

**12th International Scientific Conference
of Sport Kinetics 2011**

CONFERENCE PROGRAMME AND ABSTRACTS

**“Present and Future Research in the Science of
Human Movement”**

The conference is organized by:

University School of Physical Education in Cracow
in cooperation with
International Association of Sport Kinetics (IASK)

Editorial Board of Conference Programme and Abstracts

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WELCOME FROM ORGANIZERS

Dear Friends!

We would like to welcome you in University School of Physical Education in Royal, Capital City of Cracow! On behalf of Presidium of International Association of Sport Kinetics and Rector of University School of Physical Education in Cracow, we would like to welcome you warmly at the 12th International Conference Sport Kinetics 2011 in the best Polish University School of Physical Education in Cracow.

For over 600 years Cracow was the royal capital of Poland. On the Wawel Hill there is old Royal Castle. The traditions of over 10-century-long history are being continued in the city. It is nowadays the important centre of national culture and science. There are numerous museums in Cracow, excellently preserved medieval buildings, churches, synagogues, cemeteries, houses, and splendid sculptures, located even in salt mines in neighbourhood of the city. This testifies to permanent and interrupted contact of Poland with European and world culture since nearly one thousand years. In 2000 Cracow was designated by European Union as European Capital of Culture. In 2009, 7.3 million tourists – among them 2.1 million from abroad – have visited Cracow.

First of all the city is the university centre. In 1364 in Cracow the university has been founded, today known as Jagiellonian University. It was the second university in Middle Europe (first was the Prague University, founded 16 years earlier, in 1348). It played a great role in world science and spiritual culture. Its famous students were, for example, Nicolaus Copernicus and Pope John Paul II. Nowadays in Cracow there are several dozen university schools and colleges with about 200,000 students.

It is commonly accepted that the Academy of Physical Education has been founded in 1927, but its origins in the structures of Jagiellonian University may be traced already in 1893. Nowadays the University School of Physical Education has three faculties: Physical Education and Sport, Motor Rehabilitation, and Tourism and Leisure. The campus is situated at beautiful place, in the vicinity of the University, not far from the Old City (about 3 km). It is equipped with modern didactical, sport-recreational and accommodation buildings, so it is an attractive place for studying and sport. The scientific-didactical staff provides students with excellent preparation for professional or scientific activity. The University School of Physical Education in Cracow is regarded as being one of the best universities in Poland. Its students proudly wear their sport T-shirts with the notice: „University School of Physical Education, Cracow – the Best College of Poland”.

We do hope that all participants in 12th Jubilee Conference Sport Kinetics 2011 will be convinced that the choice of Cracow as a place of its organization is a very good idea. The youngest Rector of all universities in Poland welcomes scientists, physical education and sport practitioners, coaches, physicians and physiatrists, as well as students and doctoral students interested in human motoricity, to University School of Physical Education in Cracow. At this University, in royal city of Cracow, we will have the opportunity to exchange views on new research directions, techniques, procedures, theoretical and applied achievements in the field of human motoricity, as well as their impact on health and sport results in various period of ontogeny.

Inspiration for disputes will be no doubt the lectures of famous scientists at plenary sessions. Important will be also that we meet each other anew under presidency of the founder of International Association of Sport Kinetics, Prof. Włodzimierz Starosta. In 2011 the IASK

will celebrate its 20th anniversary. We traditionally encourage young scientists to take part in rivalry for the best presentation at the conference, oral or poster. We are planning to conclude the conference in the famous, historical, unique salt mine in Wieliczka, near Cracow.

The organizers will provide in the evening: performance by folk artists, gymnastic show, tourist attractions and Polish game ringo competitions. From 22nd to 24th September we will have an opportunity to experience personally that the University School of Physical Education in Cracow and its hospitable neighbourhood is the ideal location for conference itself, as well as for necessary relax and rest after work.

I'd like to say that the website of our Committee has been visited by several thousands of Internet users. This is an excellent promotion of our Organization and Academy. We don't know, how many persons visited the IASK website. We've got about 200 presentations, oral and poster ones, from 24 countries. We have printed the abstracts in the annex to the conference programme. In our journal "Antropomotoryka" there are printed full texts of the papers of some invited speakers; the conference participants may find them in the conference materials. We do hope that we will be able to publish other papers in next issues of our and other journals, not only in Cracow. Academy of Physical Education in Cracow is going to publish the monograph with reviewed conference papers.

For the Conference participants the hall have been readied, where the plenary, oral and poster sessions will be held. We have also several exhibitors, who present scientific instruments. For Conference participants we organize, as promotion of Cracow and its neighbourhood, the excursions to salt mine in Wieliczka, to Cracow main Market Square and to the ship on Vistula river. We guarantee the guidance by volunteers from doctoral studies in Academy of Physical Education. The Presidium of International Association of Sport Kinetics invites to participation in ringo tournament. For catering the firma "Docent" is responsible. The places, where the refreshment will be served, are shown in our campus. For the Conference participants whole the time the buffet in the main hall will be opened, as well as the student club "Meta". The relevant information is to be found in Conference materials. If necessary, Conference reception will provide participants with additional information. In the last day of the Conference the meeting of the IASK is being planned.

In three days it will be clear whether we have fulfilled our mission properly. You will evaluate this.

Organising Committee

Honorary Committee

- Włodzimierz Starosta – Chairman of the Conference Honour Committee (International Association of Sport Kinetics)
- Andrzej Klimek – Vice Chairman of the Conference Honour Committee (University School of Physical Education in Cracow)
- Barbara Kudrycka – Minister of Science and Higher Education
- Adam Giersz – Minister of Sport and Tourism
- Jacek Majchrowski – Mayor of the City of Cracow
- Stanisław Kracik – Governor of the Małopolska Region
- Marek Sowa – Marshal of the Małopolska Region
- Ireneusz Raś – Deputy of the Republic of Poland
- Józef Bergier – Senator of the Republic of Poland
- Michał Kleiber – President of the Polish Academy of Sciences
- Marek Woźniewski – Chairman of the Committee of Rehabilitation– Physical Education and Social Integration of the Polish Academy of Sciences
- Jerzy Smorawiński – Rector of University School of Physical Education in Poznan
- Waldemar Moska – Rector of Jędrzej Śniadecki Academy of Physical Education and Sport in Gdansk
- Zbigniew Waśkiewicz – Rector of the Jerzy Kukuczka Academy of Physical Education
- Juliusz Migasiewicz – Rector of University School of Physical Education in Wrocław
- Alicja Przyłuska-Fischer – Rector of Józef Piłsudski University School of Physical Education in Warsaw
- Anna Jegier – President of Polish Society of Sports Medicine
- Andrzej Kraśnicki – President of the Polish Olympic Committee
- Andrzej Pokrywka – Director of Sport Institute in Warsaw

Scientific Committee

- Prof. Dr. hab. Dr. h.c. Włodzimierz Starosta – **Conference Chairman**
- Prof. Dr. hab. Andrzej Klimek – **Vice Chairman**
- Prof. Dr. hab. Wiesław Osiński – **Vice Chairman**
- Dr. Waław Petryński (IASK), Dr. Joanna Gradek (USPE) – **Scientific Secretariat**
- Prof. Dr. hab. Michal Belej (Slovakia), Prof. Dr. Rodolfo Benda (Brazil), Prof. Dr. Silvia Ciairano (Germany), Prof. Dr. Gudrun Doll-Tepfer (Germany), Prof. Dr. hab. med. Josif M. Feigenberg (Israel), Prof. Dr. Cecilia Gevat (Romania), Prof. Dr. Walter Ho (Taipa-Macau-China), Prof. Dr. hab. Zofia Ignasiak (Poland), Prof. Dr. Branislav Jevtić (Serbia), Prof. Dr. Bojan Jošt (Slovenia), Prof. Dr. Toivo Jurimäe (Estonia), Prof. Dr. Han C.G. Kemper (The Nederland), Prof. Dr. Vassilis Klissouras (Greece), Prof. Dr. hab Paavo Komi (Finland), Prof. Dr. Vladimir Lyakh (Russia), Prof. Dr. Robert M. Malina (USA), Prof. Dr. Heinz Mechling (Germany), Prof. Dr. hab. Karel Mekota (Czech Republik), Prof. Dr. Franco Merni (Italy), Prof. Dr. Joachim Mester (Germany), Prof. Dr. Dragan Milanović (Croatia), Prof. Dr. hab. Edward Mleczko (Poland), Prof. Dr. Vladimir Platonow (Ukraine), Prof. Dr. hab. Joachim Raczek (Poland), Prof. Dr. Richard Schmidt (USA), Prof. Dr. James Skinner (USA), Prof. Dr. Emanuel Spammer (South Africa), Prof. Dr. Stephan Starischka (Germany), Prof. Dr. hab. Stanisław Sterkowicz (Poland), Dr. hab. Zbigniew Szyguła (Poland), Prof. Dr. hab. Vladimir Zaciorski (Russia-USA), Prof. Dr. hab. Adam Zając (Poland), Prof. Dr. hab. Stanisław Żak (Poland) – **members**.

Organising Committee

- Prof. Dr. hab. Edward Mleczko (USPE) – **Conference Director**
- Dr. Michał Spieszny (USPE); Dr. Waław Petryński (IASK) – **Vice Conference Directors**
- M.A. Piotr Słomiński – **Conference Secretariat**
- Dr. Przemysław Bujas, M.A. Tomasz Czarnik, Dr. Wanda Forczek, Dr. Leszek Gargula, Dr. Wojciech Gawroński M.A. Wioleta Kawa, Dr. Tomasz Klocek, Dr. Leszek Komorowski, M.A. Renata Nieroda, Dr. Anna Poznańska M.A. Barbara Przybyło, M.A. Konrad Rembiasz, M.A. Andrzej Sagalara, M.A. Katarzyna Supernat, M.A. Anna Ślusarczyk, Dr. Renata Tokarz, M.A. Józef Żmigrodzki – **members.**

CONFERENCE PROGRAMME

12th International Conference of Sport Kinetics

Thursday – 22. 09. 2011

9 ⁰⁰ –12 ⁰⁰	Registration – Main hall Refreshments: coffee, tea, biscuits
12 ⁰⁰ –13 ³⁰	Opening ceremony
12 ⁰⁰ –12 ³⁰	<ul style="list-style-type: none"> • Conference Director speech • Folk band performance • Rector of USPE speech • President IASK speech • Invited guests speeches
	Plenary session I – Assembly hall <i>Chairman: Prof. Napoleon Wolański (Poland, Mexico), Dr Waclaw Petryński (Poland), Prof. Andrzej Klimek (Poland)</i>
12 ³⁰ –13 ⁰⁰	HUMAN MOVEMENT SCIENCE - PAST, PRESENT AND FUTURE <i>Prof. Włodzimierz Starosta (Poland)</i>
13 ⁰⁰ –13 ³⁰	ANALYSIS OF HUMAN MOTORICITY – A KINESIOLOGICAL APPROACH Vladimir B. Korenberg (Russia)
13 ³⁰ –13 ⁴⁵	Opening of the exhibition of books of the Main Library of USPE, titled: XX years of IASK. Publishing achievements of IASK Library. Scientific achievements of IASK President – Prof. Dr. hab. Dr. h. c. Włodzimierz Starosta, “Scientific career or life’s passion? „Human movement science - anthropokinesiology”
13 ³⁰ –15 ³⁰	Lunch and coffee break
14 ⁰⁰ –15 ³⁰	Scientific dance workshops
15 ⁴⁰ –18 ¹⁰	Oral session I – Sports Hall – Sala H, I, K, L, 15
19 ¹⁵	Departure for the banquet

Friday – 23. 09. 2011

7 ⁰⁰ –8 ¹⁵	Ringo professors tournament – team sports hall
8 ³⁰ – 9 ³⁰	Plenary session II – Assembly hall <i>Chairman: Prof. Włodzimierz Starosta (Poland), Prof. Wiesław Osiński (Poland), Prof. Bojan Jošt (Slovenia)</i> Dr Waclaw Petryński (Poland)
	BIOLOCULTURAL HERITAGE. PRESENT AND FUTURE OF PHYSICAL ACTIVITY Napoleon Wolański (Poland, Mexico)
9 ⁰⁰ – 9 ³⁰	GLOBAL PROBLEM OF OBESITY: WITH PARTICULAR EMPHASIS ON USA AND ECONOMIC IMPACT <i>Bob Girandola (USA)</i>
9 ⁴⁰ –11 ¹⁰	Oral session II – Sports Hall – Rooms H, I, K, L, 15
11 ¹⁰ –11 ⁴⁰	Coffee break
11 ⁴⁰ –13 ¹⁰	Oral session III – Sports Hall – Rooms H, I, K, L, 15
13 ¹⁵ –14 ¹⁵	Lunch
15 ⁰⁰	Departure to Wieliczka Guided tour in salt mine and dinner for invited guests
	Plenary session III – Wieliczka <i>Chairman: Prof. Wiesław Osiński, Prof. Włodzimierz Starosta, Prof. Napoleon Wolański</i>
	PROBABILISTIC PROGNOSIS IN SPORT KINETICS Iosif M. Feigenberg (Izrael), Waclaw Petryński (Poland)
	ANALYSIS OF MOTOR LEARNING MODELS THEORY BASED OF SIX EVALUATION CRITERIA Vladimir Lyakh (Russia, Poland)

Saturday – 24.09.2011

7 ⁰⁰ –8 ³⁰	Ringo tournament, tennis hall
8 ³⁰ –10 ³⁰	Poster session
	Chairman: 1 comission of poster session: Prof. Ryszard Panfil, Prof. Józef Bergier, Prof Vaclav Bunc, Prof. Branislav Jevtić 2 comission of poster session: Prof. Zbigniew Szygula, Prof. Bob Girandola, Prof. Leszek A. Szmuchrowski (Poland-Brasil) 3 comission of poster session: Prof.Vladimir Lyakh, Prof. Valentine Sonkin, Prof. Stanisław Socha
10 ³⁰ –11 ⁰⁰	Coffee break
10 ³⁰ –11 ⁰⁰	Assembly of competition commissions (Senators' Room) – Competition of N. Bernstein Chairman: Prof. dr hab. Wiesław Osiński (Poland) Secretary: Dr Waclaw Petryński (Poland) Members: Prof. Antonio Cicchella (Italy), Prof. Bojan Jošt (Slovenia)
11 ⁰⁰ –12 ³⁰	Scientific discussion panel – Assembly hall
	Chairman: Prof. Tadeusz Rynkiewicz (Poland) Members: Prof. Robert Szeklicki (Poland), Václav Bunc (Czech Republic), Ryszard Panfil (Poland)
	PHYSICAL FITNESS NORMS IN CHILDREN AND ADOLESCENTS: THE PHYSICAL EDUCATION APPROACH Robert Szeklicki (Poland)
	WALKING LIKE A TOOL OF PHYSICAL FITNESS AND BODY COMPOSITION INFLUENCE Václav Bunc (Czech Republic)
	THE EFFECTIVENESS OF COOPERATION IN THE TEAM GAME (PRAGMATIC STUDY OF UNIQUE CASES) Ryszard Panfil (Poland)
12 ³⁰ –13 ⁰⁰	Results competition for young researchers – N.A. Bernstein <i>Chairman:</i> Prof. Wiesław Osiński, Prof. Włodzimierz Starosta Results of Professors ringo tournament <i>Chairman:</i> Dr med. Krystyna Anioł-Strzyżewska, Prof. Włodzimierz Starosta Closing ceremony – <i>Chairman:</i> Prof. Włodzimierz Starosta, Prof. Edward Mleczek, Prof. Andrzej Klimek
13 ⁰⁰ -14 ³⁰	General Meeting of members International Association of Sport Kinetics Chairman: Prof. Włodzimierz Starosta
od 13 ⁰⁰	Lunch

Thursday**Oral session II – Sports Hall – Room H**

15 ⁴⁰ –18 ¹⁰	Oral session I – Sports Hall – Room H
	<i>Contemporary Olympic sport in social sciences. Modern coaching and management in sport</i>
	<i>Chairman: Prof. Halina Zdebska (Poland)</i>
15 ⁴⁰ –15 ⁵⁵	SCIENTIFIC SYSTEM IN OLYMPIC PROGRAMME MANAGEMENT Branislav Jevtić Faculty of Sport and Physical Education, Belgrade, Serbia Olympic Committee of Serbia Sports director and Chef de Mission Olympic Delegation
15 ⁵⁵ –16 ¹⁰	SOCIAL SCIENCES OF PHYSICAL EDUCATION AND SPORT IN THE CZECH REPUBLIC – THE TRADITION, HERITAGE OF COMMUNISM, PRESENT TIME AND PERSPECTIVES OF EVOLUTION Karel Kovář, Marek Waic Charles University, Prague, Czech Republic

16 ¹⁰ –16 ²⁵	CULTURAL SPECIFICITY WITHIN A SPORTS ORGANISATION (SPORTS CAMP) Nichifor Florin, Dumitru Iulian Alexandru Ioan Cuza University, Iasi, Romania
16 ²⁵ –16 ⁴⁰	PUBLIC TYPES OF SPORTS EVENTS IN ROMANIA Beatrice Abalasei, Bogdan Ungurean, Adrian Cojocariu Alexandru Ioan Cuza University, Iasi, Romania
16 ⁴⁰ –16 ⁵⁵	BETWEEN KINESIS AND ENERGEIA – PHILOSOPHERS ON HUMAN MOVEMENT Maria Zowisło University School of Physical Education, Cracow, Poland
16 ⁵⁵ –17 ¹⁰	MOVING–IN–THE–WORLD?. THE NEW CATEGORIES OF DYNAMIC BODILINESS IN HERMANN SCHMITZ’S PHILOSOPHY Agnieszka Smrokowska-Reichmann University School of Physical Education, Cracow, Poland
17 ¹⁰ –17 ²⁵	BEAUTY CARE – OPPORTUNITY OR THREAT TO PHYSICAL ACTIVITY? Katarzyna Myśliwska University School of Physical Education, Cracow, Poland
17 ²⁵ –17 ⁴⁰	MOTOR ACTIVITY – BASIC PRINCIPLES OF HEALTH IN THE PAST AND IN OUR TIMES Ewa Kalamacka University School of Physical Education, Cracow, Poland
17 ⁴⁰ –17 ⁵⁵	SPORTS CULTURE IN RUSSIAN EDUCATIONAL ENVIRONMENT <i>Ludmila I. Lubysheva</i> Russian State University of Physical Culture, Sport and Tourism, Moscow, Russia
17 ⁵⁵ –18 ¹⁰	ENVIRONMENTALLY FRIENDLY APPROACH TO LONG-TERM SPORTS TRAINING <i>Vadim K. Balsevich</i> Russian State University of Physical Culture, Sport and Tourism, Moscow, Russia

Thursday

Oral session I – Sports Hall –Room I

15 ⁴⁰ –18 ¹⁰	Oral session I – Sports Hall – Room I
	<i>Contemporary trends in research of physical fitness of children and youth (motor fitness, health-related physical activity)</i>
	<i>Chairman: Prof. Robert Szeklicki (Poland), Prof. Zofia Ignasiak (Poland)</i>
15 ⁴⁰ –15 ⁵⁵	THE DIFFERENCES IN BRAIN RESPONSE ACCORDING TO THE LEVEL OF MOTOR DEVELOPMENT IN CHILDREN Ladislav Cepicka*, Irena Holeckova**, Pavel Mautner*, Roman Moucek* *University of West Bohemia, Plzen, Czech Republic **University Hospital, Plzen, Czech Republic
15 ⁵⁵ –16 ¹⁰	THE SCORING IN THE TEST OF GROSS MOTOR DEVELOPMENT AND MOVEMENT ASSESSMENT BATTERY FOR CHILDREN ACCORDING TO LEVEL OF MOTOR DEVELOPMENT Jana Koptikova, Mikulas Splitek, Lukas Matejovic, Ladislav Cepicka University of West Bohemia, Plzen, Czech Republic
16 ¹⁰ –16 ²⁵	POSTURAL STABILITY AND RISK OF DYSLEXIA IN 6 YEARS OLD CHILDREN Bogusława Gierat Academy of Physical Education, Katowice, Poland
16 ²⁵ –16 ⁴⁰	THE RELATIONSHIP BETWEEN MOVEMENT COORDINATION AND SCHOOL READINESS IN 6 YEARS OLD CHILDREN Bogusława Gierat Academy of Physical Education, Katowice, Poland
16 ⁴⁰ –16 ⁵⁵	THE ABILITY OF THE PRECISE ACTION BEFORE AND DURING A PHYSICAL EFFORT AS INTER-FEATURE Roman Maciej Kalina*, Bartłomiej Jan Barczyński** *Academy of Physical Education, Katowice, Poland **Index Copernicus International S.A., Warsaw, Poland

16 ⁵⁵ –17 ¹⁰	PHYSICAL FITNESS TESTS IN PHYSICAL EDUCATION IN SCHOOL PRACTICE Konrad Tulej*, Dobrzański Paweł** *University School of Physical Education, Cracow, Poland **MSc. and swimming coach, Bochnia, Poland
17 ¹⁰ –17 ²⁵	EFFECT OF 12 WEEKS SWIMMING TRAINING ON SOME INFLAMMATORY INDEXES (CRP, IL.6) IN 9 TO 11 YEARS GIRLS Sheykh Saraf Bahare*, Fathollahi Shorabe Fazlollah **, Nouri Reza**, Jalali Dehkordi Khosro* *Islamic Azad University **University of Tehran, Iran
17 ²⁵ –17 ⁴⁰	AN ASSESSMENT OF THE SELECTED CORRECTIVE-BALANCED EXERCISES EFFECT ON THE DYNAMIC BALANCE OF PRIMARY SCHOOL GIRLS WITH FLAT FOOT Gholam Reza Karami Fakhrabadi*, Behnam Ghasemi**, Zhaleh Bahramiyan** *Islamic Azad University, Mobarakeh **Shahrekord University, Iran

Thursday

Session I – Sports Hall – Room K

15 ⁴⁰ –18 ¹⁰	Oral session I – Sports Hall – Room K
	<i>Sport of children and adolescents – modernity as a cause of successes in elite sport</i>
	<i>Chairman: Prof. Stanisław Żak (Poland), Prof. Teresa Socha (Poland)</i>
15 ⁴⁰ –15 ⁵⁵	GENDER DIFFERENCES IN SPEED AND POWER ABILITIES BETWEEN MALE AND FEMALE SOCCER PLAYERS OF POLISH NATIONAL TEAMS Vladimir Lyakh, Bartosz Rutowicz, Zbigniew Witkowski University School of Physical Education, Cracow, Poland
15 ⁵⁵ –16 ¹⁰	INFLUENCE OF TRAINING LOADS ON ONTOGENETIC DEVELOPMENT AND REGULATOR-ADAPTIVE POTENTIALITIES OF YOUNG FOOTBALL PLAYERS A.V. Shakhanova, S.A. Lyausheva Adyghe State University, Maykop, Russia
16 ¹⁰ –16 ²⁵	CRITICAL SWIMMING SPEED (CSS) EVALUATION IN 12-YEARS OLD BOYS Ryszard Zarzeczny, Mariusz Kuberski, Agnieszka Deska, Dorota Zarzeczna, Katarzyna Rydz, Jan Długosz University in Częstochowa, Poland
16 ²⁵ –16 ⁴⁰	INTERNAL AND EXTERNAL FACTORS SWIMMING EFFICIENCY OBSERVED AMONG LESS-SKILLED SWIMMERS Katarzyna Kucia-Czyszczoń, Ewa Dybińska University School of Physical Education, Cracow, Poland
16 ⁴⁰ –16 ⁵⁵	THE EFFECT OF FOCUSED TRAINING PROCESS ON THE PROGRESSION OF MOTOR SKILLS AND TECHNICAL ABILITIES OF CHILDREN TRAINING FOOTBALL Leszek Cicirko, Tomasz Buraczewski University of Physical Education in Warsaw, Faculty of Physical Education and Sport in Biała Podlaska, Poland
16 ⁵⁵ –17 ¹⁰	COMPOSITION OF THE BODY WEIGHT OF YOUNG CANOEISTS DEPENDING ON AGE, GENDER AND SPORTS SPECIALIZATION Tadeusz Rynkiewicz*, Mateusz Rynkiewicz*, Jacek Biernacki**, Piotr Żurek*, Henryk Kos*, Małgorzata Wójcik** *University of Physical Education in Poznań, Local Department in Gorzów Wlkp., Poland **University School of Education and Administration, Poznan, Poland
17 ¹⁰ –17 ²⁵	ASYMMETRY OF SPINAL SEGMENTS MOTION IN CANOEISTS AND THE SPORTS RESULTS Mateusz Rynkiewicz University of Physical Education in Poznań, Local Department in Gorzów Wlkp., Poland

Thursday
Oral session I – Sports Hall – Room L

15 ⁴⁰ –18 ¹⁰	Oral session I – Sports Hall – Room L
	<i>Contemporary research on physical activity and its impact on health improvement in various periods of ontogenesis</i>
	<i>Chairman: Prof. Zbigniew Szygula (Poland), Prof. Bob Girandola (USA)</i>
15 ⁴⁰ –15 ⁵⁵	COMPARISON OF THE FOOD PRODUCTS CONSUMPTION FREQUENCY AMONG ATHLETES TO THE RECOMMENDATION OF THE SWISS FOOD PYRAMID Barbara Frączek, Maria Gacek University School of Physical Education, Cracow, Poland
15 ⁵⁵ –16 ¹⁰	EFFECT OF AN SPORT DRINK ON ENDURANCE, BLOOD GLUCOSE, HEART RATE AND RPE IN MALE RUNNERS Agha Ali Ghasemnian*, Khosrow Jalali Dehkordi**, Abasali Ghaeini*, Serous Chobeineh*, Ali Jalali Dehkordi*, Fazlollah Fathollahi Shorabe* *Tehran University **Islamic Azad University, Iran
16 ¹⁰ –16 ²⁵	AGE DEVELOPMENT OF MUSCULAR FUNCTION ENERGY SUPPLY Valentine Sonkin***, Ritta Tambovtseva***, Galina Maslova*, Diana Bukreeva*, Rimma Vasilieva*, Vladimir Demin* *Institute for Developmental Physiology Russian Academy of Education, Moscow, **Russian State University of Physical Education, Sports, Youth and Tourism, Moscow, Russia
16 ²⁵ –16 ⁴⁰	FINNISH SAUNA AS AN ELEMENT OF BIOLOGICAL RECOVERY IN THE VOLLEYBALL PLAYERS Wanda Pilch, Szczepan Wiecha, Łukasz Tota University School of Physical Education, Cracow, Poland
16 ⁴⁰ –16 ⁵⁵	EFFECT OF FINNISH SAUNA BATHING ON QUANTITATIVE CHANGES OF WHITE BLOOD CELLS IN TRAINING AND NON-TRAINING MEN Wanda Pilch, Dorota Gryka-Nowaczyk, Marta Szarek, Zbigniew Szygula University School of Physical Education, Cracow, Poland
16 ⁵⁵ –17 ¹⁰	THE AEROBIC AND ANAEROBIC CAPACITY AND SELECTED BLOOD COUNT PARAMETERS AFTER 10 SESSIONS OF WHOLE BODY CRYOSTIMULATION Tomasz Dybek*, Renata Szygula*, Andrzej Klimek**, Sławomir Tubek*** *Technical University, Opole **University School of Physical Education, Cracow, Poland ***Voivodship Hospital, Opole, Poland
17 ¹⁰ –17 ²⁵	AEROBIC AND ANAEROBIC WORKING CAPACITY IN 13- TO 14-YEARS-OLD BOYS DEPENDING ON THE RATE OF PUBERTY I. A. Krivolapchuk Russian Academy of Education, Moscow, Russia
17 ²⁵ –17 ⁴⁰	AEROBIC CAPACITY AND PHYSIOLOGICAL, BIOCHEMICAL AND TRAINING PARAMETERS IN AMATEUR ENDURANCE RUNNERS Magdalena Tataruch*, Ewa Sadowska-Krępa**, Janusz Iskra*, Tomasz Klisz** *University of Technology, Opole **Academy of Physical Education, Katowice, Poland
17 ⁴⁰ –17 ⁵⁵	THE FACTOR ANALYSIS AND COMPLEX ASSESSMENT OF PHYSICAL WORKING CAPACITY OF SIX-YEAR-OLD CHILDREN I. A. Krivolapchuk Russian Academy of Education, Moscow, Russia
17 ⁵⁵ –18 ¹⁰	COMPARISON OF HEART RATE AND THE LACTATE LEVEL OF INDIVIDUAL ANAEROBIC THRESHOLD IN SWIMMING, CYCLING AND RUNNING IN THE TRIATHLON Lenka Kovarova, Karel Kovar Charles University, Prague, Czech Republic

