the expense of the increase of the amount of counter-attacks and defenses with ripostes. In addition, the efficiency of attacks should be increased on the basis of enhancing the number of attacks on the preparation, counter attacks, redoublements and feint attacks.

The efficiency of fencers' technico-tactical fitness may be improved on the basis of their competitive activity analysis.

COMPUTER MODELLING OF A FOOTBALL TRAJECTORY TAKING INTO ACCOUNT ATMOSPHERIC EFFECTS AND MAGNUS FORCE

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It is well known that wind, altitude and air resistance can affect a football trajectory and cannot be neglected by sportsmen and coaches. The theoretical model of our shot simulator is based on a system of differential equations and describes the complex effect of head/tail wind, crosswind, altitude, temperature and Magnus force on a football trajectory. Our program together with the calculated diagrams will help coaches and sportsmen to predict the necessary velocity vector to put the ball in the goal.

The main features of our shot simulator that distinguish it from other simulators are its simplicity, the intuitive graphical design, three-dimensionality, the possibility to add virtual players and the possibility to view shots in the real-time regime. The program's interface represents the first-person point of view where a virtual football player can move in the directions perpendicular and parallel to the opponent's goal. Just pressing arrow buttons in combination with Ctrl, Alt and Shift keys the user can easily change the position of the virtual player on the virtual field, as well the initial velocity, direction and angular deviance of ball's velocity.

Our program allows us to calculate a football's trajectory for different wind speeds and different altitudes. For example, for a goal-kick launched at sea level, a rough approximation is that the range is increased or decreased by a yard for each mile per hour of the tail/head wind. Another rough approximation is that each 1000m of altitude will increase the range of a kick which carries about 50m at sea level by 2m.

Sportsmen should be aware of possible external effects on the ball trajectory. Knowing the strength of their kicks sportsmen will be able to select the best angle for a kick taking into account wind and altitude.

BIOMECHANICAL EVALUATION OF CLASS-SPECIFIC DOUBLE POLING IN ELITE PARALYMPIC CROSS-COUNTRY SIT SKIERS

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Classification process in Paralympic cross-country sit skiing is based on a series of specific lab functional tests and observations during trainings and/or competitions. This system groups athletes for 5 classes and due to their impairment level is leading to time percentage bonus system which aims to fair competition. But while lab tests improve, there is no empirical evidence for specific functional differences during the skiing situation. That is why, the purpose of this study was to biomechanically investigate the differences between cross-country sit skiers while skiing on snow at different terrains and speeds and relations to performance.

In total, 12 male elite sit-skiers representing different sport classes (2-LW10, 0-LW10.5 , 1-LW11, 4-LW11.5; 5-LW12) participated in the measurements. All tests took place under real snow conditions and athletes performed trials with constant and maximal speed on flat and uphill terrain. A kinematic 2D video (3 cams; 50 Hz; APAS-System-USA) analysis was performed to analyze trunk-elbow and pole angles. Additionally propulsive pole forces and cycle characteristic were measured (axial; 1000 Hz; AUT/FIN).

Elbow and pole angle patterns did not clearly discriminate classes but seem to discriminate LW10/11 vs. 11.5/12 and in particular LW 11.5 and 12 should most likely not be separated in a race. Trunk patterns and force production were partly class-specific but with no differences in LW12 vs. LW11.5. A LW 10 most likely cannot properly stabilize the core (counteract) against pole reaction forces or can at best keep trunk position, while LW11.5-12 distinctly flex the trunk against rising forces creating higher propulsion. Lower propulsion force values in classes LW10-11 compare to classes LW11.5-12 are compensate by higher pole frequency and shorter polling cycle length to keep speed. Additionally, maximum speed (Vmax) was correlated to classes shows the differences which hardly follow the linear 4% steps in the time-% system.

From a sit-ski specific functional point of view not all used classes can be clearly discriminated from each other and the influence of impairment on force production, cycle characteristic and performance has to be further investigated with possibly bigger groups of cross-country sit skiers.