Thursday

Oral session I – Sports Hall – Room 15

15 ⁴⁰ –18 ¹⁰	Oral session I – Sports Hall – Room 15
	<i>Modernity as a cause of successes in elite sport. Contemporary concepts in training in individual sports</i>
	<i>Chairman: Prof. Krzysztof Klukowski (Poland), Prof. Vaclav Bunc (Czech Republic)</i>
15 ⁴⁰ –15 ⁵⁵	SPORTS ASPECTS OF HIGH MOUNTAIN SKIING Szymon Krasicki, Janusz Brudecki, Magdalena Wójciak University School of Physical Education, Cracow, Poland
15 ⁵⁵ –16 ¹⁰	THE FACTOR STRUCTURE OF THE VARIABLES OF THE LENGTH OF THE JUMPS AND CHOSEN MORPHOLOGICAL CHARACTERISTICS OF SKI JUMPERS AND THEIR EQUIPMENT Janez Vodičar, Bojan Jošt University of Ljubljana, Slovenia
16 ¹⁰ –16 ²⁵	CORRELATION BETWEEN LENGTH OF THE JUMPS AND CHOSEN KINEMATIC VARIABLES AT THE EARLY FLIGHT POSITION IN SKI JUMPING Bojan Jošt, Janez Vodičar University of Ljubljana, Slovenia
16 ²⁵ –16 ⁴⁰	INNOVATION AND TECHNOLOGICAL MANAGEMENT IN THE EDUCATION SPHERE IN PREPARING A PHYSICAL TRAINING PROFESSIONAL <i>Tatiana V. Skoblikova</i> Kursk State University, Russia
16 ⁴⁰ –16 ⁵⁵	UNDERSTANDING CRITICAL INFORMATION, BEFORE AND DURING A PLATFORM JUMP: RELATIONSHIP BETWEEN DIAGNOSIS COMPETENCE AND PRESCRIPTION DURING TEACHING PROCESSES César Peixoto Technical University of Lisbon, Portugal
16 ⁵⁵ –17 ¹⁰	INJURY INCIDENCE IN TOP-LEVEL POLISH GYMNASTS WITH REGARD OF CAUSES OF TISSUE DAMAGE IN ATHLETES' OPINION Grzegorz Głąb, Joanna Ulfik University School of Physical Education, Cracow, Poland
17 ¹⁰ –17 ²⁵	ASSESSMENT OF INCIDENCE OF INJURY IN ELITE KARATE PLAYERS DURING A SEASON OF RACING Mansoor Arefinia, Behnam Ghasemi Shahrekord University, Iran
17 ²⁵ –17 ⁴⁰	RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND RANKING OF EPEE WEAPON FENCERS IN DIFFERENT LEVELS OF PERFORMANCE Baharak Moradi Kellardeh, Mehdi Namazizadeh, Zohreh Meshkati, Reza Karami Islamic Azad University, Isfahan, Iran
17 ⁴⁰ –17 ⁵⁵	RELATION BETWEEN PHYSIOLOGY AND BIOMECHANICS IN SPORT DANCERS Alina Klonova*, Leonids Zilinskis*, Juris Klonovs**, Andrea Giovanardi***, Antonio Cicchella*** *Latvian Academy of Sport Education, Riga, Latvia **Ventspils University College, Latvia ***University of Bologna, Italy

Friday

Oral session II and III – Sports Hall – Room H

9 ⁴⁰ –11 ¹⁰	Sesja ustna II /Oral session II/ – Hala Gimnastyczna (Sports Hall) – Sala (Room) H
	<i>Modernity as a cause of successes in elite sport. Contemporary concepts in training in team sports</i>
	<i>Chairman: Prof. Ryszard Panfil (Poland), Prof. Józef Bergier (Poland)</i>
9 ⁴⁰ – 9 ⁵⁵	EVALUATION OF GAMES PERFORMANCE IN BEACH VOLLEYBALL DEPENDENCY LEVELS ATTACK FROM LEVEL OF QUALITY RECORDINGS Marian Uvaček Slovak University of Technology, Slovakia
9 ⁵⁵ –10 ¹⁰	REACTION TIME AND OCULAR MOVEMENTS IN VOLLEYBALL Piras Alessandro, Lobietti Roberto, Squatrito Salvatore University of Bologna, Italy
10 ¹⁰ –10 ²⁵	FUNCTIONAL DIFFERENCES AMONG KNEE MUSCLES BETWEEN MALE AND FEMALE VOLLEYBALL MIDDLE-BLOCKER David Rodríguez-Ruiz*, María Fernández-del Valle**, Darío Rodríguez-Matoso*, Ignacio Díez Vega**, Rafael Sagastume Fernández***, J.J. Martin Molina** *University of Las Palmas de Gran Canaria. Edificio de Educación Física - Campus Universitario de Tafira; **European University of Madrid, ***Basque Country University, Spain
10 ²⁵ –10 ⁴⁰	THE USAGE OF VIDEO INTERACTION GUIDANCE METHOD IN SPORT Veronika Baláková Charles University in Prague, Czech Republic
10 ⁴⁰ –10 ⁵⁵	ASSOCIATION ANALYSIS BETWEEN BODY COMPOSITION AND SOMATOTYPE CHARACTERISTICS AND ACTN3 GENE IN ELITE SPANISH VOLLEYBALL PLAYERS Maria Fernández del Valle*, David Rodríguez–Ruiz**, Ignacio Díez Vega*; Darío Rodríguez–Matoso**, Rafael Sagastume Fernández***, Juan José Molina Martin* *European University of Madrid, **University of Las Palmas de Gran Canaria, Spain ***Basque Country University, Spain
10 ⁵⁵ –11 ¹⁰	METHOD OF THE STRENGTH MEASUREMENT OF THE STRIKE AT BALL IN TENNIS Tadeusz Rynkiewicz* , Piotr Żurek*, Mateusz Rynkiewicz*, Zdzisław Kołaczkowski*, Ewa Ziemann** *University of Physical Education Poznań, Local Department, Gorzów Wlkp., Poland **University of Physical Education and Sport, Gdańsk, Poland
11 ¹⁰ –11 ⁴⁰	Coffee break

Friday

Oral Session II and III – Sports Hall – Room H

11 ⁴⁰ –13 ¹⁰	Oral session III – Sports Hall – Sala H
	<i>Modern trends in team games training. Effectiveness of players' cooperation</i>
	<i>Chairman: Prof. Ryszard Panfil (Poland), Prof. Józef Bergier (Poland),</i>
11 ⁴⁰ –11 ⁵⁵	ANALYSIS OF SPORTS RESULTS IN THE CONTEXT OF WORLD'S AND POLAND'S TOP TENNIS PLAYERS' SOMATIC–MOTOR POTENTIAL Joanna Sakowicz–Kostecka, Bogdan Sakowicz University School of Physical Education, Cracow, Poland
11 ⁵⁵ –12 ¹⁰	SPORTS OPHTHALMOERGONOMICS AND ITS SOME POSSIBILITIES A. Tambovsky Moscow State Academy of Physical Culture. Russia
12 ¹⁰ –12 ²⁵	THE DIFFERENCES IN THE EFFECTIVENESS OF FOOTBALL GAME BETWEEN THE BEST TEAMS IN XII EUROPEAN CHAMPIONSHIP IN 2008 Tomasz Buraczewski, Leszek Cicirko University of Physical Education in Warsaw, Faculty of Physical Education and Sport in Biała Podlaska, Poland

12 ²⁵ –12 ⁴⁰	SCORING ABILITIES IN THE GAME OF TENNIS (PRAGMATIC STUDY OF UNIQUE CASES) Mariusz Nowak, Ryszard Panfil University School of Physical Education, Wrocław, Poland
12 ⁴⁰ –12 ⁵⁵	ASSESSMENT OF GROUP ACTIVITIES IN THE GAME FOOTBALL PLAYERS, EXEMPLIFIED BY MATCH POLAND-GERMANY IN THE EURO 2008 TOURNAMENT Henryk Duda University School of Physical Education, Cracow, Poland
12 ⁵⁵ –13 ¹⁰	EFFICIENT ANALYSIS AND EVALUATION OF DISTINGUISHED TEAM DEFENSIVE ACTIONS IN WOMEN'S BEACH VOLLEYBALL Tomasz Seweryniak, Łukasz Łukasik, Dariusz Mroczek University School of Physical Education, Wrocław, Poland
13 ¹⁰ –13 ²⁵	TIMING IN TENNIS SPORT Vladimir Psalman*, Martin Zvonar**, Jiří Zhánel**, Igor Duvac**, Martin Sebera** *Faculty of Physical Education and Sport, Comenius University, Bratislava, Slovakia **Faculty of Sport Studies, Masaryk University, Brno, Czech Republic

Friday

Oral session II – Sports Hall – Room I

9 ⁴⁰ –11 ¹⁰	Oral session II – Gymnastics Sports Hall – Room I
	<i>Motor coordination – significance in daily life and in sport: measurement and formation</i>
	<i>Chairman: Prof. Grzegorz Juras (Poland), Prof. Joachim Raczek (Poland)</i>
9 ⁴⁰ –9 ⁵⁵	CORE TRAINING FOR BALANCE AND PERFORMANCE G. Belli*, C. Tentoni*, G. Anderson** *University of Bologna, Italy **University of the Fraser Valley, Canada
9 ⁵⁵ –10 ¹⁰	THE LEVEL OF DEVELOPMENT OF COORDINATION MOTOR ABILITIES OF STUDENTS COLLEGIUM MEDICUM UJ IN THE ASPECT OF SOCIO – ECONOMICAL DIFFERENCES AND THE DECLARED PHYSICAL ACTIVITY Vladimir Lyakh*, Janusz Jaworski*, Janusz Brudecki*, Przemysław Bujas*, Dorota Palik**, Marek Palik* *University School of Physical Education, Cracow, Poland **Department of Physical Fitness, Jagiellonian University Medical College, Cracow, Poland
10 ¹⁰ –10 ²⁵	SEXUAL DIMORPHISM OF COORDINATING MOTOR AREA IN THE CASE OF CM UJ STUDENTS Vladimir Lyakh*, Przemysław Bujas*, Dorota Palik**, Leszek Gargula*, Marek Palik* Janusz Brudecki* *University School of Physical Education, Cracow, Poland **Department of Physical Fitness, Jagiellonian University Medical College, Cracow, Poland
10 ²⁵ –10 ⁴⁰	REACTION TIME TASK IN DUAL TASK METHODOLOGY Joanna Zima, Michał Kuczyński Academy of Physical Education in Wrocław, Poland
10 ⁴⁰ –10 ⁵⁵	EFFECT OF FATIGUE ON THE STABILITY POSTURAL COMPETITORS PRACTICING TAEKWONDO Bożena Wojciechowska-Maszkowska*, Paweł Janisiów** *Opole University of Technology, Poland **Academy of Physical Education, Katowice, Poland
10 ⁵⁵ –11 ¹⁰	EFFECTIVENESS OF SENSORIMOTOR TRAINING IN HEALTHY ADULTS IN DIFFERENT CONDITIONS OF INSTABILITY – A PILOT STUDY Dorota Olex-Zarychta*, Robert Koprowski**, Grzegorz Sobota*, Zygmunt Wróbel** *Academy of Physical Education, Katowice, Poland **Silesia University, Sosnowiec, Poland
11 ¹⁰ –11 ⁴⁰	Coffee break

Friday
Oral session III – Sports Hall – Room I

11 ⁴⁰ –13 ²⁵	Oral session III – Sports Hall – Room I
	<i>Motor coordination – significance in daily life and in sport. Measurement and formation (continuation)</i>
	<i>Chairman: Prof. Vladimir Lyakh (Poland, Russia), Prof. Branislav Jevtić (Serbia)</i>
11 ⁴⁰ –11 ⁵⁵	RELIABILITY OF THE OPTOJUMP SYSTEM AS A NEW TOOL FOR EVALUATION OF MOTOR COORDINATION Grzegorz Juras, Kajetan Słomka, Mariusz Furmanek, Grzegorz Sobota Academy of Physical Education in Katowice, Poland
11 ⁵⁵ –12 ¹⁰	TYPE-SPECIFIC FEATURES OF MOVEMENT COORDINATION OF PRIMARY SCHOOLCHILDREN A.M. Andreeva Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, Russia
12 ¹⁰ –12 ²⁵	SPORTS LATERAL STRESS (PROBLEM STATEMENT) K.D. Chermitt Adyghe State University, Maikop, Russia
12 ²⁵ –12 ⁴⁰	AUTOMATIC CONTROL OF SENSOMOTORICS INDEXES IN TRAINING PROCESS OF YOUNG ALPINE SKIERS Andrey Lisovskiy, Nina Lisovskaya Perm State Technical University, Russia
12 ⁴⁰ –12 ⁵⁵	SENSOMOTOR MONITORING OF YOUNG ALPINE SKIERS Andrey Lisovskiy, Nina Lisovskaya Perm State Technical University, Russia
12 ⁵⁵ –13 ¹⁰	THE ANALYSIS OF DOUBLE SALTO BACKWARD TUCKED AND DOUBLE SALTO BACKWARD STRAIGHT PERFORMED BY ELITE ACROBATS <i>Tomasz Niżnikowski, Michał Biegajło</i> Faculty of Physical Education and Sport, Biała Podlaska, Poland
13 ¹⁰ –13 ²⁵	BANDWIDTH FEEDBACK IN LEARNING COMPLEX MOTOR SKILLS <i>Sadowski Jerzy, Andrzej Mastalerz, Tomasz Niżnikowski</i> Faculty of Physical Education and Sport, Biała Podlaska, Poland

Friday
Oral session II – Sports Hall – Room K

9 ⁴⁰ –11 ¹⁰	Oral session II – Sports Hall) – Room K
	<i>Modernity as a cause of successes in elite sport. Motor preparation</i>
	<i>Chairman: Prof. Vaclav Bunc (Czech Republic), Prof. Henryk Duda (Poland)</i>
9 ⁴⁰ – 9 ⁵⁵	ENHANCEMENT OF POWER IN CONCENTRIC PHASE OF CLOSED CHAIN EXERCISES WITH DIFFERENT COORDINATION DEMANDS Zemková Erika, Ollé Gábor, Hamar Dušan Comenius University, Bratislava, Slovakia
9 ⁵⁵ –10 ¹⁰	RUNNING SPEED OF ELITE FIELD HOCKEY PLAYERS: VARIATION WITH AGE BETWEEN 17 AND 40 YEARS Jan Konarski*, Robert M. Malina**, Ryszard Strzelczyk *University School of Physical Education, Poznań, Poland **University of Texas at Austin, Austin, TX; Tarleton State University, Stephenville, TX, USA
10 ¹⁰ –10 ²⁵	BASKETBALL TEST AS AN INDICATOR OF DIAGNOSTIC AND CONTROL FITNESS LEVEL Stanisław Przybylski Academy of Physical Education and Sport, Gdańsk, Poland

10 ²⁵ –10 ⁴⁰	RESIDUALS OF SWIMMING AND ABILITIES IN WATER AND ON LAND Branislav Jevtic, Milos Djordjevic University of Belgrade, Serbia
10 ⁴⁰ –10 ⁵⁵	ANAEROBIC CAPACITY LEVEL OF THE AMATEUR MOUNTAIN BIKERS DURING THE FIRST HALF OF THE COMPETITION SEASON Ryszard Zarzeczny*, Mieszko Podleśny**, Anna Polak** * University in Częstochowa, Poland **Academy of Physical Education, Katowice, Poland
10 ⁵⁵ –11 ¹⁰	CONSTRUCTION OF THE FACTOR MODEL FOR THE FITNESS ASSESSMENT IN ICE HOCKEY PLAYERS Marek Kokinda, Milan Turek, Róbert Kandráč University of Prešov, Slovakia
11 ¹⁰ –11 ⁴⁰	Coffee break

Friday

Oral session III – Sports Hall – Room K

11 ⁴⁰ –13 ¹⁰	Oral session III – Sports Hall – Room K
	<i>Modern trends in research of physical fitness: health-related physical activity and sport, sport of disabled, sport for all</i>
	<i>Chairman: Prof. Ewa Kalamacka (Poland)</i>
11 ⁴⁰ –11 ⁵⁵	THE ROLE PLAYED BY THE PERCEPTION OF FATIGUE IN THE RELATIONSHIP BETWEEN ADAPTED PHYSICAL ACTIVITY AND QUALITY OF LIFE IN WOMEN WITH MULTIPLE SCLEROSIS Silvia Ciairano*, Mattia Roppolo*, Massimiliano Gollin*, Anna Mulasso*, Luca Beratto*, Antonio Bertolotto**, Alberto Rainoldi* *University of Turin, Italy **Regional Multiple Sclerosis Center, Department of Neurology, AOU S. Luigi Gonzaga Hospital, Orbassano (TO), Italy
11 ⁵⁵ –12 ¹⁰	CARDIO-RESPIRATORY FUNCTION IN CHILDREN WITH MENTAL DISABILITY AND CHILDREN WITH DOWN SYNDROME Ungurean Bogdan, Cojocariu Adrian, Abalasei Beatrice Alexandru Ioan Cuza University, Iasi, Romania
12 ¹⁰ –12 ²⁵	EFFECTS OF DANCE TRAINING ON THE PHYSICAL ABILITIES OF INDIVIDUALS WITH MOTOR DISABILITIES Joanna Grzybek, Dariusz Mucha, Sebastian Grzybek, Anna Gumułka University School of Physical Education, Cracow, Poland
12 ²⁵ –12 ⁴⁰	WHEELCHAIR BALLROOM DANCING A SIGNIFICANT FORM OF REHABILITATION WITHIN THE SCOPE OF PSYCHOPHYSICAL HOMEOSTASIS Joanna Grzybek, Dariusz Mucha, Sebastian Grzybek, Anna Gumułka University School of Physical Education, Cracow, Poland

Friday
Oral session II – Sports Hall – Room L

9⁴⁰–11¹⁰	Oral session II – Sports Hall – Room L
	<i>Modern trends in research of physical fitness: health-related physical activity and sport, sport of disabled, sport for all (continuation)</i>
	<i>Chairman: Prof. Stanisław Żak (Poland), Prof. Teresa Socha (Poland), Prof. Stanisław Socha (Poland)</i>
9 ⁴⁰ – 9 ⁵⁵	WIDELY EDUCATED BRITISH SENIORS' ATTITUDES ON THE SIGNIFICANCE OF REGULAR PHYSICAL ACTIVITY IN THEIR DAILY LIVING ACTIVITIES CURRICULA Waldemar Makula University School of Physical Education, Cracow, Poland
9 ⁵⁵ –10 ¹⁰	THE INFLUENCE OF PHYSICAL ACTIVITY ON PSYCHOPHYSICAL EFFICIENCY AND HEALTH IN ELDERLY PEOPLE AGED BETWEEN 55-75 Zofia Bubka University School of Physical Education, Cracow, Poland
10 ¹⁰ –10 ²⁵	ASSESSMENT OF RESPIRATORY FUNCTION PARAMETERS DECLARED PHYSICAL ACTIVITY AND PHYSICAL FITNESS IN ELDERLY PEOPLE Krystyna Rożek, Teresa Sławińska, Zofia Ignasiak, Anna Skrzek, Jarosław Fugiel, Paweł Postuszny University School of Physical Education, Wrocław Poland
10 ²⁵ –10 ⁴⁰	EVALUATION OF QUALITY OF LIFE, PHYSICAL FITNESS AND ACTIVITY RESIDENTS OF CARE AND ADAPTATION CENTER IN WROCLAW Krystyna Rożek, Katarzyna Ołdak University School of Physical Education, Wrocław, Poland
10 ⁴⁰ –10 ⁵⁵	LEISURE TIME AND NURSES' PHYSICAL ACTIVITY Józef Bergier, Barbara Bergier, Zofia Kubinska State School of Higher Education in Biała Podlaska, Poland
10 ⁵⁵ –11 ¹⁰	OVERWEIGHT AND OBESITY AMONG CHILDREN AND ADOLESCENTS IN NOWY SĄCZ COMPARED WITH THE POPULATION OF OTHER POLISH CITIES Katarzyna Sztafa, Katarzyna Zwolińska-Mirek, Paweł Kożuch State Higher Vocational School in Nowy Sącz, Poland
11 ¹⁰ –11 ⁴⁰	Coffee break

Friday
Oral Session III – Sports Hall – Room L

11⁴⁰–13¹⁰	Oral session III – Sports Hall – Room L
	<i>Modern trends in research of physical fitness: health-related physical activity and sport, sport of disabled, sport for all. Models, measurements, practical implications</i>
	<i>Chairman: Prof. Bob Girandola (USA), Prof. Zbigniew Szygula (Poland)</i>
11 ⁴⁰ –11 ⁵⁵	A COMPARISON OF THE EFFECT OF TWO TYPES OF RESISTANCE, ENDURANCE TRAINING ON GROWTH HORMONE(GH) SECRETION IN AGING MALE Hamid Reza Maleknia, Fazlollah Fathollahi Shorabe, Khosrow Jalali Dehkordi, Bahare Sheykh Saraf Islamic Azad University, Iran
11 ⁵⁵ –12 ¹⁰	EFFECT OF WALKING ON BODY COMPOSITION AND AEROBIC FITNESS IN NON-TRAINED MEN OF MIDDLE AGE Václav Bunc, Marie Skalská Charles University, Prague, Czech Republic
12 ¹⁰ –12 ²⁵	EVALUATION OF THE INFLUENCE OF NORDIC WALKING ON ERECTOR SPINE MUSCLE BIOELECTRICAL ACTIVITY ASSESSED DURING WALKING IN PATIENTS WITH LOW BACK PAIN Marcin Put University School of Physical Education, Cracow, Poland

12 ²⁵ –12 ⁴⁰	PHYSICAL FITNESS AND MENTAL HEALTH OF STUDENTS OF UNIVERSITY Alena Cepková Slovak University of Technology, Bratislava, Slovakia
12 ⁴⁰ –12 ⁵⁵	APPLICATION OF DIGITAL INCLINOMETER- DUOMETR FOR SPATIAL LOCATION AND RANGE OF MOTION OF PELVIC GIRDLE Karol Bibrowicz*, Bartosz Bibrowicz** *College of Education and Therapy, Poznań, Poland **College of Physiotherapy, Wrocław, Poland

Friday

Oral session II – Sports Hall – Room 15

9 ⁴⁰ –11 ¹⁰	Oral session II – Sports Hall – Room 15
	<i>Modern research on the role of physical activity on improvement of physical fitness in various periods of ontogeny. Methodology, results.</i>
	<i>Chairman: Prof. Branislav Jevtić (Serbia), Prof. Robert Szeklicki (Poland), Prof. Krzysztof Klukowski (Polska)</i>
9 ⁴⁰ – 9 ⁵⁵	RESEARCH INTO THE MEASUREMENT OBJECTIFICATION OF HUMAN JUMPING ABILITIES Zdzisław Kołaczkowski*, Tadeusz Rynkiewicz*, Włodzimierz Starosta**, Ryszard Kopański* *University of Physical Education, Poznań, Local Department in Gorzów Wlkp., Poland **College of Physical Education and Tourism in Białystok, Poland
9 ⁵⁵ –10 ¹⁰	EFFECT OF STRENGTH TRAINING WITH VIBRATION ON BILATERAL FORCE AND IMPULSE DIFFERENCE Bruno Pena Couto*, Sara Andrade Rodrigues*, Rafael Soncin Ribeiro*, Marcos Daniel Motta Drummond*, Barbara Marcelina Ribeiro Rocha**, Leszek Antoni Szmuchowski *Universidade Federal de Minas Gerais **Department of Physical Education, Fundação Helena Antipoff, Brazil
10 ¹⁰ –10 ²⁵	VALIDATION OF FOOT TO FOOT BIOELECTRICAL IMPEDANCE ANALYSIS TO HYDROSTATIC WEIGHING IN ELITE MALE WRESTLERS U. Karli*, C. Acikada**, T. Hazir** *Abant İzzet Baysal University, School of Physical Education and Sport, Bolu, **Hacettepe University, School of Sport Sciences and Technology, Ankara, Turkey
10 ²⁵ –10 ⁴⁰	THE EFFECT OF A FEEDBACK TRAINING PERIOD ON LEARNING OF SHOOTING IN INEXPERIENCED SHOOTERS Amir Dana*, Reza Rezaee Shirazi*, Saeed Ghorbani*, Faezeh Zamanian** *Islamic Azad University, Aliabad Katool **Islamic Azad University, Najafabad, Iran
10 ⁴⁰ –10 ⁵⁵	THE EFFECT OF INSTRUCTION AND MOTIVATIONAL SELF TALK ON PERFORMANCE AND RETENTION OF DISCRETE AND CONTINUOUS MOTOR TASKS Amir Dana*, Reza Rezaee Shirazi*, Saeed Ghorbani*, Faezeh Zamanian** *Islamic Azad University, Aliabad Katool **Islamic Azad University, Najafabad, Iran
11 ¹⁰ –11 ⁴⁰	Coffee break

Friday
Oral session III – Sports Hall – Room 15

11 ⁴⁰ –13 ¹⁰	Oral session III – Sports Hall – Room 15
	<i>Modern research on the role of physical activity on improvement of physical fitness in various periods of ontogeny. Methodology, results.</i>
	<i>Chairman: Prof. Branislav Jevtić (Serbia), Prof. Robert Szeklicki (Poland), Prof. Krzysztof Klukowski (Polska)</i>
11 ⁴⁰ –11 ⁵⁵	THE IMPACT OF PREGNANCY ON THE WOMEN'S WAY OF WALKING Wanda Forczek, Robert Staszkiwicz University School of Physical Education, Cracow, Poland
11 ⁵⁵ –12 ¹⁰	THE IMPACT OF CORRECTIVE & THERAPY EXERCISES ON BACK NON-ATHLETIC HYPERLORDOSIS DYSMENORRHEAL WOMEN Behnam Ghasemi Shahrekord University, Shahrekord, Iran
12 ¹⁰ –12 ²⁵	EFFECTS OF WATER EXERCISE ON FALLING RISK AND POSTURAL CONTROL OF ELDERLY PATIENTS WITH KNEE OA Faezeh Zamanian*, Elham Forouzandeh*, Javid Didari*, Mina Haghighi*, Azam Hashemi** *Islamic Azad University, Tehran, Iran **Tiran Branch, Payamenoor (PNU) University, Tiran, Iran
12 ²⁵ –12 ⁴⁰	STABILITY OF POSTURE IN WOMEN OF VARIOUS AGE Bożena Wojciechowska-Maszkowska, Dorota Borzucka University of Technology, Opole, Poland
12 ⁴⁰ –12 ⁵⁵	THE RELATIONSHIP BETWEEN MASCULINE FEMININE PERSONALITY TYPES AND INTERESTS IN MARTIAL SPORTS Karim Asgari*, Behnam Ghasemi**, Helena Husepian* *University of Isfahan, **University of Sharekord, Iran

Poster session
Saturday – 8³⁰–10³⁰

1.	THE COMPARISON OF INFLUENCE OF SPECIFIC EFFORT ON THE CARDIOVASCULAR SYSTEM OF ELITE WRESTLERS (CLASSIC AND FREE STYLE) <i>Krystyna Aniol-Strzyżewska, Włodzimierz Starosta (Institute of Sport, Warsaw, Poland)</i>
2.	ACT ON AGEING: A PILOT STUDY. THE EFFECTS OF PHYSICAL ACTIVITY IN ELDERLY PEOPLE LIVING IN RESIDENTIAL CARE FACILITIES IN TERM OF HAND GRIP AND FINGER PINCH STRENGTH <i>Giulia Bardaglio, Daniele Magistro, Anna Mulasso, Mattia Roppolo, Margherita Micheletti, Monica Emma Liubicich, Francesca Magno (University of Torino, Italy)</i>
3.	EVALUATION OF HEALTH BEHAVIOUR OF YOUNG WOMEN – STUDENTS OF PWSZ IN NOWY SĄCZ – NUTRITION AND PHYSICAL ACTIVITY <i>Monika Bigosińska*, Zbigniew Szygula** (*State Higher Vocational School in Nowy Sącz, **University School of Physical Education, Cracow, Poland)</i>
4.	EVALUATION OF HEALTH BEHAVIOUR OF YOUNG WOMEN – STUDENTS OF PWSZ IN NOWY SĄCZ – THE PHENOMENON OF SELF-HEALING OR HEALTH MONITORING <i>Monika Bigosińska*, Zbigniew Szygula** (*State Higher Vocational School in Nowy Sącz, **University School of Physical Education, Cracow, Poland)</i>
5.	ASYMMETRY OF SUPPORTING AND STABILIZING FUNCTION OF THE LOWER EXTREMITIES IN ALPINE SKIERS <i>Przemysław Bujas, Dariusz Tchórzewski, Janusz Jaworski (University School of Physical Education, Cracow, Poland)</i>
6.	SIZE OF FUNCTIONAL ASYMMETRY OF LOWER LIMBS IN ALPINE SKIERS <i>Przemysław Bujas, Dariusz Tchórzewski, Janusz Jaworski (University School of Physical Education, Cracow, Poland)</i>
7.	FACILITATION OF GAIT IN PATIENTS AFTER STROKE BY USING RHYTHM <i>Anna Bukowska (University of Physical Education, Cracow, Poland)</i>
8.	THE CHANGES IN THE PHYSIOLOGICAL RESPIRATORY PARAMETERS DURING WINTER SWIMMING IN MEN <i>Agata Cebula*, Anna Tyka**, Andrzej Markowski*, Szczepan Wiecha*, Aneta Teległów*, Anna Marchewka* (*University School of Physical Education, Cracow, **State Higher Vocational School in Nowy Sącz, Poland)</i>
9.	ASSOCIATION OF THE AMPD1 T34C POLYMORPHISM IN POLISH POWER-ORIENTED ATHLETES <i>Paweł Ciężczyk, Agnieszka Maciejewska, Marek Sawczuk (*Szczecin University, Poland)</i>
10.	EFFECT OF WHOLE-BODY CRYOTHERAPY ON POSTURAL CONTROL <i>Piotr Czech*, Czesław Giemza*, Barbara Szpotowicz***, Magdalena Kepińska***, Michał Kuczyński** (*University School of Physical Education, Wrocław, **University of Technology, Opole, ***University School of Physical Education, Cracow, Poland)</i>
11.	EVALUATION INTELLECTUALISATION TEACHING MOVEMENT TECHNIQUES IN TERMS OF EFFECTIVE AND HEALTHY FOR TRAINING YOUNG FOOTBALL PLAYERS <i>Henryk Duda (University School of Physical Education, Cracow, Poland)</i>
12.	RESPIRATORY PARAMETERS IN RELATION TO SPORT RESULTS OF THE 14 YEARS OLD SWIMMERS <i>Ewa Dybińska, Katarzyna Kucia-Czyszczoń (University School of Physical Education, Cracow, Poland)</i>

13.	THE EFFECT OF BANDWIDTH FEEDBACK ON CONSISTENCY & ACCURACY FORCE PRODUCTION TASK IN NON ATHLETE STUDENTS <i>Mohammadi Farzad*</i> , <i>Reza Baledi*</i> , <i>Mostafa Khodadoost*</i> , <i>Arash Asefirad**</i> (*Islamic Azad University, Abadan, **Shahid Beheshti University, Tehran, Iran)
14.	SELF-ACTUALIZATION AND THE CHARACTER IN A PSYCHOLOGICAL DIAGNOSIS OF ATHLETES <i>Marian Fiedor *</i> , <i>Kinga Tucholska **</i> (*University School of Physical Education, Cracow, **Jagiellonian University, Cracow, Poland)
15.	CHANGES IN AEROBIC CAPACITY IN NEWLY DIAGNOSED WOMEN WITH GLUCOSE METABOLISM DISTURBANCES AND WITH SIMPLE OBESITY AFTER 12-WEEK LOW CALORIE DIET AND STANDARDIZED TRAINING PROGRAM <i>Grzegorz Głab*</i> , <i>Jerzy Cempla*</i> , <i>Marcin Maciejczyk*</i> , <i>Aleksandra Gilis-Januszewska**</i> , <i>Beata Piwońska**</i> (*University School of Physical Education, Cracow, **Jagiellonian University, Cracow, Poland)
16.	EFFECT OF JOGGING ON THE LEVEL OF PHYSICAL DEVELOPMENT IN WOMEN AND MEN IN TERMS OF H-RF <i>Joanna Gradek</i> , <i>Edward Mleczko</i> , <i>Sebastian Swoboda</i> (University School of Physical Education, Krakow, Poland)
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Lp

1. pap.
RUM **Abalasei Beatrice*, Ungurean Bogdan*, Cojocariu Adrian***

PUBLIC TYPES OF SPORTS EVENTS IN ROMANIA

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Key words: sports events, types of public violence

Abstract. The study has an explorative character and its objective is to analyze the types of public from sporting events through expertise in sports, using categorical content analysis / thematic. The results will bring to the fore features of sports violence, focused on the behavior of fans. Typology of sports spectators will highlight them in a systematic basis of behavior, reactions, knowledge level concepts of sports, purpose.

Introduction. Modernism turned crowds in public, the media exaggerate the intention to impress, and so people are focused around a topic that they discuss with conflicting opinions. There are premises for the public to be preceded by a mass, drawn from the social problem they discussed seeking solutions to them, then to a mass retransforme aggressive.

Method. We used content analysis as a research technique that allows decoding analytical content of the messages from the interviews applied to a population.

Results. After the interpretation of responses to interview guide applied to respondents, we found that most are part of the specification: dimensions of violence in sport. Also, the responses talk about public attitudes and behavior inside and outside the sporting arena it and the solutions for combating violence in sport, to mitigate the turbulent events that occurred during the post-revolutionary Romania.

The few statements which appeared to meet the new class areas of causing violence in sport, which refers to sports that generate violence or supporters preferred space for downloading aggressive impulses.

Arenas lose functionality for which they were built to be space to express feelings of joy, hope and life and land are expressions of anxiety society.

2. pap.
BIA **Gerasevich Anatoly**, Yuri Schenovsky*, Leo Shitov****

SEX DIFFERENCES IN MORPHOLOGICAL PARAMETERS OF THE BODY OF STUDENTS OF SPECIALIZED FACULTY

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Key words: boys, girls, morphological parameters, physical education

Introduction. The process of physical development of the body is completed about 16-18 years in girls and 20-22 years in boys. On the formation of morphological traits affect specific teaching load of the specialized faculty (of physical education).

Aim of the work. Determination of informative morphological parameters which appear reliable sex differences between groups of boys and girls students of physical education faculty.

Material and methods. Surveyed boys (n=30, age 21.00±0.14 years) and girls (n=15, age 21.27±0.19 years) students of 4-course of physical education faculty. Determined by numerous morphological parameters.

Results. Among the morphological features found are those for which the results of boys is higher than the results of the girls: height, weight, BMI, percentage of water, muscle mass, the width of the elbow and knee, circumference of the chest on a pause, inhale and exhale (all - p <0.001). However, for some indicators the girls ahead of boys: the percentage of body fat, the quantity of skin and fat folds at the triceps (p<0.01) and biceps (p<0.001).

Conclusions. The obtained results reflect the peculiarities of sex differences in size of morphological parameters between the groups of boys and girls, students of the faculty of physical education.

3. pap. BIA **Timoshenkov V. V.***, **Timoshenkova A. N.****, **Borisov V. Y.*****, **Starosta V.******

ANALYSIS OF FACTORS WHICH INFLUENCE THE VITAL FUNCTIONS OF BELARUSIAN AND POLISH STUDENTS

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This research cites the results of social studies, concerning different opinions and real factors which influence the vital functions of 1 – 5-year university students from Belarus and Poland. 1349 respondents became the participants of this social study.

The submitted analysis of numerical material shows that the respondents' real factors, which influence their vital functions, differ from their opinions. Hereby, the differences within Belarusian respondents are the following: -7,7% for boys and -14,8% for girls; Polish respondents – -23,5 and -28,1% for boys and girls, respectively. The differences between Belarusian and Polish students, both male and female, were also revealed in the study. In tote, the submitted numerical results confirm that the respondents' opinions differ essentially from the basic real factors, which have the main influence on the vital functions and which are acquired by students in the issue of having healthy lifestyle.

In the course of social studies it was ascertained, that WHO's models, which influence people's vital functions, not fully coincide with the results drawn from students aged from 17 to 24. Above-stated facts induce to carry out more researches in interested countries in order to work out special models as well as theoretical and practical recommendations for young people, living in these countries.

4. pap. **Couto Bruno Pena***, **Sara Andrade Rodrigues***, **Rafael Soncin Ribeiro***,
BRA **Marcos Daniel Motta Drummond***, **Barbara Marcelina Ribeiro Rocha****,
Leszek Antoni Szmuchrowski*

EFFECT OF STRENGTH TRAINING WITH VIBRATION ON BILATERAL FORCE AND IMPULSE DIFFERENCE

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Keywords: strength training, vibration, bilateral difference.

Purpose. The purpose of the present research was to verify the chronic effects of vibration during bilateral strength training on the force and impulse difference among contralateral limbs obtained in the vertical jump.

Basic procedures. Fifty-one untrained male volunteered to participate in this study. Volunteers were randomly distributed in 4 groups: the Isometric group (n=13), the 8-Hz group (n=13), the 26-Hz group (n=13) and the Control group (n=12). Volunteers were submitted to 4-week of isometric training (Isometric group), isometric training associated with the application of 8Hz (8-Hz group) and 26Hz (26-Hz group) frequency of vibration. This training was done three times a week and made up of 12 maximal voluntary contractions (MVCs) in a semi-squatting position. The Control group did not execute any kind of training and was instructed not to execute any kind of systematic physical activity during the period of the research.

Main findings. Only the group submitted to 8-Hz vibration frequency had a significant decrease in force ($p=0,005$) and impulse ($p=0.017$) difference among contralateral limbs. The 26-Hz frequency, unlike imagined, did not reduce de force ($p=0,261$) and impulse ($p=0,925$) difference among contralateral limbs.

Conclusions. In conclusion, exposure to 4-week isometric training, when applying vibrations with frequencies of 8Hz in the direction of the resultant muscle forces' vector addition, was able to significantly decrease the force and impulse difference between limbs. Conventional isometric training and exposure to vibration frequencies of 26 Hz did not produce the same effects.

5. pap. **Baláková Veronika***
CZE

THE USAGE OF VIDEO INTERACTION GUIDANCE METHOD IN SPORT

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Key words: Video Interaction Guidance, sport, coaching, observing, case studies, interview

The purpose of this qualitative case study is to use Video Interaction Guidance method in sport in order to detect specifics regarding usage of VIG within specific environment as a sport.

Participants are 6 youth volleyball coaches working with VIG method. The core of this intervention method is a basic three-step process. Taping - making a short video of training session. Analysis - analyzing and editing the video to assess strengths, set training goals, plan feedback. Feedback - showing selected video to highlight and review strengths, build competence and enhance motivation, and teach skills in detailed one-on-one sessions. This intervention program is evaluated on the basis of the case studies, observing and semi-structured interviews. Results show that VIG method is useful and acceptable for these participants.

6. pap.
CZE **Bunc Václav***, **Marie Skalská****

EFFECT OF WALKING ON BODY COMPOSITION AND AEROBIC FITNESS IN NON-TRAINED MEN OF MIDDLE AGE

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The study was supported by grant of Czech Ministry of Education MSM 0021620864

Key words: walking, body composition, men of middle age

Introduction. An effect of physical exercise may be assessed by level of aerobic fitness (AF) and body composition (BC).

Aim of the work. In this study we verify the moving program based on walking for influence AF, and BC in middle-aged men.

Material and methods. The energy output of 4180 kJ/week was respected by construction of individual intervention moving programs. The exercise intensity at a level of 50 to 70% VO_2max (HR ranged from 65 to 90% of HRmax or 130-170 beats.min⁻¹) was used in a group of middle aged non-trained men (n=68, age=45.7±4.2 years, BM=79.1±7.1 kg, height=176.3±4.8, BF=19.1±4.3 %, $VO_2max \cdot kg^{-1}$ =33.1±5.3 ml·kg⁻¹·min⁻¹). The duration of exercise session ranged from 20 to 50 min, and exercise was performed 3-5 times a week.

Results. The moving programs consisted aerobic walking (min 80% of whole exercise) or cycling (min 10% of total exercise) at the level of 50 to 70% VO_2max . The duration of exercise session ranged from 20 to 50 min, and training was performed 3-5 times a week. The time spent at exercise per week ranged between 85-250 min. The energy output of exercise ranged from 4390 kJ to 7780 kJ [mean 6440 (960) kJ] per week. After 5 months of training, slight but significant BM loss [mean 3.5 (1.9) kg; (p<0.05)], FFM increase [mean 2.6 (1.2)kg; (p<0.05)], and BF decrease [mean 3.2 (1.6)%; (p<0.05)] was found. Aerobic fitness increased significantly by 17 (7.3)%; (p<0.01) of initial value. Similarly as VO_2max was significantly increased the maximal speed of running by 15 (2.5)%; (p<0.01).

Conclusions. According to above presented data we may conclude that exercise with total energy content of 6270 kJ/week is enough for significant improvement of AF and motor performance by maximal exercise in non-trained subjects.

7. pap. **Cepicka Ladislav***, **Irena Holeckova****, **Pavel Mautner*****,
CZE **Roman Moucek*****

THE DIFFERENCES IN BRAIN RESPONSE ACCORDING TO THE LEVEL OF MOTOR DEVELOPMENT IN CHILDREN

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Key words: motor development, motor quotient, children, evoked potential, brain, TGMD-2

Introduction. The electrophysiological methods can be used to investigate disorders in motor development of children. The electrophysiological method as the evoked potentials (EP) gives us information on the processing of sensory perception from the level of sensory organ to the processing in the cortical centers. The visual, auditory and cognitive EPs, specifically the waves MMN and P300, can be used to investigate cognitive and developmental the disorders. It can be supposed there is a dysfunction of differentiation of the complex signals which can be confirmed by variance of latency and amplitude of cognitive or sensory EPs. It can be also supposed that other developmental disorders have the same pathophysiological basis.

Aim of the work. Differences in brain response according to the level of motor development in children aged about 6 years.

Material and methods. The study covered 27 children, mean age 5.87 (SD=0.55), 19 boys, mean age 5.80 (SD=0.65), 8 girls, mean age 6.03 (SD=0.03) The relation between motor activity and brain response has been analysed. Device BRAIN-AMP, which is designed to measure bio signals (EEG/ERP/EMG) has been used. Electrophysiology response on audio stimuli has been recorded. The EP record has been interpreted by medical doctor. Wave N1 presents late sensory processing of stimuli and reflects reaction of exposure. Producter of response is located to motor cortex area and supplementary motor areas. There is a presumption that it can be modified in children with DCD. Wave P3 resents enhance of attention, categorization of stimuli and reflects emotional processing of stimuli as well. It is modified by pathological disorders, primarily by cognitive disorders. Gross Motor Quotient (GMQ) has been used to evaluate disorder and it has be obtained through TGMD-2.

Results. Significant difference at stimuli processing in children with significant different score of GMQ. Findings in children with GMQ 100-120 correspond to more matured processing of simple sensory stimuli. Children with lower GMQ have smaller amplitude of response P3. It means that these children respond on

stimuli but they are not concentrated very well. They make a little account to response. In children with lower score of GMQ the disorder results from inadequate processing of sensory perception. Children with low score of GMQ reflect different processing of stimuli at sensory level. Children with low score of GMQ have different reaction of exposure, enhance of attention and categorization of stimuli. Disorder is not related to motor demonstration only.

8. pap.
CZE **Koptikova Jana****, **Mikulas Splitek****, **Lukas Matejovic****, **Ladislav Cepicka***

THE SCORING IN THE TEST OF GROSS MOTOR DEVELOPMENT_2 AND MOVEMENT ASSESSMENT BATTERY FOR CHILDREN ACCORDING TO LEVEL OF MOTOR DEVELOPMENT

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Key words: motor development, children, TGMD-2, Movement ABC-2

Introduction. Motor skills refer to the overall human motor ability or to the complex activities of human body. They are classified as fine and gross motor skills. Gross motor skills mean the basic motor abilities, which also form the basis of many other skills. These are the activities that facilitate, with the help of torso and limbs muscles, certain motor tasks, such as running, jumping or throwing and catching a ball. Whereas fine motor skills refer to movements of hand such as grasping and handling tiny objects. Appropriate development of child motor skills is an important factor not only for its agility, but also for its mental condition and development of social relations. In case that motor development is retarded or in case of other motor abnormalities, early intervention is necessary, ideally in the form of physical education adaptation and further psychomotor programmes. With regards to current trends, when the general level of motor skills with children are deteriorating, assessment of movement is duly justified and it is also the best means to determine low movement level of a child and to recommend subsequent movement intervention.

Aim of the work. To compare application of the most used movement tests available, the Test of Gross Motor Skill Development and the Movement Assessment Battery for Children, evaluating and determining the developmental coordination disorder.

Material and methods. The study covered 51 children, mean age 5.36 (SD=0.67), 33 boys, mean age 5.48 (SD=0.43), 18 girls, mean age 5.14 (SD=0.28). Test of Gross Motor Development – 2 and Movement Assessment Battery for Children have been used. Data has been analysed by software STATISTICA.

Results. Both of these tests (TGMD-2 and MABC-2) present suitable tool for evaluation of motor development in children. Even though they were developed abroad

they can be applied in the Czech Republic very well. The advantage of TGMD-2 is a relative easiness because it does not need any special equipment. It uses just ordinary sport equipment. On the other hand, this test does not cover qualitative aspects of movement. MABC-2 takes more time and needs specific equipment but it has a qualitative part which can describe the quality of movement.

9. pap.
CZE **Kovář Karel*, Marek Waic****

SOCIAL SCIENCES OF PHYSICAL EDUCATION AND SPORT IN THE CZECH REPUBLIC – THE TRADITION, HERITAGE OF COMMUNISM, PRESENT TIME AND PERSPECTIVES OF EVOLUTION

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Key words: physical education, history, philosophy and sociology of sport

Introduction. In Bohemia, the bases of social sciences of physical education were established by the founder of Sokol, Miroslav Tyrš, as early as in the 1870's. Modern science of physical education was formed in the interwar Czechoslovakia especially by the Doctor of Medicine, Prof. Karel Weigner, rector of Charles University in 1936-1937, who focused on the influence of movement activities upon health and on social functions of physical education and sport. During the communist dictatorship, social sciences of sport were strongly influenced by communist ideology and after its fall they had to look for a new feature.

The aims of this study are to demonstrate the evolution of these sciences, their current trends and methodological approaches.

Methods. Especially the chronological and comparative method will be used, and for the study of present time and perspectives of evolution of social sciences of sport we will use the system approach.

The result will consist mainly in presenting the continuity of the evolution of this phenomenon until today and to forecast its future development.

In conclusion we want to compare the actual state and possibilities of these sciences in the Czech Republic with other Central European countries.

10. pap.
CZE **Kovarova Lenka*, Karel Kovar****

COMPARISON OF HEART RATE AND THE LACTATE LEVEL OF INDIVIDUAL ANAEROBIC THRESHOLD IN SWIMMING, CYCLING AND RUNNING IN THE TRIATHLON

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Key words: diagnostics, performance evaluation, determination of the intensity

Introduction. Knowledge of the individual anaerobic threshold is one of the most important tools in the management of sports training in endurance sports. The intensity of load on anaerobic threshold in particular parts of the triathlon is different.

Aim of the work. The aim was to compare heart rate and blood lactate in particular parts of the triathlon on the intensity of the load of individual anaerobic threshold.

Material and methods. The study included 12 junior triathletes included in the representation of the Czech Republic in the triathlon (VO_{2max} 70.6 ml • min⁻¹ kg⁻¹ (± 5.5)). For statistical data processing we used a One-Way ANOVA and Post hoc test (Bonferroniho method).

Results. The analysis showed significant differences at the 0.05 level of significance for both measured parameters (HR, LA) in all parts of the triathlon.

Conclusions. Confirmed differences are an important tool for the general concept of sports training in triathlon, and may contribute to the improvement of sports training especially in the smooth changeover between particular parts of the triathlon.

11. pap. **Psalman Vladimír***, **Martin Zvonar****, **Jiří Zhánel****, **Igor Duvac****,
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TIMING IN TENNIS SPORT

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Key words: timing, tennis, 3D kinematic analysis

Introduction. Timing is the selecting of the best time and speed for doing tennis strokes in order to achieve desired or maximum sport result. This paper deals with 3D kinematic analysis of tennis stroke technique and with evaluation of timing.

Aim. The purpose of this research was using 3D kinematic analysis and obtaining very precise kinematic characteristics in chosen key phases of tennis stroke.

Methods. We focused on 3 key time moments in the performance of motion during servis and forhand strokes. The first moment was, when time of maximal acceleration of upper tennis racket appeared, the second moment was the time, when maximal speed of upper tennis racket was recorded and finally, the third moment was defined right in time of contact between the tennis racket and the ball. Serve is a stroke performed in the flying phase and forhand is realised in the stable position on the ground. With the help of 3D kinematic analysis and Simi motion software the whole body and tennis racket movements were recorded. Twenty male tennis players from Slovak clubs in average age of 22,4 years were videotaped by 2 synchronised cameras and analysed by tennis experts and biomechanists.

Results. The highest values of acceleration of upper racket during stroke is achieved when the whole kinematic chain of body segments is finished. In this moment or in very short time interval later, the contact between the racket and the ball should happen. Range of this time interval represents quality of timing. The shorter the range, the better timing is. We found out that the most important segment of tennis player system seems to be upper racket place which is responsible for precise and fast tennis shot. Many results of speed and acceleration parameters were achieved, but definitely excellent ones are only those, which had acceleration of upper racket, in the moment of contact of the ball with the racket in positive values. On the other side, deceleration of upper tennis racket just before the contact with the ball, results in lower contact speed and hence not optimal timing and lower quality of stroke. By forhand strokes the moment of maximal speed of upper racket occurred in almost all cases at the same time as the contact of the racket with the ball. Acceleration at this moment was lower than maximal acceleration recorded during the stroke but still showing positive values. The margin of the time differences between maximal acceleration of upper racket and contact time was established on 0.06 s. So time interval between 0.00 s (ideal) and 0.06 s represents excellent timing which can be normally achieved by top tennis players. Serve stroke is more complicated because of flying phase and for excellent technique is considered time margin 0.1 s. This is because there is a gap between in time of maximal speed of upper racket and time of contact ball and racket, and another 0.04 s are clearly visible in studied records. Obtained results and their quality were confirmed by experts as well.

Conclusions. Evaluating of timing can be done very precisely and sufficiently by using 3D kinematic analysis. This study brings also specific time intervals for classification of servis and forhand strokes which can be helpful for tennis coaches and support their subjective expert evaluation.

12. pap. **Fernández del Valle María*, Rodríguez-Ruiz David**, Díez Vega Ignacio*,**
ESP **Rodríguez-Matoso Darío ***, Sagastume Fernández Rafael****, Molina**
Martin Juan, José*

ASOCIATION ANALYSIS BETWEEN BODY COMPOSITION AND SOMATOTYPE CHARACTERISTICS AND ACTN3 GENE IN ELITE SPANISH VOLLEYBALL PLAYERS

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Key words: body composition, somatotypes, ACTN3 and volleyball

Introduction. Nature is a powerful influencing factor in the sports performance. The balance between genes and environment is present in the highest performance

level in sports, such as volleyball. The somatotypes and body composition characteristics have been studied deeply, and the genetic factor, ACTN3 genotypes, seems to be present due to the explosive requirements in multiple sports.

Aim of the work. The aim of this study was to determine the possible association between morphological characteristics and ACTN3 genotypes.

Methods. The sample was evaluated during pre-season schedule, and composed by 158 players (85 male, 73 female), all of them belonging to the highest competition level in Spain. The somatotypes (Endomorphic, Mesomorphic, Ectomorphic components, scales and their respective classifications) were calculated through anthropometric measurements, following the ISAK guidelines (Anthropometrist Level 3). The genotypes of the ACTN3 R577X gene (XX, RX, RR) were analyzed.

Results. No association was found between the anthropometric measurements (muscle mass (MME), bone mass (BM), fat free mass (FFM), their percentages, and classifications) and ACTN3 genotypes for male and female. However, there were some somatotypes differences statistical significant in females, but no in males. These differences shown the lower levels of mesomorphic component and scores in mesomorphic importance classification in RR genotype ($p=0,014$) followed by the RX ($p=0,005$) regarding to XX genotype. **Conclusions.** These findings could occur because of the different adaptation requirements of the RR, RX and XX carriers, showing that the slow fibers could maintain better the gains acquired in the last season.

13. pap. ESP **Rodríguez-Ruiz David***, **Fernández-del Valle María****, **Rodríguez-Matos, Dario*****, **Díez Vega Ignacio****, **Sagastume Fernández Rafael******, **Molina Martín J.J.****

FUNCTIONAL DIFFERENCES AMONG KNEE MUSCLES BETWEEN MALE AND FEMALE VOLLEYBALL MIDDLE-BLOCKER

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Key words: tensiomyography, volleyball, high performance, knee extensors and flexors

Introduction. The Tensiomyography (TMG) is a non invasive instrument that measure the muscle mechanical characteristics, such as vastus medialis (VM), rectus femoris (RF), vastus lateralis (VL) y biceps femoris (BF).

Aim of the work. Analyze the functional differences in the knee musculature in high performance volleyball middle-blocker players using TMG as an innovative instrument.

Methods. The sample evaluated was 44 players (22 male, 22 female), belonging to the Spanish highest competition level. The muscle normalized response speed (Vrn) was studied.

Results. The female Vrn outcomes showed a higher values in VL and VM, and lower values in RF and BF. The differences were statistically significant between BF and RF ($p=0,020$), BF and VM ($p=0,002$), BF and VL ($p=0,000$), and between RF and VL ($p=0,002$). In the male group the outcomes showed a different Vrn higher in BF and VL, and the lower in RF and VM. The differences were statistically significant between BF and RF ($p=0,020$), BF and VM ($p=0,028$), RF and VL ($p=0,037$), and between VM and VL ($p=0,051$). The Vrn value was higher in BF ($p=0,005$) for male, and VM ($p=0,030$), VL and RF for female.

Conclusions. There were found obvious differences in the knee musculature response speed for extension (VM, RF and VM) and flexion (BF) in female. The male middle-blocker volleyball players show a better balance in the musculature, where the highest Vrn value was shown in BF, and the lower in VM and RF. These results seem to be a consequence of the technical-tactical requirements and the morphological gender differences.

14. pap.
IND **Behrooz Imeri*, Dilip Kumar Dureha****

THE COMPARISON OF BONE MINERAL DENSITY OF LUMBAR SPINES AND FEMORAL BONES BETWEEN MALE ELITE SWIMMERS AND MALE NONATHLETES

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Key worlds: BMD, swimmer and non-athletes

Introduction. Osteoporosis is a multi-factorial skeletal condition and is a primary cause for poor quality of life and increased medical expenses in the humans. Generally, osteoporosis exhibits both reduced bone matrix and bone mineral density; thus, the quality of the bone remains about the same, there is just less bone present. It has been said that Swimming as a non-weight-bearing sport has insignificant effect in the maintenance of bone mineral density compared to other weight-bearing sports (Volleyball, Basketball).

Aims. The purpose of this study was to compare the bone mineral density (BMD) in lumbar spines and femoral bone between men elite swimmers and non-athlete men subjects. We studied whether swimming is associated with a higher bone mineral density or not.

Methods. Ten professional swimmers (mean \pm -SD, age 25/51 years, height 182 \pm -1.19cm, weight79 \pm -1.02kg, BMI 22.80) and ten healthy non-athletes (mean \pm -SD, age 24.74 years, height176 \pm -1.66cm, weight80 \pm -1.55 kg, BMI 24.10) Participated in this study. In this study all swimmers and control group had no disease such

as diabetes, hyperthyroidism, and cardiovascular disease and were not taking any medicine. BMD was measured by Dual Energy X-Ray Absorptiometry (DEXA) at the femoral neck and lumbar spine. The participants neither use anti-seizure drugs, alcohol, cortone drugs nor cigarette. The swimmers had trained of 10 hours weekly for 3 years an average. BMD in all positions was comparable among two groups ($p > 0.05$). In this study we used the Mean to acquire the average of bone mineral density of groups. Paired sample t-test and independent t-test are used to determine the intergroup and intergroup information and to analyze the data

Result. Bone mineral density in lumbar spines and femoral bone of swimmers were significantly better than the control group.

Conclusions. According to the results of the study, it is observed that the amount of bone mineral density of elite swimmers in spines and femoral bones is higher than nonathletes. It is observed that the difference in spines is more than the difference in femoral bones, because there are pressures which are made because of the continuous swirls in different kinds of swimming. There is difference in femoral bones also, but this difference in femoral bones is less than the spines.

15. pap.
IRA **Asgari Karim, Behnam Ghasemi, Elena Hosepian**

THE RELATIONSHIP BETWEEN MASCULINE FEMININE PERSONALITY TYPES AND INTERESTS IN MARTIAL SPORTS

Aims. In the present study it was assumed that there might be a relationship between feminine masculine personality types and taking part in martial sports.

Methods. 30 female and 30 male athletes, exercising martial sports were randomly selected from martial sport club in Isfahan city, in Iran. The 5th scale of long form of Minesota Multiple Personality Inventory (MMPI) was answered by all the participants. Then, the data was analyzed by Spss.

Results. According to the analysis of the data, there was a mild relationship between masculinity / femininity dimensions of personality and taking part in martial sports.

Conclusion. Although there is relationship between femininity / masculinity, and taking part in martial arts, but this relationship is not significant. It might be due to the size of the sample, and the interpretation of the mild relationship between two variables need more investigation in the future.

16. pap.
IRA **Bagherian Mehdi*, Vahid Soltani Dehnavi****

THE EFFECT OF EIGHT WEEK AEROBIC EXERCISE (BRUCE PROTOCOL) IN THE MORNING AND EVENING ON IMMUNE SYSTEM OF ELITE WRESTLERS

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Key words: biological rhythm, leukocyte, neutrophil, lymphocyte, monocyte

Introduction. The daily change of the night and day cycle of the physiological reactions of the body explain the fact that the physiological reactions at rest and during exercise are shifting through out the day and the capabilities of the body are affected by the night and day rhythm.

Aims of the work. The aim of this research is to compare the effects of eight week of aerobic exercise (Bruce Protocol) in the morning and afternoon on the immune system of elite wrestlers.

Methods. The samples of this project include 40 wrestlers of Foolad Mobarakeh Club, in four groups per capita ten groups experiment and Control, which they participated in Bruce Test (aerobic exercise) in morning and afternoon shifts. Samples of blood conducted on the subject before and right after the test session the first and 24th. The blood sample tested in the laboratory in order to determine the measure of safety factors existing in the blood (white blood cells, neutrophil, Lymphocyte, monocyte). Analysis of the samples accomplished with using the inferential statistics (Levin test, t. test correlated and test F in $p \leq 0.05$ in a software called spss-16.

Result. According to the results achieved from morning and evening groups that have done the aerobic exercises, there were not any changes in the amounts of neutrophil, but there was a significant in the amount of white blood cells, Lymphocyte and monocytes.

Conclusion. This increase may due to use of independent variable (aerobic exercise and biological rhythm) on persons. It seem that the profile of human immune system's reaction to physical exercises needs further studies and evaluation of effective variables.

17. pap.
IRA

Baledi Reza*, Farzad Mohammadi*, Arash Asefirad**

THE COMPARISON OF OVERALL LEVEL OF SOCIAL DEVELOPMENT IN INDIVIDUAL AND TEAM SPORTS WITH NON-ATHLETES

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Key words: social development, athletes, non-athletes, individual sports, team sports.

Introduction. One of the society's problems which is contrary to the nature and essence of human being is the Lack of adequate mobility and Social disadvantage. The social process is one of the important components growths and one of the underlying growth axes character. This process is in contrast of self-axial which is during the group's values on the value of their individual value, and in final that values will conveniently built into. Being with other human beings is not the

only criterion to call a person sociable, yet cooperation must be included the self-sufficiency (autonomy), acceptance, compatibility Communication with the other, helpfulness and optimism Are dimensions of social development.