THE INFLUENCE OF THE MYORELAXATION ON THE PHYSICAL WORKING CAPACITY LEVEL OF THE ATHLETES WITH DIFFERENT STARTING VEGETATIVE TONE UNDER VESTIBULAR LOAD

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The athletes-anaerobics, wrestlers, in particular, reveal obvious changes of the muscle tone in cervicothoracic part of the spinal column which reflectively modulate the activity of the main systems: respiratory and cardiovascular, in particular, as a result of the specific workout and competitive activity. There are a number of modern methods which helps to correct the functional condition of mesodermal formations in somatic zones. One of them is traction myorelaxation.

81 athletes with ageing from 18 to 23 years were studied. All the athletes were divided into groups: I group (n=36) with the parasympaticothonic type of VNS, II group (n=22) – with the sympatothonic type, and the III group (n=23) consisted of athletes-eutonics. In the series-1 the young men experienced VL by the Voyatchek method. In the series-2 prior to VL the young men did the physical exercises aiming at active traction-rotation myorelaxation (ATRM) of the muscles of the C3-Th8 segments during 10-15 minutes. In both investigation series before and after VL and after ATRM+VL complex all athletes did test PWC170. The changes were registered by electric myotonometer in symmetric paravertebral points C7-Th1 in both series of investigation.

The results showed that the athletes with sympaticothonic type showed greater decrease of physical working capacity. The athletes with parasympaticothonic type had less distinct reaction to rotation. Such an effect might be determined by general tone raise of parasympathetic regulations in the VNS activity pattern caused by so-called endurance which is very typical for highly qualified athletes. The athletes-eutonics didn't for certain react to VL.

In the series-2 of investigation the MT of the athletes of all groups lowered by 10,6%, 14,8% and 3,8% ($p \leq 0,05$) accordingly. These changes entailed the raise of endurance and in fact the raise of physical working capacity by 1,6%, 11,6% and 2,6% ($p \leq 0,05$) accordingly.

THE USE OF GENOUROB REHAB PRO GNRB DEVICE MEASUREMENTS IN ASSESSING ANTERIOR CRUCIATE LIGAMENT INJURIES IN ATHLETES

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Preliminary examinations aimed at assessing anterior cruciate ligament (ACL) injuries include clinical tests of joint stability, KT-1000 arthrometer tests, ultrasonography (USG) and magnetic resonance imaging (MRI). Early diagnosis is crucial for the treatment process to be effective. The lack of it usually results in an increased risk of recurring knee injuries. Technological advancement of the locomotor system diagnosis contributed to the creation of the GeNouRoB Rehab Pro GNRB device. This apparatus is used to assess ACL quality. The aim of the study was to compare outcomes of ACL injury assessment performed with the use of GeNouRoB and MRI devices. Do radiological assessment results correlate with the results obtained with GeNouRoB Rehab?

The research was carried out on 50 athletes aged 20-28 who required ACL reconstruction surgeries. The study inclusion criteria – multi-ligament knee injuries and meniscus injuries. The research was made up of the following stages – MRI assessment, ACL elasticity assessment using GeNouRoB device.

Statistical analysis revealed significant correlations between the measurement results and radiological assessment outcomes. Thus, the findings indicate that the GeNouRoB device examination provided an effective preliminary diagnosis of ACL injury.

The obtained research results show that the use of the GeNouRoB device measurements when diagnosing ACL injuries in athletes is well-grounded. The fact that such examinations are non-invasive and results are reliable points to the usefulness of measurements in early diagnosis as well as an alternative to MRI in sports clubs.

STRENGTH CAPABILITIES IN RELATION TO THE CONCENTRATION OF IGF1 AND COLLAGEN SYNTHESIS MARKER IN THE FEMALE MENSTRUAL CYCLE

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Previous studies show that motor system injuries in women occur more frequently during the sharp increase in estrogen synthesis (Zazulak et al. 2006) coinciding with the decrease in collagen levels in tendons (Galey et al. 2000).