The aim of this research. Comparison of social development between individual and team major athletes with non-athletes.

Methodology. In this research Statistical Society Formed with all of the male adolescence athletes involved in the field handball, basketball Volleyball Taekwondo, Track And Field, swimming and wrestling in khouzestan Province. The survey sample was randomly selected cluster (n=350) the control group of 50 teenagers who are not in any sports activity.

Results. Other findings of this study were that, there was a difference between the overall level of social development of individual athletes and non-athletes (Table 1). The post hoc LSD test results in table 2 the overall level of social development of team athletes is higher than individual athletes and non athletes. also, the overall level of social development of individual athletes is higher than non-athletes.

Table 1. One-way analysis of variance test

Group	X±SD	N	df	F	P
Single-athletics	34.91±8.34	161			
Group-athletics	9.16±37.73	104	2,412	14.715	0.0001
Non-athletics	8.94±31.80	150			

Table 2. The result of LSD Post-Hoc test results

Test groups		Group-a thletics	Non-athletics
Single-athletics	Mean difference	-2.82	3.11
	P- value	0.01*	0.002*
Group-athletics	Mean difference		5.93
	P- value		0.0001*

Conclusion. Participate in group activities and collective growth and prosperity of the underlying behavior of adolescents. Participation in these activities makes people better communicate with others to establish and thereby to meet their basic needs in life. Social development, one of the most important aspect is that each person which not only with the other who now deal with them effectively, but also in academic achievement and career success and influence in the future. Acknowledgments: This article extracts from research project is titled: survey comparison of social development among adolescents boy athletes in contact and non-contact of group and individual sports and financial supported by the Islamic Azad University Abadan branch.

18. pap. IRA **Dana Amir***, **Reza Rezaee Shirazi***, **Saeed Ghorbani***, **Faezeh Zamanian****

THE EFFECT OF A FEEDBACK TRAINING PERIOD ON LEARNING OF SHOOTING IN INEXPERIENCED SHOOTERS

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Key word: Feedback training, KR, KP, performance, learning, shooting

Aim. The purpose of this study was to determine the effect of a feedback training period on learning of shooting in inexperienced shooters.

Methodology. The method of this study was semi-experimental that was included three experimental groups and a control group. Participants were 60 male students who were randomly selected and designed to four groups (KR, KP, KR and KP, control). First, participants were familiar to shooting by a coach. Then all of them participated to pretest shoots (10 ballots). Training period included eight weeks and three sessions a week. Every participant was shut 20 ballots a session. All of records were recorded. At the end of training period, participants were participated to post-test same to pretest. 48 hours, 10 days and one month later, participants were participated to retention test.

Results. Results of ANOVA and Tukey tests showed that all of experimental groups had significantly better than control group. KR and KP group was better significantly than all groups, too. The result of retention test were similar to learning and performance tests ($P < 0.05$).

Conclusion. The results of this study showed that a feedback training period can improve performance and learning of inexperienced shooters and combination of feedbacks can improve performance and learning better than one of them.

19. pap.
IRA

Dana Amir*, **Reza Rezaee Shirazi***, **Saeed Ghorbani***, **Faezeh Zamanian****

THE EFFECT OF INSTRUCTION AND MOTIVATIONAL SELF TALK ON PERFORMANCE AND RETENTION OF DISCRETE AND CONTINUOUS MOTOR TASKS

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Key words: Instructional and motivational self-talk, performance, retention, discrete and continuous motor tasks.

Aim. The aim of this study was to determine the effect of instructional and motivational self-talk in performance and retention of discrete and continuous motor tasks.

Methodology. Participants were 120 males, divided to six experiential groups. Dart throwing and dynamic balance was selected as discrete and continuous motor tasks, respectively. The scores were recorded after every trial as performance test. 48 hours later was done retention test.

Results and conclusion. Results of MANOVA showed that there is significant difference between instructional, motivational and combinational groups. There-

fore, instructional self-talk had a significant and higher effect on discrete motor task; and motivational self-talk had significant and higher effect on continuous motor task. Also, there is no significant difference between groups in retention test. Results of this study were discussed in short term effect of self-talk on performance.

20. pap. IRA **Faezeh Zamanian***, **Elham Forouzandeh****, **Javid Didari*****,
Mina Haghighi*, **Azam Hashemi******

EFFECTS OF WATER EXERCISE ON FALLING RISK AND POSTURAL CONTROL OF ELDERLY WOMEN WITH KNEE OA

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Key words: Knee OA, falling risk, postural control, water exercise

Introduction. Osteoarthritis is a degenerative joint process prevalent in the older adult population. The symptoms of OA, such as pain and stiffness of the joints, restrict ability to move and control the balance in which consequently results in increased falling accidents. Falling is one of the major leading causes of injury-related hospitalization in older people and may end with a very serious health-related impact such as death. Several reviews have concluded that exercise therapy can benefit patients with OA of the knee and hip.

Aim. The aim of this study was to investigate the effects of water exercise on falling risk and postural control patients with knee OA.

Method. 30 elderly women with knee OA (age: 70.4 ± 9.8 , height: 145.6 ± 12.2 and weight: 53.1 ± 10.6) voluntarily participated in present study. Their static balance was evaluated by Romberg tests. Using Berg questionnaire, the falling risk were evaluated. Then the subjects were divided into experimental and control groups randomly. Experimental group underwent an eight weeks (three sessions per week) water exercise program. The RPE scale was used to evaluate the exercise intensity. it was measured after each water exercise session. The control groups did not participate in any training program. The evaluations were repeated after the treatment sessions. Analysis of Variance (ANOVA) was used for statistical analysis.

Results. After water exercise the ability of subjects in controlling of balance on one leg ($P=0.002$) were significantly improved. Also exercise reduced the falling risk significantly ($P=0.000$).

Conclusion. water exercise improved postural control and reduced risk of fall in patients with knee OA. This water program is recommended for rehabilitation of patients with knee OA.

21. pap. **Fakhrabadi Gholam Reza Karami***, **Behnam Ghasemi****,
IRA **Zhaleh Bahramiyan*****

AN ASSESSMENT OF THE SELECTED CORRECTIVE-BALANCED EXERCISES EFFECT ON THE DYNAMIC BALANCE OF PRIMARY SCHOOL GIRLS WITH FLAT FOOT

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Key words: selected corrective-balanced exercises, dynamic balance, flat foot

Introduction. Balance has a main role in sport performances. Athletes who have a better balance can perform sport skills perfectly. This balance may be influenced by many factors, one of them is sensory information was obtained by sole. This research try to improve balance by the selected corrective-balance exercises.

Aim. The present article aims to investigate the effect of selected corrective-balanced exercises on the dynamic balance of 10 to 11 year old primary school girls of Shahrekord city with flat foot.

Methods. The study is of semi-experimental type and 40 Shahrekord primary school girls were chosen using a selective simple random sampling method and were put in to the control and experimental groups using purposeful questionnaire. The experimental group were given 6 days of selected corrective-balanced exercises with a total of 3 minutes and 33 seconds (each for 20 seconds). The balance of each group was measured both before and after the exercises under laboratory standard conditions and in a saloon with proper lighting. Data collection was done through Stabilometer device. The reliability and validity of this device which was made in Satrap company formerly set by comparing it which Biodex plate force device.

Results. The hypotheses testing results, on the other hand indicated a significant difference between the selected corrective-balanced exercises mean in the experimental group's pre-tests and post tests with the individuals eyes open and closed at the level of. The same difference was found between the experimental and control group's mean of scores. In addition, a significant different was found between the scores' mean in the individuals with their eyes open and the others closed in the pretest and the post test.

Conclusion. To sum up, we came to the conclusion that the selected corrective-balanced exercises appears to have positive effects on the dynamic balance improvement of the 10-11 year old girls with flat foot.

22. pap. **Fathollahi Shorabe Fazllolah***, **Sheykh Saraf Bahare****, **Jalali Dehkordi**
IRA **Khosro*****, **Nouri Reza******

EFFECT OF 12 WEEKS SWIMMING TRAINING IN SOME IN-FLAMMATORY INDEXES (CRP, IL.6) IN 9 TO 11 YEARS GIRLS

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Key words: swimming, (CRP, IL.6), immature girls

Introduction. In recent years, researchers were found widely predictive indicators of inflammatory diseases cardiovascular disease, atherosclerosis, and that starts from childhood to have a diagnosis of inflammatory disease. CRP as an indicator of inflammation and a strong independent predictive cardiovascular disease risk has been introduced that use it can Identification individuals to detect early atherosclerosis.

Aim of the work. Effect of 12 weeks swimming training on some inflammatory indexes (CRP, IL.6) in 9 to 11 years girls

Method. At first the children have any illness and lack of exercise and randomly divided two control groups (N = 50) and experimental (N = 50). Experimental groups for 12 weeks and three sessions each week and each session an hour and 30 minutes with intensity between 45 to 50% VO_{2pek} were practicing. blood sample experimental and control groups in fasting were taken 48 hours before and after exercise.

Results. The mean age of participants 9.9 years and BMI 21.70. CRP levels before exercise were $3.6 \pm 0/3$ and 12 weeks after the swimming training were $2.1 \pm 0/3$ and CRP levels in the control group were $3.6 \pm 0/6$ and after 12 weeks were $3.6 \pm 0/7$. IL-6 levels in experimental groups were $7.3 \pm 0/6$ and after 12 weeks of swimming training were to $4.4 \pm 0/7$ and IL-6 levels in the control group, were 7.5 ± 2 and After 12 weeks were 7.5 ± 3 . Statistical results show that the 12 weeks of swimming exercise some measure of inflammation has a significant impact as the results show 12 weeks swimming training significantly reduced the CRP level was ($P = 0 / 000$) but in the control group CRP levels did not have any significant change ($P = 0 / 80$) and 12 weeks swiming training significant impact on reducing IL-6 ($P = 0 / 02$) but no group control significantly reduce the amount of IL- 66 ($P = 0 / 93$)

Conclusions. The results of thise study showed that swimming exercise with 45 to 50% VO_{2pek} may stimulate the response of inflammatory in boys' and decrease level of these factors.

23. pap. **Foroozandeh Elham***
IRA

SPATIAL ATTENTION IN BASKETBALLISTS: A NEUROPSYCHOLOGIC STUDY IN SPORT

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Key words: spatial attention, line bisection task, basketball, women

Introduction. The line-bisecting task is a clinical and research instrument used to assess basic cortical functioning and spatial attention. Bisect a line to the right of the true center is observed in certain neurologically impaired patients. By contrast, the neurologically normal persons tend to make bisecting errors to the left of center (pseudoneglect, or left-side underestimation). Pseudoneglect is thought to reflect a bias in processing power in favor of the contralateral hemisphere. Rightward error in line bisecting error in intact persons is related to left-hemisphere based personal optimism, risk-taking behaviors, and positive mood. Based on previous research identifying situational left-brain hemispheric predominance or an „Athlete’s Profile” of left-cortical functioning, this study hypothesized that skilled athletes would make more rightward errors on the line-bisecting test than non-athletes.

Aim of the work. The main aim of this study was to compare the spatial attention performance of skilled women athletes on line-bisecting test with a control group.

Material and methods. The line-bisection standard task was composed of 17 horizontal black lines 1 mm wide on a white A4 paper. The lines ranged from 100 to 260 mm in length in steps of 20 mm. The mean length was 183.5 mm. They were pseudorandomly positioned so that seven lines appeared in the middle of the sheet, five lines appeared near the left margin, and five lines appeared near the right margin. The sheet was laid in front of the participant’s midline. Participants were instructed to bisect all lines into two parts of equal length by marking the subjective midpoint of each line with a fine pencil. All participants completed the task with one hand and then repeated it with the other. 32 skilled basketballists and a non-athlete control group (n=35) were administered a line-bisecting test. Analysis of variance (ANOVA) was used to analyze the line-bisecting data.

Results. The main hypothesis that women athletes would make more and greater magnitude rightward errors in line bisecting than non-athletes was confirmed ($p < 0.03$).

Conclusions. The results suggest that physical activities, risk taking behaviors and „Athlete’s Profile” can be related to spatial attention performance in line bisection task and change errors to the right of true center in neuropsychologic evaluation.

24. pap.
IRA

Ghasemi Behnam*

THE IMPACT OF CORRECTIVE & THERAPY EXERCISES ON BACK NON-ATHLETIC HYPERLORDOSIS DYSMENORRHEAL WOMEN

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Key words: corrective exercises; back lordosis; dysmenorrheal; non-athletic women

Introduction. Dysmenorrhea, which can be quite common in women, is characterized by lower abdominal pain and cramping, sometimes accompanied by heavy bleeding, that begins at the start of the menstrual cycle.

Aims. To examine whether applying a period of corrective and therapeutic exercises is effective in relieving dysmenorrhea on non-athletic women with back hyperlordosis.

Methods. The population included 1000 females studying in Lorestan Higher Education. First, the participants filled in the Health Questionnaire, sent by the Ministry of Science, Research and Technology to all universities in order to check its own students. Second, a sample of 60 participants were selected in line with the following criteria: 1) those aged between 20 to 24; 2) those approximating menstruation; 3) those with a height of 162 cm; 4) those weighing 52 kg; 5) and those approaching their menarche. With the average age of 21, weight of 62, height of 168, BMI of 22 and menarche age of 14, the sample was randomly assigned to two groups: experimental and control. The treatment in the experimental group consisted of 12 weeks of correctives exercises, three sessions a week. After the 12-week period, the questionnaire was again given to both groups.

Results. It became obvious that there was a significant difference between the two groups ($p < 0.001$). The general conclusion was that the corrective exercises given to the experimental group had a positive effect on the lessening of the rate of the unnatural back lordosis, and also on diminishing dysmenorrhea ($p < 0.001$), which, of course, this rate was not observed in the control group. The analysis of the data, with the help of MINITAB, pointed to the fact that there was a significant relationship between back hyperlordosis and dysmenorrhea. Also, there was a significant relationship between the corrective and therapeutic exercises and a reduction on hyperlordosis.

Conclusions. As a result, the participants with a back hyperlordosis and dysmenorrhea recovered by the help of the corrective and therapeutic exercises. It could be argued that women with lordosis could prevent dysmenorrhea through corrective and therapeutic exercises.

25. pap. IRA **Ghasemnian Agha Ali***, **Khosrow Jalali Dehkordi****, **Abasali Ghaeini*****, **serous chobeineh******, **Ali Jalali Dehkordi*******, **Fazlollah Fathollahi Shorabe*******

EFFECT OF AN SPORT DRINK ON ENDURANCE, BLOOD GLUCOSE, HEART RATE AND RPE IN MALE RUNNERS

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***** M.Sc, exercise physiology

Key words: energy drink, ergogenic effect, blood glucose, fatigue

Introduction. Believe athletes use sports drinks because they compounds like taurine, caffeine and sugar they can to increase function during exercise or competition.

Aim of the work. To compare the effects of an energy drink/placebo upon running time, blood glucose level, HR and RPE.

Material and method. 9 elite male endurance runners, ran in two separate sessions by 85% of MHR until exhaustion following initially 60 min running by 70%. At each session, firstly 6 ml/kgbw of the each drink was consumed 15 min before running and also there was consumption of the amount of 2 ml/kgbw at each 15 min in the following up to 60th min of running (5 times consumption).

Results. Energy drink increased distance of running and blood glucose level rather than the placebo, only in running with 85% of MHR ($p < 0.05$). There were significant differences in HR and RPE of the 15th min of the running and also exhaustion point with regard to the previous measurements (Immediately 15 min before), in both of the placebo and energy drink sessions ($p < 0.05$). Moreover in the placebo session, RPE in 30th min of the running was higher than the previous measurement (15th min) and additionally significant differences observed in the HR of the 60th min of the running and also RPE at the exhaustion point ($p < 0.05$).

Conclusion. It can be concluded that energy consumption can be ergogenic and decreased RPE only in the final minutes of the exercise.

26. pap. **Maleknia Hamid Reza***, **Fazlollah Fathollahi Shorabe ****, **Khosrow Jalali IRA** **Dehkordi *****, **Bahare Sheykh Saraf******

A COMPARISON OF THE EFFECT OF TWO TYPES OF RESISTANCE, ENDURANCE TRAINING ON GROWTH HORMONE (GH) SECRETION IN AGING MALE

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**** Islamic Azad University, Nejadabad Branch, Iran

Key words: resistance, endurance training, GH, aging

Introduction. World's, particularly in light of medicine scientific advances, has witnessed increasing elderly population. Spontaneous reduction in human growth hormone release after the teenager with a 7-year half-life is reduced exponentially.

Aim of the work. A comparison of the effect 8 weeks of resistance, endurance training on growth hormone (GH) secretion in aging male

Material and method. 45 elder randomly to three groups: control ($n=15$), Endurance Group ($n=15$), resistance groups ($n=15$) were replaced. Strength training program for 8 weeks and trained three sessions per week. endurance training group 8 weeks and trained three sessions per week. Blood samples collected from all subjects before the training program, four weeks after the last training session at the end of the eighth.

Results. The data that resulted from compare of Three group showed that the level of GH in resistance group and Endurance Group compare control group were significantly higher ($p < 0.05$). the level of GH in resistance group showed a significant higher compare than Endurance Group ($p < 0.05$).

Conclusions. the results of this study showed that resistance, endurance training may stimulate the response of GH factors in aging male and increase level of GH.

27. pap.
IRA

Moradi Hemmat Allah*, **Arsalan Damirchi ****, **Bahman Mirzaii *****

THE EFFECT OF INTERVAL AND CONTINUOUS TRAINING ON AEROBIC POWER, BODY COMPOSITION AND MOOD STATES

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Key words: interval training, continuous training, body composition, mood states, aerobic power.

Aim of the work. Very different training method are applying for physical and psychological fitness, the purpose of the present study was to investigate and compare the effect of interval and continuous training on aerobic power, body composition and mood states in physical education students.

Material and methods. Twenty four physical education students (aged 20 ± 0.98 yr, height 175 ± 0.98 cm and weight 70 ± 0.37 kg mean \pm Sd) were randomly divided in 3 groups ($n=8$), including: two experimental groups, interval and continuous training, and control group. The experimental groups performed selected exercise for 7 weeks, and 3 sessions per week. The continuous training group followed a steady states running protocol at 60% – 70% HRR, and interval training group exercised with 85% – 95% HRR in work periods, interspersed with active rest period at 40% HRR. Sets and duration of work and rest period gradually increased during the study. Pre and post test- measures were collected for VO_2 max, body composition, and profile of mood states (POMS).

Results. There was no significant difference between aerobic power improvement in the interval training method and continuous training method (VO_2 max by 10% vs. 12%) ($P \leq 0/05$). Body fat percent decreased significantly in the continuous training group (8.5 % ($p \leq 0/05$)). There was no significant effect on lean body mass in two experimental groups. Also there were not significant effects on total mood disturbance in two experimental groups than control group. Also the both of training methods did not improve in lean body mass.

Conclusions. Both of interval and continuous training methods improves aerobic capacity. And both of them are preventing of increase total mood disturbance, and there isn't any difference between applying two methods, but only continuous training causes body fat loss.

28. pap. **Moradi Kellardeh Baharak***, **Mehdi Namazizadeh****, **Zohreh Meshkati*****,
IRA **Reza Karami******

RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND RANKING OF EPEE WEAPON FENCERS IN DIFFERENT LEVELS OF PERFORMANCE

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Key words: emotional intelligence, ranking, fencer and levels of performance

Introduction. Emotions may have strong effect on fencers performance, because medium level of exciting needed to obtain success.

Aim. Investigation the relationship between emotional intelligence and ranking of epee weapon fencers in different levels of performance.

Methods. The participants consisted of epee fencers who participated in third Iranian Olympiad including 37 men and 49 women, Islamic Azad University's Championship in 2010 including 29 men and 20 women and elite epee fencers including 7 men and 7 women. The tool used to evaluate was Bar-on Emotional Intelligence Inventory. For analysing the information Spearman correlation Coefficient test, t-test and ANOVA test were used.

Results. Observed r at level of $P < 0.05$ showed a positive and significant correlation between emotional intelligence and ranking of epee fencers in different levels of performance. Also there was a significant differences between mean of emotional intelligence of epee fencers in levels of fencing experience, age and education. There was no significant correlation between emotional intelligence in men and women epee weapon fencers.

Conclusions. Attention to emotional intelligence skills and bring them up in fencers can be useful for coaches, fencers and managers to progress fencing skills.

29. pap. **Nazerian Iman***, **Mohammad Reza Iravani****, **Akram Soltani*****
IRA

STUDY ON EFFECT OF A SELECTED AEROBIC EXERCISE ON SOME ITEMS OF IMPROVING OCCUPATIONAL PERFORMANCE MANAGERS IN MOBARAKEH STEEL COMPLEX

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Key word: Contribution, creativity, self-confidence, selected aerobic exercise, improving occupational performance

The aim of this paper. To investigate study of effect of selected aerobic exercise on some items of occupational improving performance managers in Mobarakeh steel complex. Among 95 intermediate category managers, 30 persons were randomly selected and divided into two groups, experimental group and control. In the first stage of study, one questionnaire was made with 30 questions that measured factors of occupational improving practical performance and relations, creativity and enforcing practical contribution and self-confidence and distributed between these experimental and control group and then they were completed, after that experimental group participated regularly in practical programs of aerobic exercise for 8 weeks with sessions and every session was 1 hour and 15 min and after finishing practical period, they were examined by a test data were analyzed and following results obtained.

The result shows that level of occupational improving practical performance in experimental group in last test has meaningful effect than control group ($p < 0.01$). It is shown that selected practices of aerobic exercise have meaningful effect on practical performance and relations, creativity and enforcing practical contribution and self-confidence ($p < 0.01$). This study shows generally meaningful effect on performance Mobarakeh steel employees and it is necessary that spread programs are presented for all productive industries employees and finally cause to increase products both qualitatively and quantitatively.

30. pap. IRA **Sheykh Saraf Bahare***, **Fathollahi Shorabe Fazlollah****, **Nouri Reza*****, **Jalali Dehkordi Khosro******

EFFECT OF 12 WEEKS SWIMMING TRAINING IN SOME INFLAMMATORY INDEXES (CRP, IL.6) IN 9 TO 11 YEARS GIRLS

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Key words: swimming, (CRP, IL.6), immature girls

Introduction. In recent years, researchers were found widely predictive indicators of inflammatory diseases cardiovascular disease, atherosclerosis, and that starts from childhood to have a diagnosis of inflammatory disease. CRP as an indicator of inflammation and a strong independent predictive cardiovascular disease risk has been introduced that use it can Identification individuals to detect early atherosclerosis.

Aim of the work. Effect of 12 weeks swimming training in some inflammatory indexes (CRP, IL.6) in 9 to 11 years girls

Material and method. At first the children have any illness and lack of exercise and randomly divided two control groups (N = 50) and experimental (N = 50).

experimental groups for 12 weeks and three sessions each week and each session an hour and 30 minutes with intensity between 45 to 50% VO_{2peak} were practicing. blood sample experimental and control groups in fasting were taken 48 hours before and after exercise.

Results. The mean age of participants 9.9 years and BMI 21.70. CRP levels before exercise were 3.6 ± 0.3 and 12 weeks after the swimming training were 2.1 ± 0.3 and CRP levels in the control group were 3.6 ± 0.6 and After 12 weeks were 3.6 ± 0.7 . IL-6 levels in experimental groups were 7.3 ± 0.6 and after 12 weeks of swimming training were to 4.4 ± 0.7 and IL-6 levels in the control group, were 7.5 ± 2 and After 12 weeks were 7.5 ± 3 . Statistical results show that the 12 weeks of swimming exercise some measure of inflammation has a significant impact as the results show 12 weeks swimming training significantly reduced the CRP level was ($P = 0 / 000$) but in the control group CRP levels did not have any significant change ($P = 0 / 80$) and 12 weeks swimming training significant impact on reducing IL-6 ($P = 0 / 02$) but no group control significantly reduce the amount of IL-6 ($P = 0 / 93$)

Conclusions. The results of this study showed that swimming exercise with 45 to 50% VO_{2peak} may stimulate the response of inflammatory in boys and decrease level of these factors.

31. pap. Soleimani Athefeh*, Behnam Ghasemi**, Farzaneh Taghian***, Gholamreza IRA Karami Fakhr Abadi****,

THE EFFECT OF SPORT MASSAGE ON LEUKOCYTES (WBC) AFTER ONE SESSION OF INTENSE EXERCISE IN FEMALE FUTSAL PLAYERS.

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Key words: massage, intense exercise, leukocyte, immune system

Introduction. Strengthening immune system influences the body in a high degree. White blood cells are of major factors in immune system of the body against various diseases. Most of the athletes confront a severe falling of the immune system activities of their bodies after intense exercises or vigorous competition. Massage as inactive factor can introduce certain disorders and changes immune system causing decrease and increase in a few immune indices

The aim of this study is to evaluate the effect of sport massage on leukocytes (WBC) after one session of intense exercise in female futsal players.

Methods. 18 female futsal players (17–23 years old) participated in this study. Subjects are randomized into two equal groups, the first group received sport massage (massage group) and the other one was in inactive rest. Blood samples collected at rest (PRE), immediately post-exercise (POST), and 30 minutes post-exercise in

two groups (massage, control) were analyzed for WBC, neutrophils, lymphocytes, monocytes, RBC, hemoglobin (HGB).

Result. The results showed there was not any significant differences between, neutrophils, lymphocytes, RBC, hemoglobin, of two groups ($p>0.05$), however, WBC and Monocytes were significantly different between protocols ($p<0.05$). Neutrophils increases, but RBC, HGB, basophiles, eosonophil decreases in two groups, also WBC, monocytes increases in massage group.

Conclusions. We concludes that sport massage increases WBC, monocytes when applied as a passive recovery technique after a high-intensity exercise protocol.

32. pap.
IRA **Soltani Akram***, **Iman Nazerian****

REPRESENTING OF A MODEL FOR COMPILING OF COMPETENCES REQUIRED BY MANAGERS OF SPORT FEDERATIONS IN IRAN

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Key words: management of sport federations, human resource, competency, capability, empowerment, succession.

It is necessary to determine the competency model and intended capabilities for managers of sport federations at present and in the future in order to train them for better execution of works and moving along strategies and purposes for general establishment and development. According to this and given to the existing experiences for determining of the perfect model of competences and capabilities required by managers of sport and even non-sport organizations, management and leadership competencies will be studied firstly that are proposed by the clear-sighted and scholars of the management science. Then competency models of the world's superior and successful sport federations will be studied. Afterwards the most important competencies that are emphasized in most models and theories will be selected and each competency will be defined. At last, competencies are compiled in the form of a questionnaire and they will be distributed among the intended statistical population of sport managers of sport and non-sport organizations in order to specify the effect level of each competency on improving of the individual and organizational performance and also effect of each competency on future success of organizations. Data will be analyzed by means of SPSS software and finally reference model of sport federations' managers is determined, and it is suggested as an economics way not to waste the time and capital resource of managers with the high expense.

33. pap. IRA **Soltani Dehnavi Vahid***, **Mehdi Bagherian****

THE COMPARISON OF ONE SESSION AEROBIC EXERCISE (KACH-MAK ARDEL PROTOCOL). IN THE MORNING AND EVENING ON IMMUNE SYSTEM OF ELITE WRETLERS

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** Member of Physical Education Faculty, Islamic Azad University, Mobarakeh Branch, Iran

Key words: Biological Rhythm, White Blood Cell, Neutrophil, Lymphocyte, Monocyte.

Introduction. The immune system is one of the vital systems that its correct performance is the individual's health guarantor. and in case of incorrect performance, the living will be impossible because our body is constantly exposed to the invasion of bacteria, viruses, fungus and parasites, all of these factors exist even in normal condition.

Aims. The aim of this research is to compare the effects of one session of aerobic exercise in the morning and afternoon on the immune system of elite wrestlers.

Methods. The samples of this project include 15 wrestlers of Foolad Mobarakeh club with average age of 19.13 ± 1.4 , weight of 70.3 ± 10.32 kilogram and height of 172.43 ± 3.68 centimeter, which they participated in Kach – Mak Ardel, Sub maximal Bench Stepping Test (aerobic exercise) in the morning and afternoon shifts. A blood sampling conducted on the sample before and right after the test. The blood sample tested in the laboratory in order to determine the measure of safety factors existing in the blood (white blood cells, neutrophil, Lymphocyte, monocyte, eosinophil and Basophile). Analysis of the samples accomplished with using the inferential statistics (Kalmograph esmirnoph test, Levin test and t test correlated in $p \leq 0.05$ in a software called spss-16.

Result. According to the results derived from morning and evening groups that have done the aerobic exercises, there were not any changes in the amounts of neutrophil, but there was a significant in the amount of white blood cells, Lymphocyte and monocytes.

Conclusion. This increase may due to use of independent variable (aerobic exercise and biological rhythm) on persons.

34. pap. IRA **Assarzadeh Nooshabadi M., Ph.D.***, **M. Akbarpoor, B.Sc., Ph.D.****

THE EFFECT OF AEROBIC EXERCISE ON VASCULAR INFLAMMATORY PARAMETERS IN OBESE MEN

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** BSc, PhD Department of Physical Education, qom University, Iran

Key word: aerobic exercise, obesity, inflammatory parameter

Introduction. Serum levels of high-sensitivity C-reactive protein (hs-CRP) have been found to be a strong predictor for increased cardiovascular disease risk.

The aim of this study was to investigate the effect of aerobic exercise on the vascular inflammatory parameters in obese men.