The aim of the study was to evaluate female strength capabilities in relation to the changes in growth hormone (IGF1) and collagen synthesis (PICP) and degradation (ICTP) markers during the female menstrual cycle.

The study group consisted of 27 women aged 22 years. The average height of the study subjects amounted to h = 168.9 ± 5.97 cm and body mass bm = 61.5 ± 9.31 kg. They underwent biochemical and biomechanical measurements on designated days during the menstrual cycle. The muscle torque of ankle joint flexors was measured in static conditions in a sitting position for different lengths of triceps surae.

Mean values of IGF1 concentration in both phases of the cycle remained above the norm and were significantly higher in the luteal phase ($p<0.05$; 8.2 %). Also, the concentration of collagen markers was very high in both phases. The ICTP concentration, however, lowered by 6.3 % in the luteal phase. The results corresponded with the torque obtained in particular phases of the menstrual cycle. Considerably higher torque values were observed in the luteal phase ($F_{(1.26)}=11.58$; $p=0.002$) for both measurement angles and significantly higher torque values for the 90^{o} angle in both phases of the cycle. The torque for the extended muscle was on average 10 % lower ($F_{(1.26)}=11.58$; $p<0.002$). In addition, there was observed bigger influence of the joint angle factor (91 %) on the obtained torque values than of the cycle phase factor (64 %).

In the training process, adjusting load according to the menstrual cycle may in future decrease female specific injuries.

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A MORPHOLOGICAL PROFILE OF BALLET SCHOOL FEMALE STUDENTS AT DIFFERENT STAGE OF BIOLOGICAL DEVELOPMENT

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The objective of this study was to describe the morphological characteristic taking into account somatotype and body composition in order to compare premenarcheal and menarcheal ballet school female dancers.

The research material consisted of 24 female students from Ballet School in Poland aged 10-19. They were qualified to particular groups due to occurrence of menstruation. Twelve ballet dancers aged 12.13±1.9 years before menarche were included in group one (premenarcheal dancers). Group two consisted of 12 dancers aged 16.70±2.12 years who already menstruate (menarcheal dancers). To evaluate the body built type the Heath-Carter method based on Sheldon's classical concept of three body built components was employed. Body composition was assessed by BIA.

The main findings of this research are that premenarcheal ballet school students had balanced ectomorph somatotype profile and menarcheal ballet dancers had central somatotype profile. From these data it could be observed that there are no statistically significant differences between the group of premenarcheal and menarcheal ballet dancers for the following variables: supraspinale skinfold, endomorphy and ectomorphy components, somatotype and FAT%. Percentage value of the fat tissue in the body falls with age among the testees. This dependence is particularly visible among menarcheal ballet students.

Despite a big number of training hours and great pressure by the teachers to keep low body weight the tested ballet dancers develop correctly, what is shown by the BMI and FAT%, which were localized in the lower limits of the normal. The observation of ballet school students' somatic features helps to select talents and prevent occurrence of eating disorders. Proper body built and composition provide better effects in the practice of classical ballet.

The study was supported by Ministry of Science and Higher Education of Poland, project no. AWF–DM-42.

OVERLOAD OF LOWER EXTREMITIES DURING DROP JUMP WITH VARIOUS EXTERNAL LOADS IN FIREFIGHTERS

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Champoux i Cloutier (1996) found that as much as 37 % of all firefighters' accidents at work were related to getting out of the fire trucks cobs, which are located at a 1 m height. The aim of the study was evaluation of the overload of muscle skeletal system resulting from the different external loads in firefighters.

The study group consisted of 179 men in three age categories: up to 25 (In = 76), up to 44 (IIn = 79) and over 44 years old (IIIn = 24). The subjects performed three landing on to the force platforms from two heights (0.5 m; 1.0 m) and in two types of clothes: sport and fire protection which increased of load about 75 N. Ground reaction force was recorded during each landing. For the evaluation of the overload of the movement system was chosen: maximal vertical reaction force (GRF N), relative ground reaction force (GRF/BW) and time of overload (t>1BW). Three-factors repeated measures ANOVA ($p \leq 0{,}005$) was used for the statistical analysis.