Materials and method. To do this purpose, 20 males with the age range 20-25 years voluntarily were chosen. Obese men randomly categorized into two groups: 1) Aerobic exercise group, 2) Control group. Of all subjects in fasting state blood sampling was done (5 ml). Experimental group had 3 sessions of aerobic exercise per week for 13 weeks. Aerobic exercise program running on the field with the intensity 75-85% of maximal heart rate.

Results. The results showed that aerobic exercise significantly reduces the amount of WBC and CRP in obese men ($\alpha=0.05$).

Conclusion. It can be said, aerobic exercise reduces inflammatory parameters and probably reduces the risk of subsequent cardiovascular events of obese men.

35. pap.
ITA

Belli G.*, **Tentoni C.****, **Anderson G.*****

CORE TRAINING FOR BALANCE AND PERFORMANCE

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Key words: core training, balance, performance

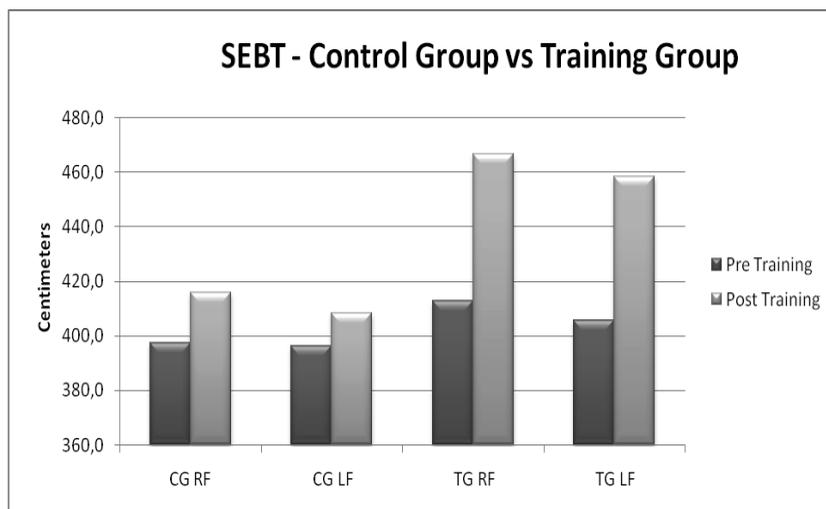
Introduction. Researchers and trainers often promote training on unstable to provide a greater stress to the overall musculature and the neural control of movement, despite the poor scientific support for the notion.

Aim of the work. The purpose of this study was to analyze the effects of a core training program on functional dynamic balance in a healthy collegiate population.

Materials and methods. Twenty seven students were involved in our study, divided into a Training Group (TG, n=19, mean age = 22.6±2.7 yrs; height 175.7±9.4 cm; weight 74.8±15.1 kg) and a Control Group (CG, n=8, mean age = 20.6±2.0 yrs; height 172.9±6.4 cm; weight 67.8±6.6 kg). Each participated in a repeated measures design with baseline and either post-training or post-control measures of balance using the Star Excursion Balance Test (SEBT). The TG were submitted to an 8 week core training program focused on 6 exercises with specific progressions from floor to unstable surface, eyes open to eyes closed, static to dynamic movement, two to one foot, and increased inclusion of off-centred forces (torque). The control group performed normal daily activity and were test prior to, and following the 8 week training period.

Results. Both groups improved SEBT scores for right (R-SEBT) and left (L-SEBT) side with a greater improvement in the TG; in particular, the TG increased R-SEBT and L-SEBT by 11,6% and 11,5% ($p=0,00$) while the CG increased 4,4% ($p=0,03$) and 2,9% ($p>0,05$), respectively. Pre-post comparison showed a significant difference between TG and CG for both side ($p<0,05$) in post training condition.

Conclusions. A well-designed core training program can have a significant impact on the neuro-muscular control of core muscles and standing, dynamic stability on one foot. A progressive core training program may enhance functional dynamic responses and ultimately performance in healthy college aged subjects.



36. pap. **Ciairano Silvia PhD¹⁻², Mattia Roppolo², Massimiliano Gollin², Anna Mulasso², Luca Beratto², Antonio Bertolotto MD³, Alberto Rainoldi PhD²**
ITA

THE ROLE PLAYED BY THE PERCEPTION OF FATIGUE IN THE RELATIONSHIP BETWEEN ADAPTED PHYSICAL ACTIVITY AND QUALITY OF LIFE IN WOMEN WITH MULTIPLE SCLEROSIS

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Key words: multiple sclerosis, adapted physical activity, quality of life, perception of fatigue, mediation effect

Introduction. Multiple sclerosis (MS) is one of the most frequent causes of neurological disability in young adults. Most persons with MS experience muscle weakness, difficulty with coordination and balance. Another factor that may worsen the quality of life (QoL) is the perception of fatigue (PoF), that is an important and very weakening symptom.

Aims. Many studies have shown that an adapted physical activity training can improve PoF and QoL in persons with MS. Our aims are (1) to verify the main effect of participation in a physical activity program on QoL, (2) understand if the PoF can have a mediation role on the main effect.

Methods. 21 women with Relapsing Remitting MS and low level of disability took part in the study. The experimental group counted 17 women (41 ± 8 years) where-

as the experimental group was made up of 4 women (41 ± 2 years). The groups, except for lack of homogeneity in sample size, were balanced for the intervening and disturbance variables. PoF and QoL were measured with validated self report questionnaires. Linear regression method, as well as Sobel's formula, were used for the analysis.

Results. The analysis shows a significant main effect between participation in a training protocol and QoL ($\beta = 0.44$ $p = 0.05$). Entering the PoF, the model highlights that this variable plays a significant role as mediator ($\beta = -0.821$ $p = 0.015$), whereas the predictor loses significance ($\beta = 0.052$ $p = 0.84$). The R² changed from a value of 0.194 to a value of 0.732 after the introduction of the mediator. The Sobel test for mediation indicates that the model was fully mediated ($z = 2.06$ $p = 0.04$).

Conclusions. Findings confirmed that in women with MS an adapted physical activity program can increase the QoL, and demonstrated that the PoF has a role of mediator in such a relationship.

37. pap. **Klonova Alina***, **Leonids Zilinskis***, **Juris Klonovs****, **Andrea Giovanardi*****,
ITA **Antonio Cicchella***

RELATION BETWEEN PHYSIOLOGY AND BIOMECHANICS IN SPORT DANCERS

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Key words: dance, biomechanics, physiological profile, technique

Introduction. Albeit it exists many studies on physiological characteristics of classical dancers, sport dancers physiological profiles are still unclear. The sport dance physiological model of performance is of "a dexterity activity with great muscular involvement" (Dal Monte 1969). It is widely accepted that physiological characteristics are the basic requirement for learning and performing sport dance and technical skills are build upon its (Koutedakis 2004). It is important to have a performance profile in order to plan the training.

Aims of our study is to 1) provide an updated physiological profile of the male and female sport dance athletes 2) assess differences in the couple (male vs female) 3) to provide basic biomechanical parameters of this sport useful for technique evaluation. Subjects: 15 males and 11 females were considered for physiological measures (mean age: 26,5 and 26,45 years; height 176 and 167 cm, weight 66,36 and 54 kg, dancing experience of 16 years).

Methods. a) test for VO₂ max on the treadmill (K4 Cosmed and Medgraphics); b) Lactate (Lactate Scout) was measured 3 and 6 minutes after the test cessation and the higher value was retained. The following biomechanics parameters were computed during 5 dance sequences with partners (Quickstep, Slow Waltz, Tango,

Slow Fox Trot, Viennese Waltz): c) hip angle between hips of the couple in transversal plane, d) knee flexion/extension angles (Smart 3D motion analysis system). Results: mean V02 max for male and female was respectively 60,4 and 46,3 ml/kg/min and the difference was statistically significant ($p= 0,095$). Blood lactate was 9,58 and 8,9 mm/L and the difference was not statistically significant ($p=0,38$). Results for biomechanical parameters of knee flexion/extension and hip alignment and (degrees) are summarized in the table below:

	Flex angle right knee Q	Flex angle left knee Q	Max hip angle from above Q	Flex angle right knee SW	Flex angle left knee SW	Max hip angle from above SW	Flex angle right knee T	Flex angle left knee T	Max hip angle from above T	Flex angle right knee SF	Flex angle left knee SF	Max hip angle from above SF	Flex angle right knee VW	Flex angle left knee VW	Max hip angle from above VW
Male (n.15)	63,5	66,5	26	60,5	64,7	24,3	57,7	54	29,1	66,4	65,3	18,6	56,5	53,7	35,2
Female (n.14)	55,4	57,4	25	60,5	69,1	26,4	42,2	54,2	24,3	69,6	68	19,6	54,6	56,2	35,8

(Q=quickstep; SW =Slow Waltz; T=Tango;SF=Slow Fox Trot;VW= Viennese Waltz)

Conclusion: physiological and biomechanical characteristic was proposed as performance model in sport dance. The methods proposed can be useful for matching the couples for sport dance performance. Biomechanical parameters useful for technique assessment have been proposed.

38. pap. ITA **Neiva¹ Henrique P.², Filipa M. Pereira¹, Pedro G. Morouço^{2,3}, Mário C. Marques^{1,2}, Daniel A. Marinho^{1,2}**

THE EFFECT OF WARM-UP IN 100 M SWIMMING PERFORMANCE

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Key words: warm-up, swimming, front crawl, performance

Introduction. Warm-up routines before competition are frequently used by coaches and swimmers. It is supposed that performance is positively affected by warm-up, but the literature is still unclear and relatively unknown in this matter, especially in swimming.

Aim of the work. To verify the effect of typical warm-up procedures in 100 m swimming performance in national level swimmers.

Material and methods. Ten male national level swimmers (mean \pm SD; age 15.4 \pm 1.02 years old, height: 1.73 \pm 4.7 m, body mass: 62.3 \pm 3.7 kg) performed 100 m at maximal swimming velocity with a usual warm-up up and without warm-up one day after. Capillary blood samples were collected to determine blood lactate concentration ([La-]) after the swimming test (1st and 3rd min of recovery). Ratings of perceived exertion scale (RPE) were also used to quantify exercise level of exertion after each test.

Results. Mean \pm SD values of 100 m performance were different with and without previous warm-up (63.28 ± 2.85 s vs. 64.73 ± 3.08 s, respectively; $p \leq 0.05$). The swimmers performance with warm-up was 2.3 ± 2.0 % better than without warm-up. At these two testing conditions, the values of [La-] found expressed no differences, as well as the values of RPE.

Conclusion. These results suggest that usual warm-up procedures in swimming can be beneficial to the male swimmers 100 m performance.

39. pap.
ITA

Piras Alessandro*, Lobietti Roberto, Squatrito Salvatore***

REACTION TIME AND OCULAR MOVEMENTS IN VOLLEYBALL

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Key words: volleyball, reaction time, anticipation skills, visual search strategy

Aim. This research aimed at better understanding the relationship between gaze strategy and anticipation skills of expert vs. nonathlete volleyball players.

Methods. Thirty participants (26 ± 5 years), 15 naïve and 15 expert volleyball players, watched several film sequences where a professional volleyball setter tossed a ball. Movies were stopped at hand-ball contact then subjects had to respond, pressing game pad buttons, as quickly and accurately as possible whether the ball would have been tossed to the right or to the left of the net. Eye position was recorded using a wearable video based eye tracker. The scene was divided into six interest areas in order to analyse gaze strategy and reaction time.

Results. Expert group were more accurate in predicting the side of the setting and faster than control group, showing a shorter key-press RT (see table 1). They exhibited more fixations of shorter duration in comparison to nonathletes and significantly they preferred coach, trunk and hands interest areas. A further analysis was done within expert group to see the differences between correct and incorrect responses. Wrong answers were associated with longer periods of time fixating on coach and setter hands areas in comparison to successful ones. All preferred areas were equally fixated for correct responses both in left and right settings, while there was a greater occurrence of wrong responses in left settings.

Conclusion. Successful expert tries to extract information as long as possible, but not too long, before pushing the button, than unsuccessful experts.

Table 1. The dependent measures recorded on the anticipation test across groups

		EXPERTS	NONATHLETES
Choice Reaction Time (ms)	Absolute	351.02 \pm 14.47	406.21 \pm 12.19
	Correct responses	385.31 \pm 21.23	397.48 \pm 17.72
	Incorrect Responses	316.73 \pm 17.91	414.94 \pm 16.91
Response Accuracy (number of trials)	Correct	% of total Right	44.20%
		% of total Left	45.00%
		% of total	77.00%
	Incorrect	% of total Right	3.40%
		% of total Left	12.40%
		% of total	23.00%

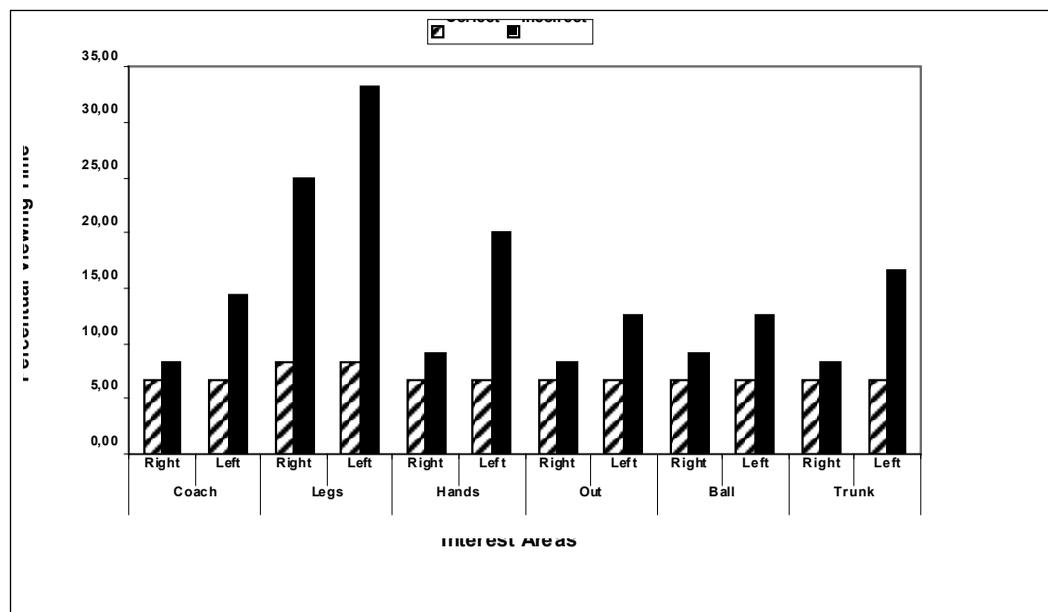


Figure 1. The percent of time spent by the experts viewing each fixation locations in left and right setting across successful and unsuccessful trials

40. pap. **Balawejder Katarzyna***, **Małgorzata Słowińska-Lisowska****,
POL **Marek Mędraś*****

RELATION BETWEEN PHYSICAL ACTIVITY AND SYMPTOMS OF LATE ONSET HYPOGONADISM (ANDROPAUSE) IN MALE POPULATION AGED 45–75

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Key words: physical activity, the Heinemann scale, andropause, androgen

Introduction. Testosterone deficiency in aging men, along with specific clinical symptoms is a serious problem. The influence of physical activity on that status is not widely described in the literature. It is assumed that lifestyle and physical activity significantly influence on the revelation of the clinical picture of testosterone deficiency syndrome.

The aim of the dissertation is to estimate clinical symptoms of androgen deficiency syndrome in male population aged 45-75.

Methodology and research material. The study sample consisted of 233 men aged 45–75, randomly selected from the population of Wrocław. Subjects completed the International Physical Activity Questionnaire, and they were divided

into two groups: physically active and inactive. The clinical androgen deficiency syndrome was assessed by the Heinemann questionnaire. Both tests are widely used in population studies.

Results. Based on the sum of points in the Heinemann scale in all 233 subjects, it has been stated that 68 men (29,4%) showed no symptoms of androgen deficiency syndrome, 152 men (65,8%) showed minor symptoms of androgen deficiency syndrome, and 11 men (4,8%) showed severe symptoms of androgen deficiency syndrome. In the group of physically active men it has been stated that 36 men (33,64%) showed no symptoms of androgen deficiency syndrome, 66 men (61,68%) showed minor symptoms of androgen deficiency syndrome, and 5 (4,7%) showed severe symptoms of androgen deficiency syndrome. In the group of physically inactive men, it has been stated that 32 (25,81%) showed no symptoms of androgen deficiency syndrome, 86 men (69,35%) showed minor symptoms of androgen deficiency syndrome, and 6 (4,84%) showed severe symptoms of androgen deficiency syndrome.

Conclusion. Clinical symptoms of androgen deficiency syndrome assessed by the Heinemann scale occur in a group of male population aged 45–75 at the same degree in both physically active and inactive.

41. pap.
POL **Bibrowicz Karol***, **Bartosz Bibrowicz****

APPLICATION OF DIGITAL INCLINOMETER- DUOMETR FOR SPATIAL LOCATION AND RANGE OF MOTION OF PELVIC GIRDLE

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Key words: pelvic tilt, pelvic tilt range of motion, measurements, duometr

Introduction. The ilio-lumbar complex is „central” link in the human locomotor system determines the correct static and dynamic efficiency. The role fully in the human body makes its assessment is an important component of many diagnostic and therapeutic systems.

Aim. To present the application to assess the position and motion girdle electronic inclinometer own concept – Duometr and measurement results obtained with its use.

Material and methods. The study included 147 person group (83 women and 64 men) WSEiT physiotherapy student from Poznan, at the age of 20–29 years. Studied the position and range of motion of the pelvis in the sagittal and frontal plane, separately on the right and left side of the body. Bilateral differences were analyzed position and range of motion of the pelvic girdle and their variations depending on gender. Statistical analysis was performed using the MedCalc program.

The results. Studies have shown the presence of asymmetry in the position and mobility of pelvic girdle. Women were characterized by higher values than men position and motion of the pelvis and also found significant asymmetry in pelvic tilt (PM) and its maximum posterior rotation (MTM) having regard to the measurement site.

Conclusions.

1. It has been shown in a variety of measurements depending on gender and the measurement of female pelvic inclination were higher.
2. According to the authors is desirable to define normative ranges of the position and range of motion in ontogenesis.

42. pap.
POL **Bigosińska Monika***, **Zbigniew Szyguła****

EVALUATION OF HEALTH BEHAVIOUR OF YOUNG WOMEN – STUDENTS OF PWSZ IN NOWY SĄCZ – THE PHENOMENON OF SELF-HEALING OR HEALTH MONITORING

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Key words: preventive action, health monitoring, smoking, alcoholic beverages, medicines over-the-counter

Introduction. Health behaviour can be considered as: negative or positive. An example of the positive health behaviour is a preventive action concerning obeying doctor's recommendations or awareness of having regular health monitoring. The negative health behaviour is represented by smoking, overusing of alcoholic beverages as well as overusing of medicines.

Aim. The objective of the article is evaluation of preventive health actions and chosen types of negative health behaviour.

Methods and research materials. The research was conducted on 168 women at the age of 20 – students of PWSZ in Nowy Sącz. The research makes use of a survey which contains questions concerning obeying doctor's recommendations, smoking or drinking alcoholic beverages.

Results of the research. 70,33% of the examined students have their medical examination done on a regular basis. 88,6% of the women obey doctor's recommendations. The majority takes over-the-counter medicines. The source of the students' knowledge concerning the medicines they use are doctors (59,5%) and commercials (31,5%). The most common medicines are non-steroidal anti-inflammatory medicines (60,71%). Over-the-counter medicines are most frequently used in case of pains (77,3%). Over half of the students being tested occasionally drink alcoholic beverages like beer, wine or vodka. Only 14,8% smoke cigarettes.

Conclusion. The majority of the women take preventive actions to stop civilization disease from occurring, such as: regular health monitoring or obeying doctor's recommendations. The most conspicuous negative health behaviour is overusing of over-the-counter medicines.

43. pap.
POL **Bubka Zofia***

THE INFLUENCE OF PHYSICAL ACTIVITY ON PSYCHOPHYSICAL EFFICIENCY AND HEALTH IN ELDERLY PEOPLE BETWEEN 55–75 YEARS OLD

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Key words: physical activity, fitness, health, ageing

Introduction. During the last century life span constantly increased by 25 years. This fact should not be connected with the improvement of people's health or the standard of life. Ageing is an unavoidable process and it concerns whole population. Elderly people limit their physical activity long before they are made to do it due to their health condition. They are unaware of the fact that movement can stop involution and decelerate the process of ageing.

Aim of the work. The objective of the research was to study the influence of physical activity on psychophysical efficiency and health in elderly people who participated in organized physical activities.

Material and methods. The method of diagnostic opinion poll was used in the research. Empirical material was gathered on the basis of the questionnaire prepared by the surveyor.

Results. The subjects noticed positive results of physical activity on their health. 50% declared that they seldom consulted a doctor and 20% did not seek doctor's advice at all. Physical activity was accompanied by the feeling of pleasure, joy and increase of energy.

Conclusions. Elderly people are motivated to perform physical activities as they are willing to be fit and healthy. According to the subjects organized physical activity has a positive influence on their psychophysical efficiency. Popularization of well-chosen physical activity is a prerequisite to change the opinion about elderly people and the way elderly people think about themselves.

44. pap.
POL **Buraczewski Tomasz*, Leszek Cicirko***

THE DIFFERENCES IN THE EFFECTIVENESS OF FOOTBALL GAME BETWEEN THE BEST TEAMS IN XII EUROPEAN CHAMPIONSHIP IN 2008

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Key words: football, match analysis

Introduction. The aim of the observation of a football game performed by the best teams and national teams is to notice its basic technical-tactical characteristics. The aim of the study was to compare the frequency and effectiveness of technical-tactical actions performed by winning and losing football teams in chosen matches of 2008 European Championship.

Aim of the work. The following research questions have been formulated: Are there any differences in the frequency of applied technical-tactical offensive actions between winning and losing teams? The effectiveness of which actions conditions the victory in the match?

Material and methods. The material for the research comprised the observation of the footballers of two teams (Austria – Switzerland) who participated in XII European Championship Finals in 2008. Detailed observations were made for the play of 166 footballers from 11 countries in 8 matches. The total time of observation reached 720 minutes. The following research method was applied- systematic, outside observation categorized by such standardized research tool as the observation sheets proposed by Szwarc (2002). Analyses were conducted for the following technical-tactical actions: shots at the goal, passes; 1x1 play in offensive actions, receiving and losing the ball.

Results. Taking the analysis of the obtained results into account, it should be stated that the winning teams differed from the losing ones in the effectiveness of performed actions with the ball. The winning teams' actions were more effective. A significant statistical differentiation was stated with reference to the shots at the goal ($<0,05$), passes performed in difficult situations ($<0,05$) as well as receiving the ball ($<0,05$). As far as the effectiveness of other actions with the ball is concerned, the winning teams took the advantage, too, but no significant statistical differences were stated.

Conclusions. The analysis of the research results of many researchers (Kuhn 2005, Buraczewski 2009) indicated that there are small dissimilarities in the frequency of applying some technical-tactical actions with the ball in the play of top class teams. These differences lie in the effectiveness of their performance in offensive as well as defensive actions.

45. pap. POL **Cebula Agata***, **Anna Tyka****, **Andrzej Markowski***, **Szczepan Wiecha***, **Aneta Teległów*****, **Anna Marchewka******

THE CHANGES IN THE PHYSIOLOGICAL RESPIRATORY PARAMETERS DURING WINTER SWIMMING IN MEN

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Key words: winter swimming, TDMA, $V \cdot O_2^{\max}$, HRTDMA

Introduction. Bathing in cold water during winter is an extreme sport, with many fans around the world. However health effects are still unclear. Available researches indicates that people who are swimming more regular achieve better results, because body metabolism adjusts to new conditions. Only then we can talk about preventive effect of winter swimming on various diseases. For those who occasionally are swimming in cold water it may be more dangerous.

Aim of the work. Determination of changes in physiological respiratory parameters and exercise capacity in men – comparing results before and after sixteen winter swimming sessions.

Material and methods. This study covered ten men aged 36.9 ± 5.4 years performed incremental exercise tests on a cycloergometer at pedal frequency of 60 rpm before and after sixteen winter swimming sessions. The tests began with 2 min warm-up at the power output of 55 W which was after increased by 35 W every 2 min. Heart rate (HR), breathing frequency (BF), maximal oxygen uptake ($V \cdot O_2^{\max}$), carbon dioxide in exhaled air ($V \cdot CO_2$) and minute ventilation (MV) were monitored. Also total work (TW) and duration of exercise (DE) were measured.

Results. The recorded results in the studied group on respiratory parameters such as $V \cdot O_2^{\max}$, $V \cdot CO_2$, MV and BF showed no significant statistical differences before and after winter swimming even on the TDMA exercise level. However the results at the level of maximum heart rate on the threshold of decompensated metabolic acidosis (HRTDMA) showed significant statistical difference ($p < 0,05$) during performed exercises after swimming sessions.

46. pap.
POL **Cicirko Leszek*, Tomasz Buraczewski***

THE EFFECT OF FOCUSED TRAINING PROCESS ON THE PROGRESSION OF MOTOR SKILLS AND TECHNICAL ABILITIES OF CHILDREN TRAINING FOOTBALL

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Key words: football, children, experiment, motor skills, technical abilities

Introduction. The modern process of learning a skilled player is a very complex and creative procedure involving long- term design of a competitor's development (Naglak, 2005). In the present study is addressed the problem of motor preparation and technical support of young football players, as a basis for further training and achieving a significant progression in it under the influence of a targeted training process.

The aim of the work. The application of appropriate training, developing and coordinating means has an impact on the progression of motor skills and technical abilities of young football players.

Material and methods. The study included 20 boys practicing football in the UKS TOP 54 in Biała Podlaska. The first measurements were made in June 2007, then the boys participated in a 6-month teaching experiment in which were used care-

fully selected exercises affecting the skills and abilities tested. The second study was conducted in December 2007. For the evaluation of motor skills and technical abilities were used motor tests (after Ljach, Witkowski, 2004, Talaga, 2006).

Results. Based on the analysis of data on the level of motor abilities of young players, it was found that in the result of the experiment in each sample they achieved better results ($p < 0.01$, $p < 0.001$). Similar results were also reported in the technical abilities, where there was a significant progression of the result ($p < 0.001$).

Conclusions. Targeted training process contributed to the increase in the level of motor skills and technical abilities.

47. pap.
POL **Dancewicz Tomasz***, **Agnieszka Zabrocka****

EFFICIENCY OF SHAPING FLEXIBILITY IN DANCE SPORT ATHLETES AT THE BEGINNING STAGE OF TRAINING

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Key words: dance sport, flexibility, training efficiency

Introduction. Ballroom dancing is a sport since 1997 (Order of the UKFiT President 17.09.1996). Preparation of dancers achieving a high level of sport is of interest to coaches and instructors of this discipline (Pilewska 2003, Rokita 2006). Dance sport disciplines is acyclic, a large volume and variety of motor tasks in which there is early specialization. In dance sport high level of coordination is necessary. This discipline requires a complex technique, aesthetics, and above all execution skills of movement, choreography according to the rhythm of the music (Fostiak 1996).

Aim of the study. To determine the efficiency of shaping flexibility in dance sport athletes at the beginning stage of training.

Methods. The studies involved 60 contestants of dance sport at the age of 6-9 years and 60 untrained children. The above-mentioned groups took part in studies lasting two years. Assess the level of flexibility tests were made by measuring the depth of be torso bend forward MTSF at the beginning of training for a group of dancers and at the beginning of school year in the control group, after a year and after two years.

Results. The results showed differences in the manifestation flexibility between the two groups characterized by higher scores of children engaging in sport dancing. After two years of training with dancers a significant increase in the level of flexibility – more than 150% was observed, in untrained children only 19%. Increased level of flexibility in sport dance competitors at the beginning stage of training was due to the specificity and nature of training in the sport. Therefore, the flexibility may be one of the criteria for the selection and pre-selection in dance sport.

Conclusions.

1. The results showed large variations in flexibility level manifestation between athletes and untrained children. Higher level of flexibility in children was characterized by engaging in sport dance. Therefore, it appears that the training process sources in sport dance influenced shaping this ability.

2. Increased level of flexibility in different makro-cycles in dance sport athletes in the beginning stage of training was due to the specificity and nature of training in the sport.
3. The high level of flexibility in dancers in the beginning stage of training may indicate the usefulness of this indicator during the selection and pre-selection of dance sport.

48. pap.
POL **Duda Henryk**

EVALUATION INTELLECTUALISATION TEACHING MOVEMENT TECHNIQUES IN TERMS OF EFFECTIVE AND HEALTHY FOR TRAINING YOUNG FOOTBALL PLAYERS

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Key words: intellectual education, the effectiveness of training, sports injuries.

Aim of the work. Sporting success puts high requirements in terms of physical stress, it causes a major threat to the health of the athlete. It is therefore a need for effective training methods in order to reduce the number of injuries and sports injuries. To this end, proposes a method of intellectual training in the mastery of motor actions (playing technique), young football players.

Material and methods. Effect intellectualisation the training process and the effectiveness of his state of health made in the studies of young football players (age of the subjects 16 years), students of the School of Sport in Krakow. Continuous research conducted in the years 1966 to 2001. We examined 92 individuals – in two groups: 46 – Experimental group, 46 – control group.

Results. Research have shown that the intellectualization of training, which reduced the volume of the body burden of 12% a positive impact on the effectiveness of training and helps to reduce the number of injuries during sports training.

Conclusion. Intellectual training is beneficial to the effectiveness of technical young football players. Intellectualization of the learning process reduces the physical burden and exposing the player aware of the operation affects the condition of lower limb injuries in young players

49. pap.
POL **Dybińska Ewa*, Katarzyna Kucia-Czyszczoń****

RESPIRATORY PARAMETERS IN RELATION TO THE 14 YEARS OLD SWIMMERS SPORT RESULTS

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Key words: swimming, sport results, respiratory parameters

Introduction. In competitive sport where fractions of a second often determine the success, coaches and players are looking for more efficient means of increasing the effectiveness of the management of the training process.