It was proven that the load was 4-fold higher than BW for all tests: for two heights (0.5 and 1.0 m) and for two types of clothes. Significantly lower load was found in the oldest group ($F_{(2.17)} = 7.486$; $p = 0.0007$) with a statistically significant longer duration of those load timing ($F_{(2.17)} = 7.749$; $p = 0.0006$). In addition, it was found that the overload during drop jump of firefighters in fire protection was even higher during landing from height of 1 m ($F_{(1.170)}=36.01$; $p=0.000$).

Based on the conduced research, we concluded that special attention should be paid on the developing of increasing amortization technique of landing from different heights what also has been confirmed in the Giguere i Marchand (2005) research.

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PARTICIPATION IN PSYCHOLOGICAL WORKSHOPS AND CHANGES IN PERSONAL RESOURCES IN STUDENTS OF THE UNIVERSITY OF PHYSICAL EDUCATION IN WARSAW

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In the work of a Physical Education teacher and a coach, psychosocial skills such as social competence and emotional intelligence are useful. The aim of the study was to determine the influence of psychological workshops on the development of these skills in physical education students. Searching for answers to the research question: are emotional intelligence and social competence changing under the influence of participation in psychological workshops?

The study has been carried out in a quasi-experimental model with a pretest and a subtest dependent variable. Thirty-three students from the Faculty of Physical Education of the Academy of Physical Education in Warsaw, Poland took part. The respondents participated in three copyrighted 12-hour psychological workshops: *Communication In the Light Of Feelings and Emotions*, *Forgiveness,* and *The Need for Love*. Before and after each of the workshop, emotional intelligence and social competence were investigated using *Popular Emotional Intelligence Questionnaire*, *Social Competence Questionnaire* and *The Authorized Communication Skills Questionnaire*.

Participants in the workshop observed favorable changes in general emotional intelligence (χ 2 = 10.33, p = 0.016). Measurements were made before the whole cycle of workshops and after each of them. Especially have improved ability to understand emotions (χ 2 = 23.66, p = 0.000), assertive behavior (χ 2 = 8.26, p = 0.041) and emotional control (χ 2 = 6.88, p = 0.076). Measurements of communication skills after the first effective communication workshop indicated an increase in skills in specific subjects (z = -1.75, p = 0.079). Observing the changes in social competence after the third workshop, in relation to the first, we see a change in the assertiveness (z = -2.042, p =0.041).

Psychological workshops have provided a useful tool for shaping students' psychosocial skills and should be included in the curriculum of teacher education, including Physical Education.

THE COMPARISON OF HEALTH ATTITUDES OF STUDENTS WHO ARE PROFESSIONAL ATHLETES AND STUDENTS WHO DO NOT DO SPORT FOR COMPETITION

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Nowadays, healthy lifestyle is of particular importance. On the one hand, progress in medicine as well as general development of civilization have contributed to improving the quality of life, while on the other hand, more and more common sedentary lifestyle with excessive amount of low quality food negatively affect human health.

The purpose of the study was a comparative analysis of pro-health attitudes of students who are professional athletes and students who do not do any sport for competition. In order to achieve the purpose it was necessary to answer the following questions: How do the students evaluate their health and what do they do to improve it? How do the students use their spare time and which forms of physical activity do they take up? What is their emotional attitude towards healthy lifestyle?

A diagnostic survey method was used in the study. A total number of 112 students (45 women and 67 men aged 19-29, of which 59 students trained systematically and 53 did exercise rarely) of two Biała Podlaska higher education institutions were questioned with the use of the technique of questionnaire. To measure the attitudes and opinions of respondents Likert scale was employed.