Aim of the work. The aim of this study was to evaluate the functional efficiency of the respiratory system in relation to the sports results over a distance 100m individual medley.

Material and methods. The study involved 33 participants, (18 boys and 15 girls) aged 14 years. Basic research method was direct observation on the following variables: 1 level of the parameters of the respiratory system – expressed spirometric test results; 2 swimming efficiency level – expressed in the sport result reached at a distance of 100m individual medley.

Results. Analysis of the relationship between the sports result and respiratory system parameters led to the conclusion that these compounds were average formed in most cases. At a high level took place in the girls only in one case – between the swimming efficiency and test forced expiratory volume in one second primary, while at the boys in 3 cases – between the swimming efficiency and test forced expiratory volume in primary-second, forced vital capacity and vital capacity lungs.

Conclusions. It appears that presented research results used as the, cognitive and practical function. They can be used by coaches and trainers to the diagnosis, prognosis, and analysis and even, planning in the training process young swimmers, particularly in relation to the development of functional determinants of respiratory system.

50. pap.
POL **Forczek W.*, Staszkiwicz R.***

THE IMPACT OF PREGNANCY ON THE WOMEN'S WAY OF WALKING

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Key words: pregnancy, gait pattern, pelvic mobility, Vicon system

Introduction. Locomotion of pregnant women has not been investigated so comprehensively as in the case of natural overground or treadmill walking. Available data are usually based on a small sample of subjects. Besides, the authors devote their attention to the description of pregnant walking in a single, specified period of gestation. From this point of view these studies appear to be unique.

Aims. The purpose of our research was to identify changes in women's pattern of walking in three consecutive periods: before pregnancy, in the second half of the last trimester of pregnancy and, finally, half of the year post partum.

Methods. The study was carried out in Biokinetics Laboratory in Biomechanics Department at University School of Physical Education in Krakow. The kinematic data were collected using 3D Motion Analysis system (Vicon 250).

Results and conclusions. As a result, we achieved complete information on kinematic parameters of pregnant gait. Within the wide range of variables we focused on spatial movement of pelvis and hip joint. As we know, these parts of the body are the link between so-called “passenger and locomotor unit”. This set of parameters allowed to assess the impact of the developing fetus on the mobility of those links. Additional aspect of our analysis was the evaluation of changes in the size of the base of support of our subjects in three periods mentioned. This issue is of vital importance due to the existence of a direct relationship between the size of the base of support and balance, and consequently to safety. In addition, there are real reasons to conclude that the safety strategy in gait during pregnancy dominates the strategy of minimizing the energy cost of locomotion.

51. pap.
POL **Fraćzek Barbara*, Maria Gacek***

FOOD PRODUCTS CONSUMPTION FREQUENCY AMONG ATHLETES COMPARING TO THE RECOMMENDATION OF THE SWISS FOOD PYRAMID

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Key words: nutritional habits, food products, consumption frequency, food pyramid, athletes

Introduction. Nutritional habits are the key factors optimizing exertion abilities of athletes.

Aim of the study. Estimation of nutritional behaviors, especially of the chosen food products consumption frequency among athletes comparing to the recommendation of the Swiss food pyramid and depending on gender.

Material and methods. Research was taken among 145 persons of the age of 21-30 years (70 women and 75 men) on the base of the authors' questionnaire of dietary behaviors. All the questioned were advanced athletes practicing different sports.

Results. The athletes from the examined group most frequently consume fruits, juices, vegetables, low fat dairy products and wheat bread (average frequency in the sample from 5,41 to 4,95, which means, at least 4-5 times a week). Statistic analyze proves, that definitely more often women provide for vegetables and low fat dairy products ($P < 0,05$) and on the other hand, men consume meat ($P < 0,05$) and sweetened carbonated or plain drinks ($P < 0,001$). However, valuation of the frequency of food products group consumption demonstrates the limited scale of implementation of the nutritional recommendations for athletes, especially in restriction of intake of high fat dairy products (21,4%), confectionery (20,7%) and alcoholic drinks (29,7%), as well as providing for fish at least once a week (19,5%) and daily wholemeal bread (24,8%) and vegetable

juices (20% of the sample). It was shown that women declare, considerably more often than men, reducing the consumption of sweetened carbonated drinks (67,1% vs. 32,0%) and sweetened plain drinks (60% vs. 29,3%) ($P < 0,001$) and also daily vegetables consumption (57,1% vs. 37,3%) ($P < 0,05$). Majority of the group (70%) correctly supplement fluids and practice the proper strategies of hydration.

Conclusions. Incomplete realization of the nutritional recommendation in the group of athletes may cause unbalanced supply of some nutrients and reduce the training effectiveness.

52. pap.
POL **Gierat Bogusława**

POSTURAL STABILITY AND RISK OF DYSLEXIA IN 6 YEARS OLD CHILDREN

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Key words: preschool children, risk of dyslexia, perception of balance

Introduction. The problem of dyslexia can be foreseen based on deficits in motor development in the early years of life. Children have difficulties with learning how to ride a bicycle or scooter and are unable to proficiently participate in games and plays with their peers. They present significantly poorer dexterity. Therefore it can be hypothesized that low level of balance performance coexist with the possibility of later difficulties in reading and writing.

Aim of the work. The main aim of this study was to determine whether the early (preschool) balance diagnosis can be used as supportive indicator of dyslexia which produce later problems in the process of education.

Material and methods. Forty 6 years old children were randomly assigned to the experiment. The risk of dyslexia was evaluated using the Dyslexia Risk Scale (DRS) (Bogdanowicz 2002). The balance performance was evaluated using the simple motor performance test – standing on toes with eyes closed.

Results. The results of Pearson's correlation for the group indicate dependencies between SRD and balance performance. Higher values of SRD indices, which suggest the risk of dyslexia coexist with lower level of sense of balance in the examined children.

Conclusions. The tendencies presented in the experiment support the idea of intentional balance development in preschool children. Children with better balance performance can adapt to activities, and tasks at the beginning and during their schooling, more proficiently. Evaluation of postural stability in pre-school children could be useful in early diagnosis of specific problems in reading and writing.

53. pap.
POL **Gierat Bogusława**

THE RELATIONSHIP BETWEEN MOVEMENT COORDINATION AND SCHOOL READINESS IN 6 YEARS OLD CHILDREN

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Key words: preschool children, reaction time, hand coordination, spatial orientation, school readiness

Introduction. A yearly stay of the preschoolers in the class called „zero grade” and systematic work adjusted to the developmental needs should provide the children with appropriate and specific school readiness. This can be diminished by the coordination disorders which characterizes with low movement precision and difficulties with different activities, even the simplest ones. This suggest the need for search in the area of movement coordination some clues that might correlate with preparation to proficiency in reading and writing.

Aim of the work. The purpose of this study was to explore the relationship between preschoolers’ school readiness and movement coordination.

Material and methods. Twenty nine, 6 years old children attending two public kindergartens in Lubliniec took part in the experiment. The battery of 4 motor tests was applied: simple reaction test, choice reaction test, hand coordination test and pursuit space orientation test. School readiness of preschool children was evaluated with the use of the Education Diagnosis Tool for 6-7 years old children (Tryzno 2006). EDT verifies: skills of visual analysis and synthesis, auditory-language skills, graphomotor skills and preparation for mathematics. Statistical analyses were performed using the Pearson’ correlation and canonical analysis.

Results. The correlation analysis for the whole group (N=29) showed that the choice reaction time, hand coordination and space orientation correlates moderately with the school readiness variables. The results of canonical correlation analyses pointed to a tendency of development of abilities which define the readiness for beginning school and general coordination development in preschool children.

Conclusions. Statistical significance and positive correlation between the set of motor variables and the set of school readiness variables, suggest to give more attention to coordination exercising in preschool age. In such a way small children will develop their motor and cognitive components of motor behavior, what will contribute to children’s readiness for school.

54. pap. **Głąb Grzegorz***, **Jerzy Cempla****, **Marcin Maciejczyk****,
POL **Aleksandra Gilis-Januszewska*****, **Beata Piwońska*****

CHANGES IN AEROBIC CAPACITY IN NEWLY DIAGNOSED WOMEN WITH GLUCOSE METABOLISM DISTURBANCES AND WITH SIMPLE OBESITY AFTER 12-WEEK LOW CALORIE DIET AND STANDARDIZED TRAINING PROGRAM

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Key words: glucose metabolism disturbances, simple obesity, maximal oxygen intake, physical training

Introduction. The prevalence of diabetes mellitus and other obesity related diseases continue to grow. Post training changes may lead not only to improvement of body composition, glucose and fat metabolism but also influences on physical fitness which improves quality of life.

Aim of the study. Evaluation of changes in aerobic capacity in patients with newly diagnosed glucose metabolism disturbances and with simple obesity.

Material and methods. The study covered 16 obese women (BMI 33,14 \pm 4.40) with newly diagnosed impaired fasting glucose (n=4) and impaired glucose tolerance (n=12) mean aged 52,25 \pm 5,16 (group I) and 16 with simple obesity (32,98 \pm 3,24), aged 52,13 \pm 7,74 (group II). VO_2 max was estimated using Astrand-Ryhming test. Low calorie diet and 12 weeks 45' physical training with work intensity at 60-80% HRmax twice a week and one time controlled water exercises were carried out.

Results. In both groups, after diet and physical training, the aerobic capacity improved significantly. The global values of VO_2 max increased 7,91% in group I and 7,01% in group II, the relative values to body mass of VO_2 max increased respectively 11,43% and 8,34%, the relative values to free fat mass of VO_2 max increased 8,7% (group I) and 9,76% (group II).

Conclusions. Standardized physical training with low calorie diet lead to improvement of aerobic capacity, in both research groups, but those changes were higher in patients with newly diagnosed glucose metabolism disturbances than with simple obesity.

55. pap. **Głąb Grzegorz***, **Joanna Ulfik***
POL

INJURY INCIDENCE IN TOP-LEVEL POLISH GYMNASTS WITH REGARD OF CAUSES OF TISSUE DAMAGE IN ATHLETES' OPINION

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Key words: gymnastics, sports injuries

Introduction. Gymnastics is a sport with high level of trauma risk. Despite no contact like for example in team games, gymnastics is though to be one of the most traumatic sports.

Aim of the study. Evaluation of injury incidence in top-level polish athletes with regard of trauma causes, diagnosis and treatment.

Material and methods. Fifty nine athletes, 26 women – mean age 16,4 and 33 men – mean age 20, top-level gymnasts filled the validated questionnaire formed by study authors.

Results. One noted 56 in women, and 93 in men, various injuries leading to at least three days absence from training. Mean injury index in women was 2,2 and in men 2,8. The highest number of injuries were located in wrists, ankles and the knees, they were mainly soft tissue damages (occurred most often during floor exercise). The reasons of the injuries in athletes' opinion were training overloads, and exercise faults. In 47% of cases no diagnostics were established and in more then a half no treatment was carried out.

Conclusions. Most of injuries were caused by training overload and located in wrist, ankle and knee. In many cases there were no diagnosis and treatment. Injury prevention and treatment programs should be developed and respect those findings in the future.

56. pap. POL **Grzybek Joanna***, **Dariusz Mucha****, **Sebastian Grzybek*****, **Anna Gumulka******

EFFECTS OF DANCE TRAINING ON THE PHYSICAL ABILITIES OF INDIVIDUALS WITH MOTOR DISABILITIES

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Key words: dance training, physical ability, wheelchair dancing, dance therapy.

Introduction. Alongside the rise of civilisations, we have experienced advances in medicine, which have allowed many individuals with serious bodily injuries to return to normal life within our society. Motor rehabilitation is responsible for the physical abilities of such individuals and returning them to everyday life. An activity which allows to combine the correct and effective motor exercises, improves physical abilities as well as provides an opportunity to experience many moments of happiness whilst performing it is, amongst others, wheelchair dancing, which in 1998 became a paralympic discipline by the International Paralympic Committee (IPC) as a „combi” sport.

Aim of the work. An evaluation of ballroom dancing on the physical abilities of individuals with motor disabilities.

Material and methods. 15 wheelchair dancers who participated actively in dance training were included in the research. Such a small sample group size for the purposes of the research was dictated by a small number of disabled dancers who train systematically in Poland. The group of individuals who train is constantly changing and oscillates around 20 disabled dancers in the entire country. During the research, custom designed interviews were conducted with the dancers and an analysis of available documents was carried out.

Results. Almost half of the dancers considered wheelchair dancing to be predominantly a sports discipline – 47%. One third considered dancing to be a good recreational activity. Whereas about 20% out of the group, considered dancing to be a form of rehabilitation. All of the individuals within the sample (100%) stated that dance training helped to improve their everyday activities. More than half of the sample group (60%) were convinced that dance training motivated them to participate in further physical activities.

Conclusions. Dance training influenced the abilities of the individuals in the sample within the scope of such characteristics as coordination, movement speed and motor memory. Those within the sample group considered systematic training to have had a significant impact on their everyday activities. Most of the dancers (almost half) considered wheelchair dancing to be a sport discipline. Individuals who provided these answers, in most cases hold the highest sporting achievements in competitions such as Polish Championships, World Cup or World Championships.

57. pap.
POL **Juras Grzegorz***, **Kajetan Słomka****, **Mariusz Furmanek*****,
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RELIABILITY OF THE OPTOJUMP SYSTEM AS A NEW TOOL FOR EVALUATION OF MOTOR COORDINATION

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Key words: motor coordination, diagnosis tools, reliability, ICC, OptoJump Next

Introduction. Using more and more precise and reliable tools in diagnosis of motor behavior seems to be one of the essential condition, which allows to improve our knowledge about human potential. Existing measuring tools are not fully reliable. Laboratory testes have some limitations – for example possibility of measurement of (only) eye-hand coordination and a huge gap between laboratory and real conditions of movement.

Aim of the work. The main objective of this research project was to determine the reliability of new procedure of diagnosis of global coordination with the use of OptoJump system.

Material and methods. The research experiment was conducted on 26 healthy subjects. The written consent from subjects was taken. The subjects were examined using the OptoJump Next system (Microgate, Italy). They were asked to warm up

and then their rhythm of movement, reaction time, movement differentiation and combining were diagnosed using OptoJump. The procedure to provide data analysis were proceeded in MatLab. Measurements were performed successively 10 times and repeated with 7 days break.

Results. The achieved empirical data and its analysis allowed establishing that proposed measurement methods are reliable. Results of inter class-correlation test (ICC) allow to state that in most of investigation procedures using only two or three repetitions of examined procedures allowed for reliable measurement of global coordination.

Conclusions. Based on the results of this study, one can conclude that OptoJump system allows for a reliable measure of movement coordination, which can greatly improve the existing methods of assessment, and makes an interesting alternative to measures this area of motor behavior.

58. pap.
POL **Kalina Roman Maciej*, Bartłomiej Jan Barczyński****

THE ABILITY OF THE PRECISE ACTION BEFORE AND DURING A PHYSICAL EFFORT AS INTER-FEATURE

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Key words: motor abilities, motor control, motor safety, empirical scheme

Introduction. The dominating paradigm of the motor control is the measurement of individual motor abilities (conditioning and coordinating) and correlating these indicators with some external criterion (sports result, productivity on a workstation etc). Meanwhile in sport, in the occupational activity, during the self-defense and rescue efforts the man is solving different situations using the whole body and the mind. In many situations the motor safety of the man is being determined by the ability to keep the optimum precision nevertheless of a growing physical effort.

Aims. Do school children with similar precision solve simple tasks before effort and during repeated intense physical effort?

Methods. Empirical scheme of the seven motor tasks: (1) before the warm-up throw to the basket from the distance of 2 meters with five balls within 10 seconds.; (2) after individual 10 minute's warm-up throws to the basket (like previously); (3) to (7) every five minutes intense 50 seconds physical effort finished with throws to the basket (like previously). Generalized the results of randomly selected pupils of primary schools, gymnasium and secondary schools from various regions of Poland.

Results. The type of the school does not differentiate results of pupils. The highest effectiveness (57% of an accurate throws) youths have shown during the task (4) followed by gradual reduction of effectiveness. Respectively: 54%, 51%, 40% – like during the task (1). Stimulating the body's warm-up increases the effectiveness of relapses by 10%, while the first intensive effort – task (3) – is the cause of lowering the effectiveness up to 45%.

Conclusions. The model of 45 minute's classes mandatory for all types of Polish schools is an obstacle in developing at young people the optimal ability of precise acting by at least several minutes' intensive physical efforts. Shaping the inter-features is possible through the participation of young people in optional extracurricular trainings.

59. pap.
POL **Kalamacka Ewa**

MOTOR ACTIVITY – BASIC PRINCIPLES OF HEALTH IN THE PAST AND IN OUR TIMES

The development of science in the 20th century affected all the areas of human life. By the end of that century, the potential of science had increased immensely, but although man had obtained unprecedented control over the forces of nature, a great part of an individual's life was taken up by disease and suffering. Old age, unattainable for most, was burdened with premature debility and diseases. In this context, the advances of science seemed a tragic paradox. Despite the progress in the spheres of surgery and pharmacology, which made possible the treatment of many ailments, medicine was unable to protect human health at large, relieve man from suffering, make life longer and more active. As a result, the emphasis finally shifted from therapy to health. "For a long time physicians have directed their attention exclusively to the sick body, symptoms of disease, diagnostic methods, post mortem examination, and the study of diseases, achieving truly admirable results in this field. But on the other hand, they have neglected the healthy man criticism to be levelled at medicine". This is an interesting statement, given that it came from a medical doctor who lived in the 19th century. Apparently, it foreshadowed a historic turning point in medicine which hinged of the traditional priorities. As a result, medicine took an interest in healthy people, which allowed it to formulate the modern principles of hygiene based on an holistic view of man in his natural environment. The retrospective studies can be interesting.

60. pap.
POL **Kobiela Filip***

THE TWO KINDS OF SPORTS & HUMAN MOVEMENT ACTIVITIES

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Key words: purposive/aesthetic sport, game/performance, hybrid sport, human movement.

Introduction. From the philosophical perspective we can find two radically different categories of sport (and human movements in general). According to B. Suits, the first is labeled „games” and implies overcoming unnecessary obstacles, whereas the second is labeled „performances” and implies postulating ideals to be

approximated. One can find the very similar idea in D. Best distinction between „purposive” and „aesthetic” sports. These distinctions can be very useful in human movement studies, however they are very rarely used.

The aim of this paper is to clarify the distinction between purposive sports (games) and aesthetic sports (performances), discuss the problematic „hybrid-sport” case, and body movements functions specific to each category of sports.

Methods (Procedures). Tools of modern analytical philosophy/conceptual analysis.

Results. The clarified definition of two categories of sports is provided. Functions of human body movements during such activities is also analysed.

Conclusions. Having made clear distinctions of these two categories of sports, one should apply such findings to PE curricula, as well as to the Olympic Games program.

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61. pap. POL **Kołaczkowski Zdzisław¹, dr hab.;** **Tadeusz Rynkiewicz¹, dr hab.;** **Włodzimierz Starosta², prof. zw. dr hab.;** **Ryszard Kopański¹, dr**

RESEARCH FOR THE MEASUREMENT OBJECTIFICATION OF HUMAN JUMPING ABILITIES

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Key words: motility, structure, jumping ability

Introduction. In the existing literature does not specify the exact location of jumping in the structure of human abilities. By many authors jumping is regarded as a complex motor ability depends on strength, speed, technique and coordination. Almost all the links work now determine the amount of jumping through the determination of the overall elevation of the center of mass during the test using dynamometric platform.

Aim. The aim of this study was determining the jumping ability on more measured parameters. Assumed that the jumping ability will be described in an objective, if the overall rate is taken into account the maximum power or maximum power relative.

Method. The study was conducted using dynamometric platform for groups 30 women and 30 men aged 20–23 years. When measuring vertical jump height was measured reflectance values of strength, energy, time of reflection, the generated power and the weight of the subjects. Each trial was repeated five times at regular intervals.

Results. During the study found that people with relatively low elevation of the center of mass h , both women and men, the so-called level. „Pointer jumping”, which is determined by taking into account the relative generated during the test, was often high, while for those with large values of h , - low.

Conclusions. The proposed method of determining jumping ability, eliminating the influence of human body weight and power of lower limbs, seems to be more objective. Lack of correlation between the description of jumping ability by the height of mass elevation center, and the proposed method indicates the need for studies on larger groups of test, also with the participation of athletes.

62. pap.
POL

Konarski Jan*, **Robert M. Malina****, **Ryszard Strzelczyk***

RUNNING SPEED OF ELITE FIELD HOCKEY PLAYERS: VARIATION WITH AGE BETWEEN 17 AND 40 YEARS

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Key words: field hockey, speed, age, variability, testing

Introduction. Samples of elite athletes in many sports are often treated as a single group although they include participants who span a relatively broad age range. Variation in functional capacities with age in currently active elite athletes is not often considered.

Aim of the work. The purpose of this study is to evaluate running speed in a cross-sectional sample of 43 elite field hockey players 17 to 40 years of age.

Material and methods. All players were members of the national team and were actively training for international competitions at the time of the study. Running speed was evaluated with a 20 m sprint. Two trials were administered and the better of the two was retained for analysis. Sprint times were converted to m/sec. Four age groups were compared: < 20 (n=15), 20.0 to 24.9 (n=11), 25.0 to 29.9 (n=8), and ≥ 30.0 years (n=9). Descriptive statistics by age group were calculated and groups were compared with MANOVA.

Results. Comparison of age groups was of borderline significance ($F=2.65$, $p=0.06$) and only the pairwise comparison of players 20.0-24.9 and ≥ 30.0 years approached borderline significance ($p=0.10$). Given the small sample sizes per age group, risk of Type 2 errors is increased. Distributions of players by position (attacker, midfielder, defender) within age group did not differ ($\chi^2 =4.32$, $p =0.63$) so that field position is not a confounder of the age variation in speed performance. Moreover, running speed and age did not differ among players by position ($F=0.37$ and 0.23 , respectively).

Conclusions. The trend in mean performances across the four age groups suggested a slight increase in speed performance from the late teenage years into the early 20s, and then a linear decline into the two older age groups. The results

highlight variation in speed performance with age among elite field hockey players. By inference, coaches or trainers should be aware of age variation in speed performance of elite level field hockey players which might be relevance to tactical decisions.

63. pap. POL **Krystyna Rożek***, **Sławińska Teresa ****, **Ignasiak Zofia****, **Skrzek Anna***, **Fugiel Jarosław ****, **Posłuszny Paweł****

ASSESSMENT OF RESPIRATORY FUNCTION PARAMETERS DECLARED PHYSICAL ACTIVITY AND PHYSICAL FITNESS IN PEOPLE OLDER

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Key words: elderly, respiratory function, physical fitness, physical activity

Aim of the work. Assessment of parameters of respiratory function, the level of physical activity and fitness in elderly people and to determine the relationship between these areas.

Material and methods. 266 persons were examined (219 women, mean age 65.4, and 47 men mean age 66,8). In each subject was made respiratory function by the spirometer Flowscreen, and analysis the following parameters: FVC, FEV1, PEF, MEF50. The level of physical activity was assessed using the Paffenbarger Questionnaire. Physical fitness was measured using the Senior Fitness Test, measured trials, which indirectly evaluate: the strength and flexibility of the upper and lower body, aerobic endurance, physical coordination. Relationships between the level of physical activity, fitness and respiratory function were assessed using Pearson's simple correlation.

Results. The obtained results of the respiratory parameters in all subjects developed within normal values. Based on Pearson's simple correlation was observed only significant associations between respiratory parameters and all fitness trials in women and for strength and endurance in the group of men. No correlation was found between the level of physical activity and respiratory function in both groups. While physical activity levels, correlated with the efficiency.

Conclusion. The parameters of respiratory system was appropriate for age and were within the norm. Most respondents had the physical activity on the moderate level, and less people intense level of activity. There were significant associations between functional respiratory parameters and physical activity and not related between respiratory function and the declared level of physical activity in both group.

64. pap.
POL **Kucia-Czyszczon Katarzyna*, Ewa Dybińska****

INTERIOR AND EXTERIOR FACTORS SWIMMING EFFICIENCY OBSERVED AMONG LESS-SKILLED SWIMMERS

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Key words: training overloads, swimming strokes, kinematics, technical skill level

Introduction. The dynamics of performance in professional sport requires a systematic improvement of the training process. Such activities should also include optimizing the children and youth training in these disciplines, where an early specialization operates.

Aim of the work. The main aim of this paper was to search the relationship between swimmer's segmental kinematics (segmental velocities, stroke rate, stroke length, stroke index); the relationship between swimmer's technical skill level (in four competitive swimming techniques) and training overloads taking into consideration gender and age effect.

Material and methods. The study group consisted of 121 swimmers (69 female and 52 male), of the Polish 12-15 Aged – Group Swim Team, volunteered to serve as subject. Video – based methods and video equipment are being applied to assist qualitative and simple quantitative analysis for immediate feedback and research in swimming.

Results. Both technical skill level preparation and segmental kinematics 12-15 year old swimmers, proved to be highly conditioned implemented training intensity ($p < .001$), as well as the volume of training (high and average trade at a level of significance ($p < .001$)).

Conclusions. Implemented training overloads expressed both volume and intensity of training showed high and very high correlation with the swimming efficiency, presented segmental kinematics and technical skill level, however, appeared particularly pronounced relationship to the size of kinematic parameters taken into account in four competitive swimming techniques, components of the 100 m individual medley.

65. pap.
POL **Lyakh Vladimir*, Bartosz Rutowicz**, Zbigniew Witkowski*****

GENDER DIFFERENCES IN SPEED AND POWER ABILITIES BETWEEN MALE AND FEMALE SOCCER PLAYERS OF POLISH NATIONAL TEAMS

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Key words: sexual dimorphism, speed, strength, soccer

Introduction. The problem of sexual dimorphism in the conditioning capacities among athletes were considered in many publications. However, there is little information on gender differences between highly skilled athletes, occurring in the representation of national states.

Aim of the work. The aim of this study was to determine differences in the speed and power abilities between male and female soccer players of the Polish national teams.

Material and methods. Female soccer players of the Polish national teams U-15, U-17, U-19 and male soccer players of the Polish national teams U-15 and U-17 had been tested. In the male category of U-19 there were examined players from Wisla Krakow – Polish soccer champion team. It has been rated speed capacities (5, 10 and 20 meters course – measured by photocells), speed-strength capacities (jumps on power mat, motor tests) and strength capacities (leg power – mechanical dynamometer).

Results. It was found that male soccer players really outweigh their counterparts in the assessed indicators ($p < 0.05$). In terms of speed and speed-strength capacities the advantages are similar in all categories of age and amounts to about 5-10% and 10-30%. Differences in favor of male players decrease with age in tests assessing the maximum moments of force and amount in successive age categories 50-65% (U-15), 20-35% (U-17) and about 20% (U-19).

Conclusions. In the conditioning workout the largest reserves are situated in the development of force capabilities. It's much harder to get close to the „male model“ in the speed and speed-strength capacities.

66. pap. POL **Lyakh Vladimir***, **Janusz Jaworski****, **Janusz Brudecki*****, **Przemysław Bujas****, **Dorota Palik******, **Marek Palik*******

THE LEVEL OF DEVELOPMENT OF COORDINATION MOTOR ABILITIES OF STUDENTS COLLEGIUM MEDICUM UJ IN THE ASPECT OF SOCIO - ECONOMICAL DIFFERENCES AND THE DECLARED PHYSICAL ACTIVITY

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Key words: socio-economical status, coordinating motor abilities, students, physical activity

Introduction. The works relates to the influence of environmental on the level of training abilities they are very numerous. They relate to children and youth mainly. Valuable studies treating to students the last summers also appeared. It is decidedly

less however the studies of the relating abilities coordinating which have the huge meaning in the context of future work of the graduates of the medicine (dentist, surgeon).

Aim. Examining the level of ability coordinating of the students of first years of studies UJ CM in the light of chosen socio - economical modifiers and the declared motive activity.

Methods. It took the part in investigations 95 women and 65 students men and year UJ CM various directions. Level of seven specific abilities coordinating was qualified on the basis of the results of motor and laboratory tests in their track. Information on the subject of socio - economical status and physical activity was collected on the basis of the inquiry.

Results. Only rarely essential coefficients of the correlation were received in the work among studied abilities coordinating and chosen determinants SES. The sum coefficient SES did not also show essential correlations with determinants SES.

Conclusions. It was established that SES did not sail on the level specific coordinating motor abilities and on the sum coefficient indeed. The declared level of the physical activity in the larger degree differentiates studied students.

67. pap. POL **Lyakh Vladimir*, Przemysław Bujas**, Dorota Palik***, Leszek Gargula**, Marek Palik***** Janusz Brudecki*******

SEXUAL DIMORPHISM OF COORDINATING MOTOR AREA IN THE CASE OF CM UJ STUDENTS

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Key words: sexual dimorphism, coordinating motor abilities, students

Introduction. Dimorphic diversifying coordinating area was a subject of many studies being based on examinations children and teenagers. However news reports describing scales of this phenomenon at students are less numerous, of especially not sports colleges. Examined environment in the context of the future career (surgeon, dental surgeon) will be standing up before considerable challenges in the so-called motor intelligence.

Aim. Searching the level of the sexual dimorphism in the area of the coordination of students of first years of studies from CM UJ

Methods. 95 women and 65 men – students of the first year CM UJ, took a part in examinations. During the examination the level of seven specific coordinating abilities was determined. For that purpose motor and apparatus tests were used.

Results. From the studied abilities the greatest dimorphism was stated in kinesthetic differentiation, especially for reconstructing extreme values of angles. Diversifying weight aspects of the move as well as the static balance is also showing the essential majority of girls. Remaining abilities (dynamic balance, speed of reaction) and especially a spatial imagination and linking movements are demonstrating the dominance of men.

Conclusions. Observations were confirmed about the majority of female reconstructing accurate in requiring trials the move and keeping their balance (being based on a kinesthesia). It seems that the size of the demonstrated dimorphism depends on the form of the move. The stronger dimorphism with the majority of men was stated in motor tests, that is in global attempts, in which the energy component is more notable.

68. pap.
POL **Makula Waldemar***

WIDELY EDUCATED BRITISH SENIORS' ATTITUDES ON THE SIGNIFICANCE OF REGULAR PHYSICAL ACTIVITY IN THEIR DAILY LIVING ACTIVITIES CURRICULA

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The sample of twenty five ageing persons consisting of widely educated – except only three persons, the silver age respondents had been legitimated themselves by the high education level – women (in the approximate age of 60) and men (in the approximate age of 59), who represented both the University College Birmingham, the Aston University, the Woodbroke Quaker Study Centre in Birmingham, and the University of the Third Age in Nottingham has been researched. The aspects such as the self-esteem of the older respondents' actual health status compared to their health status in the youth, the character of seniors' participation in physical activity, as well as, providing by them the other healthy lifestyle manners in their daily living activities curricula, seen in the perspective of their relation to the values of physical culture, have been reported in the investigations. The analysis of the research data has revealed, that however, one can say that British seniors are people who generally are interested in providing healthy and active style of life, some findings like for instance the respondents' interests in the movement forms ensure that the differences mainly between women and men are present in the investigated British silver age population.

69. pap.
POL **Myśliwska Katarzyna***

BEAUTY CARE – OPPORTUNITY OR THREAT TO PHYSICAL ACTIVITY

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Key words: beauty, health, time budget, beauty care, physical activity

Introduction. The problem of optimum effect in the physical recreation involves the question of the direction in which people want to transform their body. The growing importance of beauty in the modern world causes that physical activity during leisure time is increasingly treated as a way to achieve a nice silhouette. This provides an opportunity to increase the level of physical recreation. On the other hand, a great threat for physical activity is the growing popularity of other methods of beauty care and at the same time some changes in relation to the body.

The aim of the work. To answer the questions whether and in what direction young people want to change their bodies, whether they care more of health or of physical appearance, what care treatments for the body and its appearance are the most popular among them, how much time they spend on physical activity during leisure time and how much time they devote to other treatments for the body care and beauty?

Methods. The study involved 102 college students from Krakow. They completed the questionnaire, which focused on the amount of time allocated to different treatments and concerns for the body.

Results. Respondents devote to physical activity much less time than to other care treatments designed to care for their body and appearance. Most respondents want some changes in their appearance and try to have own unique style. The youth assess their level of beauty care higher than health care.

Conclusions. Development of various methods of beauty care and promoting fashion on one's own unique style makes young people devote more time to take attention to the body but not to take physical activity sufficiently. The promotion of physical recreation should be more attentive to a range of aesthetic benefits such as beauty of the movements.

70. pap.
POL **Niewiadomska Monika*, Mariya Radziyevska****

USE OF PHYSICAL ACTIVITY FOR CORRECTION OF METABOLIC STATE IN CHILDREN WITH TYPE 1 DIABETES

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Key words: type 1 diabetes, physical activity, agility, insulin

Introduction. Physical activity is a very important element in treatment of the children with type 1 diabetes. However, it is very difficult to use it with appropriate intensity that would reflect developmental and motor needs of young patients and their psychophysiological condition.

The aim of this work was to assess the impact of physical activities – games and agility exercises on metabolic parameters in children with type 1 diabetes.

Methods. We surveyed a group of 7 girls aged 8-10 years, patients from the Department of Pediatric Endocrinology, Diabetology, Metabolic Diseases and Cardiology for Children and Adolescents in Szczecin. The control group were diabetic patients of the same age, examined during „one-day hospital” scheme. All the patients were treated using insulin pump and basal-bolus method.

The research program involved physical activities three times a week for 45 minutes, at an intensity of 75% of maximum heart rate during physical effort. Prior to exercises and immediately after we measured blood sugar (Accu-chek Active). During exercises heart rate was monitored using sporttester Bauer PM 80. The exercises consisted of open-air games and agility exercises.

Results. The analysis of the collected test results showed a statistically significant decrease ($p < 0.05$) in insulin reception (bolus) at 1.30 pm, 6.30 pm, and 10.30 pm, with unchanged base. We observed no such relation in children in the control group ($p > 0.05$).

Conclusion. Systematic and sufficiently intense physical activity for children, when offered in attractive form, may substantially and positively influence the metabolic control in children with type 1 diabetes.

71. pap.
POL **Niżnikowski Tomasz*, Michał Biegajło****

THE ANALYSIS OF DOUBLE SALTO BACKWARD TUCKED AND DOUBLE SALTO BACKWARD STRAIGHT PERFORMED BY ELITE ACROBATS

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Key words: technique, double salto, acrobats

Introduction. ‘Technique analysis’ is the term given to an analytical method that is used to understand the way in which sports skills are performed and, through this understanding, provide the basis for improved performance.

Aim of the work. The aim of the study was to compare the key elements during the performance of double salto backward tucked with a double salto backward stretched.

Material and methods. Seven top level acrobats (track jumpers) participated in the study. Mean values of body height, weight and age were as follows: 170 cm \pm 4.0 cm, 72.4 kg \pm 3.6 kg, 20.4 \pm 1.7 years, respectively. Two digital video cameras (240 Hz) and APAS 2000 (Ariel Dynamics Inc.) were used during the study. Markers were placed in ankle, knee, hip, arm, elbow and wrist joints. All marker positions were tracked and reconstructed using the APAS system.

Results. Drawing on the biomechanical analysis of the routines of double salto backward tucked and double salto backward straight performed by elite acrobats the following key elements were singled out: starting body position (SBP), body

multiplication position (BMP), landing body position (LBP). It was observed that in SBP of double salto backward tucked an acrobat assumed a stiff body position. SBP is characterised by the following joint angles: shank-thigh 1790, thigh-trunk 1770; trunk-uparm 1150; time 0.633). While performing double salto backward straight an acrobat demonstrated a springy-stiff SBP (joint angle: shank-thigh 1700, thigh-trunk 1840; trunk-uparm 1780; time 0.583).

Conclusion. The following key technique elements in two routines were singled out: starting body position, body multiplication position, landing body position. Biomechanical indices of performing the starting body position in double salto backward tucked and double salto backward straight determine an effective technique of dynamic exercise links.

72 pap.
POL **Nowak Marcin*, Mariusz Ozimek**, Robert Rokowski*****

SELECTED SOMATIC AND BIOMECHANICAL PARAMETERS IN THE SPRINT RACE 100 M MEN

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Key words: somatic, biomechanical, men, sprint 100m, determining.

Introduction. „Master Model”, according to theoretical assumptions is understood as an abstract (imaginative) system, whose task is to imitate the selected, the most important features of the original, the present or the future master of a particular sport.

Aim of the work. The aim of research was to identify factors determining sport results of selected sprinters in the 100 m race at different levels of sports.

Material and methods. The scope of investigation included the construction of somatic parameters of athletes: body height, body mass and biomechanical parameters: moments of the forces developed by teams of flexors and extensors of knee joints.

Results. In the case of the knee extensor group of respondents, at the level of sports M, had values over 20% higher than in other groups. The differences between the competitors are reduced in the case of knee flexor. In calculating the proportion of listed power rectifiers to the flexor of this joint was recorded values exceeding more than twice in favor of the rectifier.

Conclusions. The values of strength parameters were similar in groups I and II of athletes. In addition, higher values especially on the knee extensor group was noted in the sports class athletes M. Regarding of somatic construction, athletes from the class M were slightly taller (on average 0.5–1.5 cm) and heavier (on average 3–4kg) from the other groups respondents.

73 pap.
POL **Nowak Mariusz*, Ryszard Panfil****

SCORING ABILITIES IN THE GAME OF TENNIS (PRAGMATIC STUDY OF UNIQUE CASES)

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Key words: criteria of the ability, variety, flexibility, changeability, the level of risk

Introduction. The process of rationalization applied in the course of teaching students to play tennis requires systematic monitoring of the effectiveness of the game, especially the agility and constant availability which are conducive to the very effectiveness. In practice, it is quantitative indicators which are used for the analysis of efficiency, and which refer not only to the ability of moving over the space of the game and hitting the ball, but also to the ability of cheating fatigue over the course of the game and showing emotional resistance, which contribute to the tangible result of the game. Most analysis ignore the assessment of pure ability to play, or the skill of taking an opponent by surprise with flexibility, variety, velocity or changeability of conscious or intuitive movement of the ball or hitting the ball to keep it in the game space, as well as the preparation of a final blow or one to score a point. The above mentioned premises constituted the grounds for the determination of the aim of the research.

The aim of the research is the identification of the ability to score points, based on original criteria of assessment of the ways involved in taking an opponent by surprise, by means of variety, spatial flexibility and changeability of action, but also by the degree of eagerness to run risk.

Method. The analysis focused on the performance of effective sportive competitors: Roger Federer and Novak Djokovic in the following tournaments: the final of US Open 2007, semi-final of Australia Open 2008 and semi-final of Indian Wells 2011. The widely available tv coverage, made by Eurosport station, was used for this purpose. At the stage of data compilation Excell sheet was used.

Results. The assessment of the chosen tennis players' performance, based on the proposed criteria, presents both quantitative and qualitative picture of their game. The aspects of variety, flexibility and changeability of applied solutions, as well as the level of risk taking in the game, constitute quantified values. Taking into account the highest sports level exemplified by the examined players, the obtained results are undoubtedly of considerable educational value.

Conclusions. The obtained results allow us to reach the conclusion that the process of teaching students to play tennis demands the introduction of significant modifications, aimed at its intellectualisation and especially rationalisation of educational means, and criteria of their effectiveness monitoring.

- 74 pap. **Olex-Zarychta Dorota***, **Robert Koprowski****, **Grzegorz Sobota*****,
POL **Zygmunt Wróbel******

EFFECTIVENESS OF SENSORIMOTOR TRAINING IN HEALTHY ADULTS IN DIFFERENT CONDITIONS OF INSTABILITY – A PILOT STUDY

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Key words: proprioception, sensorimotor training

Introduction. Neuromuscular training has long been performed in Europe as part of sports training and injury prevention. Neuromuscular training involves progressive balance and proprioception training using unstable surfaces such as stability discs, balance boards and special equipment for upper/lower body exercises. Several studies have reported that proprioceptive exercises and training reduce injuries in athletes and are useful in rehabilitation. However, usefulness of this kind of training in non-athletes and healthy performers is not well documented. Additionally, the wide variety of exercise and prescriptions (volume and intensity) made it difficult to recommend specific dosages of exercise. Poor methodological quality of introduced so far curriculum, lack of applicable studies and inconsistent results of experiments confirms an urgent need for more research in this area to provide methodological guidelines for healthy subjects in different age and fitness level.

Aim of the work. Main aim of the paper is to present the research project directed to study the effectiveness of different types of sensorimotor training involving both upper and lower extremities. Specially designed trainers (stability trainer and shoulder trainer) with computer-guided possibility to generate stochastic changes in the system are presented as new, useful diagnostic tools in motor control. The purpose of the work is also presentation of pilot results on experiments with designed trainers.

Material and method. Results of a pilot experiment with specially designed and produced shoulder trainer are presented. In the experiment took part healthy, male students of physical education, not involved in sport training of any type. They performed shoulder exercises with a 2 meter tube filled with water equipped with special sensors of movement and recording system.

Results. Pilot results present influence of different parameters of training design on effectiveness of exercises and feedback from performers.

Conclusions. Results indicated an urgent need for evaluating the effectiveness of proprioceptive and neuromuscular training and for developing methodological procedures for healthy persons involved in recreational and health-related training.

75 pap.
POL**Omorczyk Jaroslaw***, **Leszek Nosiadek****, **Andrzej Nosiadek*****

THE BENEFIT OF HIGH-SPEED CAMERA RECORDING DURING BACK HANDSPRING TECHNIQUE A BIOMECHANICAL ANALYSIS

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Key words: back handspring, kinematic analysis, artistic gymnastics, biomechanics

Introduction. Artistic gymnastics is a discipline that requires a large number of different movements. Each training session requires a large number of repetitions with constant control and analysis of the athletes' technique. Observation and evaluation made by the coach helps the gymnast perfect the elements. During each training session, the incorrect movements are highlighted and then eliminated. Finest athletes distinguish themselves in a way that they are able to produce numerous repetitions of high standard elements. The human eye is not capable of detecting all the errors because of the speed at which each body part moves. In order to resolve this issue, video recording and kinematic analysis could be used to allow further perfection of the athletes' technique. Unfortunately these tools are not widely used despite wide access to video recording equipment and kinematic motion analysis software.

Aim of the work. The purpose of this study was to analyse the back handspring technique used by master class athlete with the use of video recording and kinematic analysis software.

Material and methods. During the process, gymnast was observed to identify the differences and similarities in his technique. Out of five repetitions, the gymnastic judges picked the best three for further study. During the analysis time-dependent kinematic quantities and biomechanical analysis were used. The kinematic quantities of the three exercises in each phase of the element were compared. Chosen anatomic points of athlete's body were covered in elastic tape. The movements were then filmed using a high speed camera of frequency of 120Hz.

Results. The biomechanical analysis revealed changes in physical quantities of linear and angular motion (position, displacement and velocity) of athlete's body or chosen segments of his body during the back handspring. In each phase scientists indicated whether the movements were correct or incorrect according to the technique described in the literature and set relations between the technique and kinematic quantities.

Conclusions. The biomechanical analysis allowed the athlete's back handspring technique to be judged based on kinematic quantities. It enabled the technique imperfections which are difficult to detect by the human eye alone to be identified

and quantified. The use of high speed cameras could also identify the connections between correct technique and chosen values of kinematic quantities (linear and angular motion) which might be the foundation to objectively grade the gymnastics performance.

76 pap.
POL **Panfil Ryszard***

THE EFFECTIVENESS OF COOPERATION IN THE TEAM GAME (PRAGMATIC STUDY OF UNIQUE CASES)

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Key words: interdependence of players' actions, dimensions and levels of synergies, effectiveness criteria

Introduction. The characteristic feature of contemporary team games is the high level of dynamic and situation-based organisation of the players' actions, and this gives a new meaning to the collaboration. Particularly in those combinations in the performance of which two or three players whose actions are absolutely dependent on each other participate, the skill of cooperation plays a leading role. Identification of the determinants of team effectiveness requires evaluation of the level of synchronization and coordination of the players' actions because this has an influence on the revelation of various dimensions and levels of synergies. Therefore, while evaluating the effectiveness of team actions, the players should not be treated as separate entities but as sub-subjects co-contributing to the success of the team as an entity.

Aim of the work. To present the possibility of measurable identification and justification of the importance of synergism in the performance of absolutely interdependent actions in team sport games

Method. Based on the video record, a pragmatic comparative study of player cooperation effectiveness in club teams, including in basketball the Orlando Magic and Los Angeles Lakers and in football FC Barcelona, as well as in national representatives, including Brazil, Russia, and Serbia in volleyball.

Results. The results obtained allowed identification of various dimensions and levels of synergism in the team game including: the effectiveness of collaboration among selected players in the positioning of offensive actions and in creating scoring situations, as well as the effectiveness of performing combinations (variants) in the creation of scoring situations and in the positioning of action in the game.

Conclusions. The results obtained enable formulation of the conclusion that the evaluation of the effectiveness of double and triple collaboration may concern both the dimension of the synergy for example the synergic potential of the players, as well as the level of synergy resulting from the level of synchronization and coordination of actions absolutely dependent on each other. Synergic perception of collaboration effectiveness, accepted by the players, favours the development of added value in the team, for example task consistency and as a consequence also emotional consistency, as well as a new quality for example the combination of actions that we cannot analyse in an individualized dimension.

77. pap. POL **Pilch Wanda***, **Dorota Gryka-Nowaczyk****, **Marta Szarek****, **Zbigniew Szygula*****

EFFECT OF FINNISH SAUNA BATHING ON QUANTITATIVE CHANGES OF WHITE BLOOD CELLS IN TRAINING AND NON-TRAINING MEN

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Key words: athletes, thermal therapy, leucocytes

Introduction. Finnish sauna has a wide effect on the human body. Thermal therapy procedures in a sauna constitute one form of biomedical regeneration and are used as a leisure activity, as well as in sport. During sauna bathing hot, dry air affects the skin and respiratory system causing the body's core temperature rises to 39°C and the skin's surface up to 42°C. This treatment is a strong stimulus that affect many organs and body systems including the immune system.

Aim of the work. The purpose of the research was to determine the impact of Finnish sauna bathing on changes of body weight, plasma volume and number of leucocytes in peripheral blood in a training and non-training healthy male group.

Material and methods. The study involved 20 healthy men divided into two groups. The first group consisted of 10 medium and long-distance runners. The athletic males had similar aerobic capacity (VO_{2max} 60,53±13,5ml · kg⁻¹ · min⁻¹) and similar period of training (5±1,2 years). The second group consisted of 10 non-training men. Dry sauna treatment (with temperature 93°C and relative humidity 16%) lasted until the core body temperature measured per rectum rose by 1,2 °. Before and after sauna bathing the body mass was measured and the venous blood was sampled to determine total protein level and number of white blood cells.

Results. The study showed that trained people stayed longer in sauna room than untrained people until their core body temperature rose by 1,2 °C. The reduction of plasma volume and body mass due to intense sweating was observed in both groups, however, athletes showed higher mean loss of plasma volume than untrained men. There was an increase of the total number of white blood cells and lymphocytes, neutrophils, basophils, and monocytes in peripheral blood in runners after sauna bathing, whereas in non-training man the increase of number of neutrophils and lymphocytes was observed and there were no changes in number of monocytes and basophils. Moreover the number of eosinophils decreased in both groups, but only in athletes this change was statistically significant.

78. pap.
POL **Pilch Wanda*, Szczepan Wiecha*, Łukasz Tota***

FINNISH SAUNA AS AN ELEMENT OF BIOLOGICAL RECOVERY IN THE VOLLEYBALL PLAYERS

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Introduction. Good way to decrease recovery time and removal of mental and physical fatigue is a sauna bathing, because it acts profitably to the whole organism. Body became detoxicated after a few baths cause many toxins are removed with the sweat. After body's temperature increase, it is cooled rapidly. During that process blood distribution is changing, oxygen consumption increases, muscles become less tenseness and mental stress decreases. For these reasons finnish sauna is recommended not only as an body relaxation but also as an part of rehabilitation process after many kinds of sports injuries.

Aim of the work. The aim of that paper was to investigate athletes knowledge and awareness on sauna effects and compare it with untrained persons.

Material and methods. Group of 33 trained volleyball players (polish volleyball league) and group of 33 students (physical education students) were asked to fill in a questionnaire. In the special questionnaire their were asked about sauna uses and physiological effects of sauna bathing for the human body.

Results. We demonstrated that all of the athletes uses finnish sauna during the training program. In control group 62% men use sauna regularly. Volleyball players use sauna more frequently (92% – once a week) than non training persons (32% – once a week). In the athletes group most popular sauna type is finish one (67%), steam one (31%) and infrared (8%). Most of the trained men use sauna since 4–5 years (46%), 3 years (15,4%) or even more than 15 years (7,7%). Volleyball players have much more information about sauna physiological effects. Most of them (69,23%) were informed about it by their couch or physiotherapist.

79. pap.
POL **Przybylski Stanisław*, Piotr Makar****

BASKETBALL TEST AS AN INDICATOR OF DIAGNOSTIC AND CONTROL FITNESS LEVEL

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Key words: diagnosis and control of training, lactate, glucose, recovery

Introduction. In order to continuously improve their fitness level, strive to improve the control resolution of the training process through the use of numerous tests and stress test. Taking into account the current state of knowledge allows you to enable various new elements measuring technical and strive to optimize the actual training. Exclusive increase in volume and intensity of work without reason-

able control is limited, among other things the level of adaptability of the organism, and sometimes that can be used for training.

Goals. The aim of the research is to evaluate the effectiveness of technology and changes in fitness level, based on selected biochemical indicators.

Methods. This study is an original proposal for a specialized test for basketball players for their diagnosis and control of their fitness. The test is carried out on the pitch for basketball. Video camera throughout the course of execution of the test player's shooting in order to register the efficiency and effectiveness in the various phases of the test run. Is evaluated the effectiveness of relapse (number of hit the racks), the overall duration of the test and evaluation of temporal sequences of the various phases of the test (time dobiegnięcia and return, but control of the ball during kozłowania in full gear). Assessing the dynamics of the return value is subject to lactic acid and glucose after finishing the test, and the speed of their restitution

Results. The results of the studies found individual variability of kinematic, and tested the effectiveness of flash players. Individual was found to improve the indicators of restitution under the influence of the applied training.

Conclusions. The use of the test in practice allows you to specify the changes of kinematic and effectiveness of technology in terms of biochemical changes in their fitness level. The proposed test can be used as an effective tool in the control of basketball training.

80. pap.
POL **Put M.***

EVALUATION OF THE INFLUENCE OF NORDIC WALKING ON ERECTOR SPINE MUSCLE BIOELECTRICAL ACTIVITY ASSESSED DURING WALKING IN PATIENTS WITH LOW BACK PAIN

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Key words: nordic walking, low back pain, surface electromyography, erector spine muscle

Background. The numbers of patients with pathological changes in lumbo-sacral spine is rising rapidly. Low back pain is a frequently reported disorder in the physiotherapist's office. According to clinical researches the main cause of low back pain is a shortage of activity. Nordic Walking – walking using sticks – is a popular and fast growing type of activity. Active approaches including both specific and unspecific exercise are probably the most widely recommended treatment for patients with chronic low back pain but it is not known exactly which types of exercise provide the most benefit. Therefore some form of activity (exercise) increases not only the strength of the erector spine but also recovers right pattern of movement which with corrected well-matched physiotherapy could be helpful in the treatment of patients with low back pain.

Aim. The assessment of bioelectrical changes in the erector spine muscle during normal walking and nordic walking (with sticks) in patients with low back pain.

Material and Methods. In 33 persons aged 35-55 years with low back pain, the bioelectrical activity of the erector spine muscle was assessed. Bioelectrical activity was measured by surface electromyography (sEMG which was synchronized with a video camera) according to guidelines of project SENIAM. Muscle activity for each subject on the left and right sides was evaluated two times: during normal walking and nordic walking. Patients walked on a flat surface at normal speed. The mean, peak and input of signal value (symmetry) were compared between 2 measurement (normal walking and walking with sticks).

Results. A statistically significant increases in erector spine activity was observed during walking with sticks compared with normal gait ($p < 0,05$). Additionally, also observed, was an improvement of movement pattern due to normalization of bioelectrical activity of paraspinal muscle.

Conclusion. Outcome of assessment of bioelectrical changes in the erector spine imply that nordic walking could be advantageous both in prevention and in therapy (additional to therapy) of patients with low back pain. However, this kind of activity needs to be evaluated further in the future studies.

81. pap.
POL **Radziyevska Mariya*, Pawel Radziyevsky***

THE COMPARISON OF EFFICIENCY OF NATURAL AND ARTIFICIAL HYPOXIC TRAINING IN THE ELITE SPORT

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Key words: hypobaric hypoxic hypoxia, normobaric interval hypoxic training, preparation of elite athletes.

Introduction. The adaptation to hypobaric hypoxic hypoxia in mountain climate conditions and various artificial modifications of mountain climate are traditionally used in the system of training of high-qualified athletes. Therefore, the analysis of similarities and differences in compensation mechanisms of natural hypoxic hypoxia in hypobaric (mountain) conditions and artificial interval hypoxic training (IHT) conducted on the sea level could present interest.

The purpose of the work was to compare the efficiency of adaptation to hypoxic hypoxia during training session in the mountains and on the sea level in the course of IHT.

Methods. The subject of our analysis was the data of functional state and level of general and special work capacity of the female athletes of high qualification, specialized in sports requiring great stamina. The first group of athletes lived and trained at the height of 2100 metres above the sea level ($n=29$) for 30 days. The second group of athletes took the month course of IHT consisting of 24 sessions with 9-11% of oxygen in the gas mixture inhaled ($n=33$).

Results. The research analysis indicated that the function of compensation mechanisms of hypoxic hypoxia of athletes during their stay in mountain climate conditions and in the conditions of normobaric IHT were of similar nature. However, special working capacity increased reliably higher ($p < 0,05$) in the group having taken the course of IHT.

Conclusion. The IHT method which is used outside planned sport training in the dormant state, when the athlete body is affected by only one type of hypoxia – hypoxic hypoxia, could serve as an effective substitution for training in mountain climate conditions.

82. pap.
POL **Radziyevska Mariya***, **Pawel Radziyevsky****, **Monika Niewiadomska*****, **Tatyana Dyba******, **Mikhail Kalinski*******, **Nejele Jasczaniec*******, **Egle Kemerite*******, **Alex Bilkevitz*******

ANALYSES OF THE PARTICULARITIES OF THE RECOMMENDED PHYSICAL ACTIVITIES FOR OBESE AND OVERWEIGHT CHILDREN 7-9 YEARS OLD IN POLAND, UKRAINE, LITHUANIA, ISRAEL, USA

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Key words: obesity, overweight children, physical activity

Introduction. Childhood obesity is one of the most serious public health problems of the 21st century. This global problem starts spreading widely in middle-income and low-income countries particularly in their urban districts.

Purpose of the work – analysis of normative official acts regulating exercises of overweight and obese children's physical activity 7-9 years old in Poland, Ukraine, Lithuania, Israel, USA.

Methods. Analysis of normative official acts regulating exercises of overweight and obese children's physical activity in Poland, Ukraine, Lithuania, Israel, USA.

Results. Obesity leads to many somatic complications especially among children. Nevertheless it's a medical problem mainly but in all countries where legal foundations of physical activity's regulation for the overweight and obese children were studied, practically a teacher of physical education is responsible for its usage. However, besides general guidelines that say the physical activity for overweight and obese children is very useful, its level should be improved in order to influence favourably on such children's health.

Conclusion. As a result acute need arises to develop a Specialized Physical Activity Training Program (SPATP) for the overweight and obese children. We plan that despite its universality, SPATP will consider a range of the health risks for these kids, and will vary depending on the stage of obesity, detected health consequences of the condition, as well as cultural particularities. The benefits of such an approach is obvious, but was never applied before.

83. pap.
POL **Radziyevsky Pawel*, Mariya Radziyevska*, Michael Kalinski****

THE ROLE OF BLOOD GEMOGLOBIN CONTENT INCREASE IN THE BODY STATE IMPROVEMENT OF HIGH-QUALIFIED FEMALE ATHLETES SPECIALISED IN SPORTS GAMES

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Key words: hemoglobin content, interval hypoxic training, high qualified female athletes.

Introduction. A great amount of research into the efficiency of adaptation to hypoxic hypoxia of athletes undergoing training in mountains and in similar climatic conditions raises the question about the significance of tissue and system mechanisms of hypoxic state compensation.

The aim of the work was to analyze the regulatory effects the blood hemoglobin content increase has on the state of oxygen transporting systems of high-qualified female athletes during their adaptation to hypoxic hypoxia in the course of interval hypoxic training (IHT).

Methods. The course of IHT was undergone by 12 female athletes, highly-qualified volleyball players. The IHT course included 24 sessions with oxygen content in the hypoxic gas mixture gradually decreasing from 11.5% down to 10%. The control data were coming from the athletes who were inhaling only the room air (n=17) during the IHT sessions.

Results. The group of female athletes having taken the course of IHT during the control testing showed reliable ($p < 0,05$) increase in blood hemoglobin content from 124.5 ± 4.2 up to 143.2 ± 4.8 g/l. In the control group any reliable dynamics was not registered ($p > 0,05$).

Conclusion. As a result of adaptation to hypoxia in the course of IHT the blood hemoglobin content increase plays a dominant role in the regulation of cardiac output (MCO). The maintaining of MCO at the normoxic level with reliable increase in blood oxygen capacity ($p < 0,05$) allows speeding up the flow of arterial blood, the process of oxygen consumption by working tissues which is the base of the general working capacity improvement.

84. pap.
POL **Rożek-Piechura Krystyna*, Katarzyna Oldak****

EVALUATION OF QUALITY OF LIFE, PHYSICAL FITNESS AND ACTIVITY RESIDENTS OF CARE AND ADAPTATION CENTER IN WROCLAW

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Key words: elderly, quality of life, physical fitness and activity

Introduction. Regular physical activity should be permanently inscribed in the style of human life. This is extremely important for elderly. Low physical activity can significantly affect the risk of diseases.

Aim of the work. Evaluation of the quality of life residents of Care and Adaptation Center in fitness and physical activity dimension.

Material and methods. The study covered 30 women aged 75-84 years, divided into two groups according to age: first - 16 women aged 75-79 years, second - 14 women aged 80-84 years. Women were measured basic somatic parameters: height and weight, then was calculated BMI (Body Mass Index). Applied quality of life questionnaire WHOQOL-Bref, Paffenbarger Physical Activity Questionnaire and fitness Fullerton test in all women. In the analysis was used Statistica program. To demonstrate the significant differences between groups was used U-Mann Whitney test. To assess the compounds between groups was used ordinal Spearman correlation.

Results. Average BMI was 28.42 in younger group and 28.91 in older group. This demonstrates the occurrence of overweight among women in both age groups. Average quality of life was 93.4 points in younger group and 96.36 points in older group. Average Paffenbarger's rate was 3609.3 kcal in younger group and 3052.77 kcal in older group.