The analysis of the results reveals more positive and stronger pro-health attitudes among students who train regularly. The following conclusions could be drawn: the impact of higher education institutions on shaping health behaviours of students as well as the research in the field of nutrition, physical activity and avoidance of stimulants should be intensified.

Practising sport positively affects pro-health attitudes and lifestyles of students and therefore should be included in health education.

SOCIOLOGICAL ASPECTS OF DEVELOPMENT OF FITNESS INDUSTRY IN BELARUS

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The aim was to identify factors influencing motivation to work out in sports clubs. The study used scientific methods of observation, description, analysis and comparison, a sociological survey based on the questionnaire developed by the authors and methods of mathematical statistics.

In recent years, high growth rates of the fitness industry market have been registered in Belarus. Observations of the daily life of people and the study of their way of life have shown that, recognizing the usefulness of physical culture and sports activities, the bulk of the population of the republic chooses "more interesting forms of employment" than doing fitness, namely: passive rest and physical work at home and on household plots.

In order to study the motivation of fitness activities was conducted a survey of 150 respondents, attending sports clubs in Brest. The fitness classes are oriented on different segments of the population that differ in age, sex, income and education. The motives for attending fitness clubs are very diverse - from the desire to lose weight and to maintain a good shape to the feeling of self-worth and the possibility of finding friends. The choice of the club is influenced by various factors - courtesy, high professionalism of instructors and high-quality equipment, adequate price and a variety of fitness classes.

The main problem of the development of fitness in Belarus is the low solvency of the population and the lack of a sufficiently strong motivation for physical training and sports. At the same time, the results of the research showed that there is an increase in the number of clients of fitness centers working out actively and consciously in them. For even greater involvement of the population in fitness activities it is necessary to focus on the organization of educational and propaganda work in the field of healthy lifestyles, and the elimination of various social barriers.

FANOTOURISM IN POLAND: THE SOCIO-CULTURAL ASPECTS OF SPORTS SPECTACLE

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Fan tourism in Poland is set an example of one of the newest forms of tourist activity. A great impulse for its development has been the large sporting events organized in Poland, as well as the successes of players from national teams and individual disciplines. The purpose of our own research was to develop a diagnosis of the condition and prospects of fan tourism development in Poland on the example of Fan Club Barca Polska members. Among the most important research topics are motives and forms of participation, financial and organizational issues, expectations of participants, determinants for the development of fan tourism.

The research used a diagnostic test (survey technique), analysis of subject literature, and participant observation. The questionnaire consisted of 19 closed questions. The research was conducted on the members of Fan Club Barca Polska in July-August 2015 on a group of 120 people.

The results show the high activity of Polish fan tourists. 62% of the respondents declare that they take part in fan tourist events several times a month, and membership in a fan club creates various opportunities for participation in sporting events. What is interesting for 58% of respondents the Fan Club Barca Polska were the main organizers of this type of event. At the same time, the participants of the research pointed out the almost complete lack of commercial offers and logistical difficulties attending the organization of events for fans. The participants of the research evaluated the activities of the Fan Club Barca Polska well, pointing out only minor items requiring improvement.

Although fan tourism in Poland is still a relatively new and not recognized form of tourism activity, it can be said that it has a great potential for development. This can be confirmed, among others: involvement and regular participation of fans in fan tourist events, large financial resources involved in organizing events, growing number of fan clubs, growing popularity of such leisure activities. At the same time, it is noteworthy that many of the reports in Polish-language literature may indicate that the subject needs in-depth research.

THE PARENTS' KNOWLEDGE AND CARE ABOUT FAULTY POSTURE OF PRIMARY SCHOOL CHILDREN

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The purpose of this study is to assess the parent`s knowledge and care about faulty postures of primary school children.

The used method was opinion survey. The group of 120 parents/guardians of primary school children took part in the research. The respondents were asked to fill in the survey aiming at assessing their knowledge about faulty postures. They were also requested to describe their children's pastimes and types of physical activity. Apart from that medical records of 105 primary school children were analyzed.

The parents' knowledge about faulty postures is poor. As many as 30% of parents was not able to mention any of the defects. About 60% parents think that their children spend leisure time actively enough. Only 15% children participate in organized forms of physical therapy. The conducted research confirmed that 70% of the primary school children have faulty postures. The most frequent abnormalities are faults in lower limbs and trunk asymmetry.

Although more and more is said about the problem of faulty postures, the parents' knowledge on the subject is still insufficient. It seems appropriate that teachers, due to their vocational preparation and constant contact with students and their guardians, should play a more significant role in propagating the knowledge about preventing faulty postures.

Therefore it is extremely important to increase the parents' awareness of the risks resulting from abnormalities of body postures, importance of physical activity to health as well as recognizing the basic faulty postures and noticing their symptoms.

ATTITUDES TOWARD THE PRINCIPLE OF FAIR PLAY IN TERMS OF EQUAL OPPORTUNITIES IN SPORT AND LIFE IN THE OPINION OF LODZ JUNIOR HIGH SCHOOL STUDENTS

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Fair play idea plays an important role in neutralising modern sport threats, such as stadium hooliganism. It is especially relevant for the Polish city of Łódź, where the problem of stadium hooliganism is particularly acute because of the competition for influence among fans of two city sports clubs. After the implementation of the educational project „I am fair" dedicated to lower class of secondary schools' pupils in Łódź (14-15 y.o.), it was decided to evaluate if and to what extent, students who took part in the project, had changed their awareness and declared behaviour of fair play in the aspect of equal opportunities in sport and life. Among the declaring supporters (including the boys and girls) and non-supporters of the selected football club as well.

The study was conducted by diagnostic survey using a situational test "Fair play in sport and life". The results were analyzed taking into account the change in the responses of students completed the questionnaire twice: before (pre- test) and after (post- test) the implementation of the project, taking into account the all respondents (1,304 people) and variable - the declaration of supporting or not the football, gender. The study was conducted in two waves- in September 2011 (pre- test) and June 2012 (post- test)

Results of post- test survey proved the improvement of declared behaviour among all tested groups- boys, girls and club supporters.

On the one hand, sport contributes to the escalation of undesirable behaviours, on the other hand it becomes an educational tool. Education supported by fair play values brings expected effects and desirable changes, both in sport and in life.

SOCIAL VALUES OF SPORT IN THE OLYMPIC EDUCATION PROGRAMS

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For the purpose of this article the author formulated the main research problem as follows: What is the effectiveness of the developed program in the field of Olympic education "I am fair" in the context of changing the attitudes of the students of Lodz junior middle schools to the social values of sport occurring both in sport competition and social life.

The author choosing the path of empirical cognition has attempted to obtain an opinion - from students of 28 Lodz middle junior schools located in the districts of Śródmieście, Bałuty, Polesie, Górna and Widzew. The research was conducted at the turn of 2011 and 2012 with the use of target selection method. In the research process, a survey method was applied with the use of the questionnaire technique, using for the purpose of the article selected variables from questionnaire survey "Fair play in sport and life". The study was conducted before and after the implementation of the "I'm Fair" educational project. The collected empirical material was subjected to a comparative analysis using the SPSS Statistics 21 program. In order to investigate the influence of the educational program on the attitudes of junior middle school students towards the selected values of sport, chi-square $\chi 2$ independence test was used (Pearson) Verification of the variables was carried out with significance level $\alpha = 0.05$

The results of the study indicate that the participation of the studied group of students in the program in the field of Olympic education statistically significantly differentiates their attitudes towards social-educational paradigms of sport. Of particular note is the fact that under the influence of planned educational activities, the consciousness of the respondents increased significantly, as regards both the negative and positive aspects of contemporary sport.

The author, referring to the social values of sport, stresses that they are an important general component of all sport education programs in the Olympic sport. By influencing the physical, emotional and social aspects of the student in a wide variety of ways, sports activities significantly shape the social attitudes of the student (goals, style, quality of life) in adult life. In the end, the author attempts to answer the question of whether educational programs of the Olympic Games can still be an effective tool to promote the humanistic values of sport.

DYNAMICS VARIABILITY OF WORLD PERFORMANCE IN TRIATHLON

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Triathlon is considered one of the most complex disciplines in the world in every respect. Only a detailed analysis of all parameters of each competition included in the triathlon provides the opportunity for further improvement. Given that the dynamics of sports results in triathlon is affected by many factors, the best way to obtain reliable results analysis is to analyse the components of the discipline as a function of time. This helps predicting future results and dynamics of their changes and determine their linear trends. The paper presents of the dynamics of changes in sport results of World Championship in triathlon.

The database with results of thirty best male and female players of the World Cup World Cup in triathlon at the Olympic Standard Distance since 1989 proved to be the most appropriate research material. Top ten male and female triathletes of the World Cup were extracted. Sport results in individual component disciplines, and a discipline as such during the World Cup with the use of a function of time (1989-2014) were analysed. Hypothes: it is possible to designate specific periods in respect to time function, and trends describing the variability of results of the finalists in triathlon World Championships characterized by a broken trends, resulting from conditions unrelated to the athletic development.

The test results allow to form the world average in the period in question from 1989-2014 accepting as 100% data from 1989. Analysis of the results using the time series showed very strong dynamics variation in component disciplines.

The results of analyses and results of other authors allow us to conclude that further improvement of athletic performance in triathlon component disciplines and in triathlon as a discipline will be possible thanks to optimizing the work load through analysis and mathematical modeling.

MODERN PARADIGM OF HEALTH-ENHANCING PHYSICAL ACTIVITY: THE BASIC CONCEPTS AND THE WAYS TO IMPLEMENT IT IN UKRAINE

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Most of the Ukrainian adult population (16 +) is physically inactive. From 5% to 8% of the population have sufficient (at least 5 times per a week), 10 to 12 % – moderate, and 20 to 22% – low level of engagement in health-enhancing physical activity (HEPA). There is now a growing trend towards an increase in sports participation in Ukraine due to the actions of fitness clubs, municipal centres "Sport for All", the NOC and other Sports NGOs. More and more people are engaged in individual HEPA. However, indicators of HEPA in Ukraine need further improvement in the context of the benchmarks of SPECIAL EUROBAROMETER 412 “Sport and physical activity” (2014).

The project is aimed at the theoretical justification of the modern paradigm of HEPA and identification of the ways of its practical implementation in Ukraine.

On the basis of generalization of the results of scientific research and advanced world experience, it was established that the concept of health formation is an important component of the modern paradigm of the HEPA. Engagement of a person in HEPA will encourage them to lead a healthy lifestyle and to improve their health. At the heart of the modern paradigm of HEPA is the concept of humanizing the process of engagement of a person in physical activity. We have justified the system of views on the directions and mechanisms of the implementation of humanism and prevention of manifestations of authoritarianism in the system of physical culture in Ukraine. The modern paradigm of HEPA is based on the relevant recommendations of the UN, WHO, UNESCO, the Council of Europe and the EU. We have proposed the ways to implement these recommendations taking into account the current challenges of socio-economic development of Ukraine and the specifics of national legislation. The justified paradigm has been embodied into the National Strategy for health-enhancing physical activity in Ukraine for the period up to 2025 “Physical activity – a healthy lifestyle – a healthy nation”, which was approved by the Decree of the President of Ukraine of February 9, 2016, No. 42.

The modern paradigm of HEPA includes the concept of health formation, the concept of humanizing the process of engagement of a person in physical activity, and the recommendations of intergovernmental organizations adapted to the national context. The ways of practical implementation of the paradigm in Ukraine were identified.

FEATURES OF PREPARATION OF SPECIALISTS IN PHYSICAL DUCATION AND SPORT TO WORK WITH PERSONS WITH DISABILITIES

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The need for qualitative professional preparation of specialists in physical culture, which are able to work with persons with disabilities, is caused by social needs of society in the preservation and strengthening the health of the entire population. Health is the most important value of man and society, and the process of its preserving and strengthening is classified as national priority.

Material and methods: sociological; analysis, synthesis and theoretical generalization; comparison and analogy.

Results. The need for special training and retraining of specialists to work with persons with disabilities is observed, some relevant programs are created, the need for the formation of information system to motivate this category of persons to work in the field of sport activities is emphasized at many educational institutions that train specialists in the sphere of physical culture and sport. The analysis of the current situation and study of the needs of the labor market for specialists in physical culture who are able to work with persons with disabilities, showed the necessity to form a specialist, possessing the skills of the researcher, designer, developer of new education and training technologies, and whose activity requires not only profound professional knowledge, but also the important personal qualities. To resolve this goal it may be useful to develop a professiogram of the specialist in the sphere of physical culture and sport in view of the humanistic orientation of his professional education that will include three components: universal moral quality, professional valuable orientations and civil position.

Taking into account the current trends of the national society, preparation of the specialists in the sphere of physical culture and sport should include the formation of complex professional knowledge, moral and ethic habits of behavior and orientation on their implementation during training sessions, competitions and other socially useful activities.

LEVEL OF GROUND REACTION FORCE DEPENDING ON LOCOMOTION VELOCITY, EXTERNAL LOAD AND AGE OF SUBJECTS

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The aim of the study was to identify the pace of ground reaction force increase during locomotion along with growing speed depending on subject age and clothing conditions.

One hundred and six firemen were examined aged: up to 34 (n=36), up to 44 (n=50) and above 44 (n=19). They did two trials (in sports and fighting – nomex clothes and shoes) one day-off meantime. They walked on the treadmill with tensiometric platform (AMTI, 250 Hz) with the speed of $6^{km}/_{h}$ for 2 minutes. Next the velocity was growing up by $2^{km}/_{h}$ by 2 minutes until stop. The ground reaction force through 10s of each locomotion velocity was registered. The averaged maximum value of vertical force was measured basing on maximum value of loading response and terminal stance. It was expressed with body weight units [BW] in sports and fighting clothes respectively. The values of each trails were approximated with linear funtion f(v)= Av+B, where "A" means speed of increase of ground reaction force. In analysis mixed design ANOVA for repeated measures was used (p≤0,005), during which an influence of velocity, clothing and age group factors was examined.

It was assumed that the only significant factor was the locomotion velocity (F=511,5; p≤0,001). Apart for that the tendency to decreasing of ground reaction force for fighting clothes was observed (F=2,9; p=0,09). It was also proved in analysis of the "A" rate, which was significantly smaller for "nomex" (F=5,27; p≤0,05).

Tab.1. The values of ground reaction force [BW] depending on locomotion velocity, type of clothing, age group and rate speed of load increase "A".

clothing	Age category	Locomotion velocity [$^{km}/_{h}$]					rate A
		6	8	10	12	14	
	<34	1,4±0,15	1,7±0,31	2,1±0,24	2,3±0,24	2,4±0,23	0,13±0,027
sport	***≤34; 44>***	1,4±0,13	1,8±0,28	2,1±0,25	2,3±0,28	2,4±0,27	0,12±0,033
	≥44	1,4±0,17	1,7±0,16	2,1±0,28	2,2±0,24	2,2±0,24	0,12±0,040
	<34	1,3±0,14	1,6±0,30	2,0±0,23	2,2±0,29	2,3±0,30	0,14±0,038
nomex	***≤34; 44>***	1,4±0,17	1,7±0,29	2,0±0,25	2,2±0,21	2,2±0,29	0,13±0,049
	≥44	1,3±0,13	1,6±0,17	1,9±0,23	2,1±0,25	2,1±0,18	0,12±0,046

The tendency to lighter load in fighting clothing, especially in fighting shoes, is proved in literature Baltic at al. (2015). The authors declared that in shoes, which have greater stiffness, smaller values of force impulse were obtained.

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