Conclusions. Physical activity and fitness among women has reached a significantly higher value in the younger group. In turn, the average quality of life is higher in the older group. There were no significant associations between quality of life, physical activity and fitness level.

85. pap.
POL **Rynkiewicz Mateusz**

ASYMMETRY OF SPINAL SEGMENTS MOTION IN CANOEISTS AND THE SPORTS RESULTS

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Key words: asymmetry, canoeists, spine motion, starting speed

Introduction. Paddling in the canoe requires an asymmetric technique, which is the result of the asymmetrical body position and work most of the muscles. As a result of prolonged use of unilateral exercises observed numerous changes in body composition. Change, even positive impact on factor sports, may adversely affect the health of canoeists.

Aim of the work. Determine the asymmetry of the spine segments motion in canoeists and determine its impact on the paddling speed. It was assumed that the change in canoeists paddling speed will be associated with asymmetry of motion segments of the spine.

Material and methods. The study included 18 canoeists at the age of 16.4 years. Measurements of spinal range were in the cervical, thoracic and lumbar levels in sagittal, frontal and transverse plane.

Results. A significant statistical relationship between average speed and the asymmetry range of the cervical spine level in the frontal plane ($R = -0.52$, $p = 0.03$) and asymmetry range of the lumbar spine level in the frontal plane ($R = 0.57$, $p = 0.01$).

Conclusion. Scope of asymmetric bending of the cervical vertebrae in the frontal plane should be as small as possible, which should have positive impact on paddling speed. The canoeists training is desirable to increase the asymmetry of lumbar spine bending in the frontal plane. However it should be noted, that such proceedings benefit in terms of training needs can be very negative for the health of canoeists.

86. pap. **Rynkiewicz Tadeusz***, **Mateusz Rynkiewicz****, **Jacek Biernacki*****, **Piotr**
POL **Zurek******, **Henryk Kos******, **Małgorzata Wójcik******

COMPOSITION OF THE BODY WEIGHT OF YOUNG CANOEISTS DEPENDING ON AGE, GENDER AND SPORTS SPECIALIZATION

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Key words: body composition, canoeists, kayakers, juniors, sport training.

Introduction. Sports training requires regular use of loads similar in size to the maximum potential for adaptation competitors. They cause a number of adaptive changes, whose size varies depending on the length of the training, gender and sports specialization. One of the main effects of training loads relate to changes in body composition.

Aim of the work. Sports training results in modifications of the composition of body weight. In canoeing this issue is examined in small degree. Therefore, studies were undertaken aimed at understanding the impact of sports training in kayaking on the composition of body weight in relation to sex, age and sport specialization.

Material and methods. Considered 170 male and female kayakers and male canoeists aged 13 – 18 years. Body composition and its segments determined using the BIA method.

Results. It was found that with age in all subjects increased body weight and BMI. Systematic progression was observed in body height of male kayakers and canoeists. Female kayakers characterized by stable levels of this characteristic, regardless of age. Reduce the percentage of fat mass was observed from 16 age in male subjects. Sports training of female kayakers did not cause significant changes in percentage of fat mass content.

Conclusions. Sports training of young kayakers causes significant changes in content of fat and muscle mass. Effect of sports training on body composition is much smaller in female than male competitors. It seems that more depends on the sex than sport specialization.

87. pap.
POL **Rynkiewicz Tadeusz***, **Piotr Żurek****, **Mateusz Rynkiewicz*****, **Zdzisław Kołaczkowski***, **Ewa Ziemann******

METHOD OF THE STRENGTH MEASUREMENT OF THE STRIKE AT BALL IN TENNIS

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Key words: dynamic strength, tennis, sport level, serve in tennis, juniors

Introduction. Tennis is a game with a typical structure of acyclic movements, requiring condition and coordination abilities. One of them is the level of dynamic strength, which has a significant impact on the sporting achievements in tennis.

Aim of the work. The aim of this study was to assess the usefulness of a new method

of measuring of dynamic strength during the serve. It was assumed that the strength developed during impact is related to the ability of effective implementation of the serve.

Material and methods. Polish national team tennis players were studied (n = 16) aged $M \pm SD = 16.4 \pm 1.0$ years. Dynamic strength in the service was measured using strength measurement attached to a tennis racket. We have analyzed the average strength of the series of 10 custom services.

Results. The average value of the strength developed during the strokes in the left field of service was $M \pm SD = 29.0 \pm 3.0$ N, and the right $M \pm SD = 24.0 \pm 1.0$ N. The highest average value of the strength left the service in the field has reached a player classified at No 1 in Poland.

Conclusions. On the basis of these results it can not be clearly shown the relationship between dynamic forces due to the level of sport specific place in the ranking of players with relatively little sport experience. Results must be validated by measurements on a larger number of players with a more diverse experience and sport level.

88. pap.
POL **Sadowski Jerzy***, **Andrzej Mastalerz****, **Tomasz Niżnikowski*****

BANDWIDTH FEEDBACK IN LEARNING COMPLEX MOTOR SKILLS

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Key words: acrobats, bandwidth feedback, complex motor skill learning, guidance hypothesis

Introduction. From theoretical and applied perspectives, one of the major issues of interest in motor skill acquisition is how information feedback influences learning.

Aim of the work. The aim of the study was to examine the effect of two different types of feedback during the acquisition of complex motor skills.

Material and methods. Thirty male acrobats aged 11 participated in the study. They were randomly assigned to two groups: bandwidth feedback (experimental, n=15) or 100% feedback (control, n=15). Progressive-part method was employed in the acquisition phase of learning acrobatic skills. The participants received different amounts of verbal prescriptive feedback.

Results. In learning complex acrobatic skills bandwidth feedback was more efficient than high frequency feedback.

Conclusion. The results support the guidance hypothesis in learning complex motor skills.

89. pap.
POL **Sakowicz-Kostecka Joanna***, **Bogdan Sakowicz ****

ANALYSIS OF SPORTS RESULTS IN THE CONTEXT OF WORLD'S AND POLAND'S TOP TENNIS PLAYERS' SOMATIC-MOTOR POTENTIAL

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Key words: tennis, somatic and motor predispositions, training optimization

Introduction. The subject of the relationship between the somatic-motor potential and sports achievements of world's top tennis players is not presented precisely and unambiguously in literature. The complexity of motor, mental, physiological and technical-tactical events in tennis calls for a specific look at the empirical outcome of players' training results.

Aim of the work. The objective of this research was to determine the level of these outcomes and to suggest actions to optimize the effectiveness of sports competition.

Material and methods. This research analyses the level of selected somatic parameters and motor skills, with particular emphasis on the parameters of psychomotor coordination predisposition (analyzed by the test: Klocek et al, 2002) of the world's top tennis players and Poland's representation team

Results. The results of the group under research do not show a significant and major relation between sports achievements as expressed by WTA ranking and the level of selected somatic features and motor skills. Conclusions concerning the degree of strength of coordination predisposition are particularly interesting.

Conclusions. The results presented here call for the creation of research programs inspired by a new look at multifaceted and specific predispositions and dispositions influencing female tennis players' achievements.

90. pap.
POL

Seweryniak Tomasz*, Łukasz Łukasik, Dariusz Mroczek****

EFFICIENT ANALYSIS AND EVALUATION OF DISTINGUISHED TEAM DEFENSIVE ACTIONS IN WOMEN'S BEACH VOLLEYBALL

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Key words: beach volleyball, team actions, defense, actions efficiency

Introduction. Beach volleyball belongs to the group of sports, which popularity ascends worldwide fast and systematically. World's top tournaments are very professional and competition is hard. To get the upper hand of the opponents it's necessary to study the game, including defense.

Aim of the work. Analysis and evaluation of beach volleyball team defensive actions in the scope of activity, efficacy, reliability and efficiency on the example of high class women teams.

Methods. Team defensive actions of world's best teams during SOG Beijing 2008, WCH Stavanger 2009 and SWATCH FIVB Beach Volleyball World Tour (Stare Jablonki, Poland 2009 and Seoul, South Korea 2010) were analyzed, using the systems of defense, that were earlier described. Analysis and evaluation of defense outcome was conducted with efficient approach using the criterion of activity, efficacy and reliability.

Results

Activity, efficacy and reliability of distinguished most often used systems of defense, at minimum activity > 6 (n=481)

System of defense Value	System 2	System 3	System 5	System 6	System 9
Efficacy	93	53	2	10	5
Efficacy quota	30%	50%	14%	24%	45%
Inefficacy	43	7	0	6	0
Inefficacy quota	14%	7%	0%	14%	0%
Conefficacy	171	47	12	26	6
Conefficacy quota	56%	44%	86%	62%	55%
Activity	307	107	14	42	11
Reliability	0,30	0,50	0,14	0,24	0,45

Conclusions. Defensive system marked as „System 3” should be recognized as the most efficient in analyzed sample. For that reason it should be the main objective of defense training for high class teams. Though the tactics of defense should also contain other defense systems, that can surprise the opponent and in consequence give good result.

91. pap.
POL **Smrokowska-Reichmann Agnieszka**

„MOVING-IN-THE-WORLD”. THE NEW CATEGORIES OF DYNAMIC BODILINESS IN HERMANN SCHMITZ’S PHILOSOPHY

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Key words: felt body, corporeal body, vital drive, bodily communication, suggestions of movement, narrowness, expanse

Summary

Introduction. Hermann Schmitz is one of the most original contemporary philosophers. His New Phenomenology has developed from the classical phenomenological theories but radicalizes and transforms the traditional phenomenology. Schmitz proposes a new systematic and holistic approach to questions which concern human being in its dynamic physicality and its location in the world.

Aim of the work. Reconstruction of Schmitz’s argument, especially his conceptions of human being viewed through the rhythmical dynamic of bodily economy. Explications of terms used in New Phenomenology to describe human body in its double sense (i. e. felt body and corporeal body), as well as human movement and perception. Presenting Schmitz’s philosophy as a chance of constructive dialogue among different sciences dealing with human bodiliness, including psychosomatic medicine, rehabilitation and sport sciences.

Material and method. The primary and secondary literature concerning New Phenomenology. Query, analysis, synthesis.

Results and conclusions. Herman Schmitz coins a new definition of human body and movement. Especially the felt body opens up a new field of experiencing ourselves: not only being-in-the-world, but also moving-in-the world. Bodily dynamics, bodily communications and other categories broaden our perspective of human physicality. Schmitz's philosophy also assists in better understanding the relationships between human being and its environment. New Phenomenology is orientated around experience and applicability. Nowadays doctors, therapists and physical culture scientists discuss it as a possibility of new approach to human corporeality.

92. pap.
POL **Supernat Katarzyna*, Andrzej Sagalara****

SUBJECTIVE SLEEP QUALITY AND OFF LINE LEARNING

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Introduction. Off line learning is an effect of improvement in trained skill during the break in training. The effect may depend on the type of activity during that gap, especially the presence of night sleep. This phenomenon is often claimed to be accounted for by objective sleep quality (physiologically measured), such as total amount of SWS and its spin density. Recent studies have shown a positive correlation between these two characteristics and the three indicators of subjective sleep quality (declared in sleep diary): total amount of sleep (TST), sleep efficiency (SE) and overall quality of sleep (SQI).

Aim of the work. The aim of the study was to determine the relationship between off line learning effect and subjective sleep quality – total sleep time (TST), sleep efficiency (SE) and overall sleep quality (SQI).

Material and methods. An empirical study of 27 female students was conducted. At learning, subjects were trained on running start. Performance level was assessed by the total amount of possible technical mistakes on the two test blocks: on the first and the following day (off line learning effect). Subjective sleep quality was assessed employing Karolinska Sleep Diary.

Results. The results showed statistically not significant dependence between Sleep Quality Index, Sleep Efficiency, Total Sleep Time and Off Line Learning Effect.

Conclusions. Distribution of variables was in line with expectations. Our findings point out the importance of addressing the issue of subjective sleep quality with regard to augmenting number of subjects in further analyses.

93. pap.
POL **Szeklicki Robert***

PHYSICAL FITNESS NORMS IN CHILDREN AND ADOLESCENTS: THE PHYSICAL EDUCATION APPROACH

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The physical fitness development is mentioned as one of main aims not only among short-term tasks of physical education (supporting of fitness development), but also among long-term tasks (lifelong physical fitness education). In both cases, the proper measurement and evaluation of physical fitness level are necessary. While we care strongly about the measurement methods (validity, reliability, standardization etc.), much less of our attention is related with evaluation of received scores of physical fitness. The main aim of this paper was to emphasize the significance of suitable establishment and interpretation of physical fitness norms in children and adolescents. In consideration of the topic the physical education approach was applied and discussion was divided into four sections:

1. OBLIGATIONS or endorsement of physical fitness development as one of the basic aims of physical education.
2. PROBLEMS or why proper establishing physical fitness norms for children and adolescents is impossible.
3. MISTAKES or what we do wrong in establishing and interpreting norms of physical fitness of children and adolescents.
4. GOOD EXAMPLES or how to establish and apply norms of physical fitness in children and adolescents.

The additional aim of the paper was introduction and invitation professionals from various sciences to wide discussion about establishment and interpretation of physical fitness norms in children and adolescents.

94. pap.
POL **Sztafa Katarzyna*, Katarzyna Zwolińska-Mirek*, Paweł Kozuch***

OVERWEIGHT AND OBESITY AMONG CHILDREN AND ADOLESCENTS IN NOWY SĄCZ COMPARED WITH THE POPULATION OF OTHER POLISH CITIES

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Key words: children, obesity, overweight, BMI

Introduction. Overweight and obesity is becoming a problem concerning more and more young people. To compare the frequency of this phenomenon between populations, it is important to accept one system of assessing the extensive body mass among children and adolescents.

Aim of the work. The aim of this thesis was to compare the frequency of presence of the excessive body mass in the population of children and adolescents in Nowy Sącz compared with the population of other Polish cities.

Methods and methods. The test group consisted of 1154 girls and 1104 boys at the age of 7–18, living in Nowy Sącz. The children were anthropologically tested. The height and body mass were measured, BMI was calculated. Overweight and obesity were assessed by means of Cole's cutting points. The comparison groups consisted of the populations in which, as well as in Nowy Sącz, children's overweight and obesity were assessed according to international standards recommended by IOTF.

The data from Nowy Sącz were compared with the data from Cracow, eastern Poland, Poznań and the results of the national tests outcome. In order to find out if there are any statistically important differences in the frequency of overweight and obesity presence among young people in Nowy Sącz compared with other parts of Poland, a test for both fractions was used.

Results. Having analysed the frequency of obesity presence among the population of girls in Nowy Sącz as opposed to other regions of Poland, except for rare cases, no statistically important differences were observed. In the group of boys the situation was similar, numerous statistically important differences in the frequency of obesity presence were not observed. As for as obesity is concerned, according to the statistics it was more frequent among girls from Nowy Sącz than among their peers at the age of 8–12 living in Cracow and eastern Poland. No statistically important differences between obesity among girls in Nowy Sącz and the whole Poland were stated, apart from obesity among 10-year-olds which was over 5 times more frequent in Nowy Sącz than in the whole Poland. As for as boys are concerned the obesity among these from Nowy Sącz was more frequent than among those from eastern Poland. The results were observed at the age of 8, 10, 14, 16.

Conclusions. Apart from rare cases, no significant differences in the presence of overweight among young people from Nowy Sącz and other areas of Poland were observed.

95. pap. **Tataruch Magdalena***, **Ewa Sadowska-Krepa****, **Janusz Iskra***, **Tomasz POL Klisz****

AEROBIC CAPACITY AND PHYSIOLOGICAL, BIOCHEMICAL AND TRAINING PARAMETERS IN AMATEUR ENDURANCE RUNNERS

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Key words: aerobic, capacity, training parameters, endurance run

Introduction. Running for the long-duration („endurance run”) is still an essential method of recreation. „Joggers” often train more than professional runners. Their effort is not only of sport value but also of a social value.

Aim. The aim of this study was to evaluate the relationship between aerobic capacity and selected parameters (physical, physiological, biochemical, training and psychological), which are of vital importance in pursuing the training in a systematic way.

- Methods.** The participants of this study were advanced amateur runners (n = 35, age 36.6 ± 14.7 years, body height 175 ± 17.6 cm, weight 69.9 ± 8.1 kg) from the Opole area, who participated, among others, in long-distance runs, e.g. from Opole to Rome. The runners were subjected to multidimensional analysis, which included the following:
- physiological parameters (e.g. VO_2 max test measured with the use of ergometric test „until giving up”, HR PPA) and the parameters of the Wingate test,

- biochemical parameters (e.g. CK, glucose, antioxidants, cholesterol)
- fitness parameters (in the field of fundamental fitness abilities and coordination)
- psychological characteristics (including the assessment of temperament and personality traits)
- sociological characteristics (based on 5 questionnaires)
- training parameters (as specified in the training of long-distance runners).

All of the above-mentioned elements were evaluated with the use of the basic methodology of scientific research. Details of the study are presented in M. Tataruch (2010). In the final stage of statistical analysis, the regression analysis was used; there the explanatory variable was the value of $VO_2\max$ (ml / kg / min) and the explanatory variables for selected parameters, which, according to prior factor analysis, were statistically significant for the achievements of sports in amateur long-distance running.

Results. The regression analysis revealed that the following explanatory variables of aerobic capacity are found in amateur runners: minimum weight, the value of HR at anaerobic threshold, maximum power and rate of decline in power, the value of hemoglobin and the minimum value of HDL during the Wingate test, emotional reactivity, and preventive behavior as well as annual training load. The whole is explained in 69.1% by the analyzed parameter.

Conclusions. Research conducted in the group of runners-amateurs supports the hypothesis that the aerobic capacity (and hence the degree of fitness) is conditioned by several factors. The parameters related to the maximum value of $VO_2\max$ are associated with both the classic endurance training as well as social factors (sociological and psychological). The latter group of parameters emphasizes the specificity of recreational running.

96. pap.
POL **Tulej Konrad*, Dobrzański Paweł****

PHYSICAL FITNESS TESTS IN PHYSICAL EDUCATION IN SCHOOL PRACTICE

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Key words: teacher of physical education, tests of physical fitness, school, health-related fitness.

Introduction. Nowadays physical fitness tests, both in popular opinion and according to experts, is one of the instrument that are used in physical education of children and adolescents.

The aim of the work. The research on physical education teachers was an attempt of finding the answer the question: which and how physical fitness tests are used in school practice and popularity the concept of „H-RF” in school practice.

Material and methods. 76 teachers of physical education from Krakow and Bochnia was studied by author's questionnaire. The teachers represented all three type public schools except colleges.

Results. 97.4% teachers declared physical fitness testing is used in school practice and more than a quarter of teachers could not describe test samples. Every fifth teacher believes that the results of physical fitness tests are principle for student's marks of a school subject. No significant differences between professional experience and function of assessing students based on their results in the physical fitness test batteries were noted.

Conclusions. Physical fitness tests are not sufficiently well used in school practice. Education in the field of physical fitness testing in the concept of H-RF requires constant popularization among both students and teachers of physical education.

97. pap.
POL

Wąsik Jacek*

INFLUENCE OF DIFFERENT VERSIONS OF THE STRAIGHT FORWARD PUNCH ON THE OBTAINED FORCE, ENERGY AND POWER – MEASUREMENTS OF TAEKWON-DO ITF ATHLETES' PERFORMANCE

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Key words: taekwon-do, factors, straight forward, punch

Introduction. Efficient delivery of strikes in taekwon-do and other combat sports is affected by a number of factors including their force, mechanical work, energy, power, etc. However, it is not uncommon for some sports specialists not to interpret appropriately the terms of work, energy and power. For instance, great power is not necessarily a determinant of a greater force of a strike, is not necessarily more damaging to the rival, or does not always result in breaking more boards as these are a result of kinetic energy, and not power. The fact that these terms happen to be confused might lead to some misunderstanding.

Aim. The aim of the study was to evaluate the values of force, energy and power obtained during performance of the straight punch in two different techniques.

Method. 6 taekwon-do ITF (International Taekwon-do Federation) athletes were asked to participate in the study. The group consisted of 1 female athlete and 5 male athletes (n=6) whose average age was 16.5 ± 0.8 , average weight amounted to 64.1 ± 9.0 kg and the average height was 176.5 ± 6.0 cm. They were asked to perform the traditional and sports version of the punch three times each. The research was carried out with the use of Smart-D system manufactured by Italian BTS Spa company and used for complex analysis of movements.

Results

Table. The calculated physical parameters of the strike

Parameters	Sports version of the punch	Traditional version of the punch
Force [N]	1308 ± 173	3284 ± 555
Energy [J]	916 ± 60	2299 ± 320
Power [W]	5630 ± 247	2598 ± 283

Discussion. Having analyzed the obtained results it can be stated that the aim of a strike determines the way the strike is delivered. The traditional taekwon-do punch is used to perform mechanical work and produce a maximum kinetic energy, which is necessary for breaking, whereas the sports punch requires a short time of delivery, which gives great power, i.e. high rate of energy production. That is the reason why it is used in combat.

98. pap.
POL **Wojciechowska-Maszkowska Bożena*, Dorota Borzucka***

STABILITY OF POSTURE IN WOMEN OF VARIOUS AGE

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Key words: postural stability, stabilogram, women

Introduction. The complexity of the body balance is especially expressed in case of its deprivation due to some pathological processes or to physiological process of ageing. Physical abilities of the human organism decrease with ageing and the age-related functional disturbances increase the risk of falls and contusions. Involution is not a simultaneous process and adaptation of the nervous system can mask the defects due to the compensation mechanisms.

Aim of the work. The aim of the study was to determine the differences in the parameters of the stabilogram characterizing the stability of body balance in women of various age.

Material and methods. The study encompassed 71 women in three different age groups. In the eldest group mean age was 76, in the middle age group 44 and in the young group it was 22 years. The criterion of stability of the posture were the values of the stabilogram's amplitude parameters (measured, real time COP signal). The reported parameters of the stabilogram are of descriptive nature and refer to general symptoms of the stability of the upright body position.

Results

Table. The level of statistical significance for values of the stabilogram's amplitude parameters in tested groups of women

WOMEN	Parameter						
	Changeability [mm]		Range [mm]		Mean velocity [mm/s]		Mean radius [mm]
	sagittal plane	frontal plane	sagittal plane	frontal plane	sagittal plane	frontal plane	
elder age - middle aged	NS	NS	NS	p = 0,02	p = 0,00	p = 0,00	NS
middle aged -students	p = 0,00	p = 0,00	p = 0,04	p = 0,00	NS	NS	p = 0,00
elder age – students	p = 0,02	p = 0,00	p = 0,03	p = 0,00	p = 0,00	p = 0,00	p = 0,00

NS - statistically non significant

Conclusions. The results prove that in women with ageing the instability of body posture increases together with individual differences among the group members. The reported results show significant differences between the youngest and the oldest volunteers. It seems that increasing deficit of balance control results in increased difficulties in maintaining the upright position.

99. pap.
POL**Wojciechowska-Maszkowska Bożena*, Pawel Janisiów******EFFECT OF FATIGUE ON THE STABILITY POSTURAL
COMPETITORS PRACTICING TAEK WON DO**

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Key words: fatigue, postural stability, mean velocity, taek won do

Introduction. Regular physical activity results in increase and development of abilities and motor skills. Sports training is based on alternating exercise loads and breaks. Postural stability enables human motor function in upright position. Physical fatigue resulting from physical activity leads to decrease in parameters of performed work and leads to disturbed accuracy and speed of movements and of endurance.

Aim of the work. The aim of the study was to evaluate the effect of fatigue on stability of the upright position by analyzing the average velocity of body sway.

Material and methods. The study of balance control encompassed 12 taekwondo competitors. The experiment was performed using stabilographic platform in four attempts: with and without visual control, before and after exercise (Wingate test).

Results

Table. Mean values, mean velocity of body sway taekwondo competitors in traffic levels, in attempt with and without visual control

Plane	Test	Mean velocity [mm/s]	
		before the Wingate test	after the Wingate test
Sagittal	EO	12,31 ± 6,1	15,39 ± 8,5***
	EC	13,61 ± 2,9	18,22 ± 6,2***
Frontal	EO	7,22 ± 2,3	8,91 ± 2,1**
	EC	8,74 ± 2,4	10,14 ± 2,9*

* p < 0,03; ** p < 0,004; *** p < 0,006

EO – eyes open

EC – eyes closed

Conclusion. The results of the study show that the body balance during dynamic changes of the organism's energetic processes relies on increased effort of the muscles responsible for body balance in sagittal plane compared to the muscles ensuring balance in the lateral plane. Monitoring changes in the mean velocity of body sway in the sagittal plane in situation of physical fatigue, may be important in sport training and help protect the athletes against the risk of falling and injury.

100. pap.
POL **Zarzewny Ryszard dr hab.*, Mieszko Podleśny**, dr Anna Polak****

ANAEROBIC CAPACITY LEVEL OF THE AMATEUR MOUNTAIN BIKERS DURING THE FIRST HALF OF THE COMPETITION SEASON

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Key words: peak power, exercise capacity, lactate, competition season, cyclists

Introduction. Sustained aerobic exercise not only affects the rate of force development but also decreases peak power development.

Aim. The aim of this study was to investigate if anaerobic power of amateur mountain bikers changes during the first half of the competition season.

Material and methods. Eight trained cyclists (mean±SE: age: 22,0±0,5years; height: 174,6±0,9cm; weight: 70,7±2,6kg) were subjected to ergocycle incremental exercise test and to Wingate test on two occasions: before, and in the middle of the season. After incremental exercise test oxygen uptake (VO_{2rec}) was measured during 5-min recovery. Blood lactate concentration [LA] was measured in 4th min after Wingate test.

Results. Maximal oxygen uptake (VO_{2max}) increased from 60,0±1,5 at the beginning of the season to 65,2±1,4 ml/min/kg ($p<0,05$) in the season. Neither of the mechanical variables of Wingate test nor VO_{2rec} values were significantly different on these two measurements. However, [LA] was significantly higher ($p<0,001$) in-season (11,0±0,5 mM) than before season (8,6±0,4 mM).

Conclusions. 1) Despite the increase of cyclists' VO_{2max} during competition season their anaerobic power has not changed; 2) [LA] measured at 4th min after Wingate test doesn't properly reflect training-induced changes in energy metabolism.

101. pap.
POL **Zarzewny Ryszard dr hab., mgr Mariusz Kuberski, mgr Agnieszka Deska, dr Dorota Zarzewna, mgr Katarzyna Rydz**

CRITICAL SWIMMING SPEED (CSS) EVALUATION IN 12 YEARS OLD BOYS

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Key words: swimming velocity, CSS, 12-min swim test, boys

Introduction: It was suggested that in young swimmers CSS may be estimated on two timed exerting maximum efforts on distances of 50 and 400 m.

Aim. The aim of this study was to find out if the CSS estimated by above mentioned method in 12 years old swimmers corresponds to the results obtained during a standard 12-min swim test.

Material and methods. The study was carried out on 24 trained boys (age: $12,2 \pm 0,06$ years; height: $158,0 \pm 1,8$ cm; weight: $47,7 \pm 2,2$ kg). All swimmers were timed exerting maximum effort on distances of 50 and 400 m in breaststroke (BS) and front crawl (FC), and performed 12-min tests in both styles to swim as far as possible during this time.

Results. The data showed a close relationship between CSS calculated on the basis of 50 and 400m swims and a covered distance during 12-min test ($r=0,788$; $p<0,001$ and $r=0,834$; $p<0,001$ for BS and FC, respectively). There was no significant difference between CSS and mean velocity of 12-min swim test in FC ($0,862 \pm 0,027$ m/s and $0,851 \pm 0,027$ m/s; respectively); however, CSS was significantly higher ($p<0,01$) than mean velocity of 12-min test in BS ($0,769 \pm 0,018$ m/s and $0,727 \pm 0,022$ m/s; respectively).

Conclusion. CSS estimated on front crawl swimming is a good indicator of the exercise intensity for young swimmers training.

102. pap.
POL

Zima Joanna*, **Michał Kuczyński****

REACTION TIME TASK IN DUAL TASK METHODOLOGY

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Key words: postural stability, dual task, reaction time task

Introduction. Recent studies indicate that human postural control is affected by concurrently performed secondary mental task. If the secondary task is simple and unequivocal, the results are easy to interpret. However, it is often not the case like in tasks that require verbal responding. We believe that similar problems may occur when the simple visual reaction time (RT) is used as a secondary task with a modified computer mouse to measure the response time.

Aim. To compare postural stability in three tasks: (1) simple standing (S); (2) the S while holding a computer mouse (SM); and (3) the SM with the concurrent reaction time task (SRT). We hypothesized that mouse holding task, in contrast with reaction time task, would not influence postural stability.

Methods. Postural stability was assessed in quite bipedal standing on a Kistler force platform. Eleven young subjects were asked to perform the three tasks in a random order. Each task lasted 20 s and the centre-of-pressure (COP) was recorded in the anterior-posterior (AP) and medial-lateral (ML) planes. The COP range, frequency and sample entropy were computed as indices of postural stability.

Results. The differences between the baseline and the both mouse-holding task took place in the AP plane only. The SM and SRT increased the COP frequency and entropy in a similar way ($p<0,05$). Also, the SM decreased the COP range to a larger extent ($p<0,05$) than SRT did ($p<0,14$).

Conclusions. It is likely that the reaction time task alone does not affect postural stability at all in young persons indicating high automaticity of this task. On the

other hand, holding an object in hands appears to require attention as evidenced by increased postural automaticity (entropy) and frequency. These somehow counterintuitive results warrant further study aimed at the instructions for subjects and how these instruction are perceived.

103. pap.
POL **Zowisło Maria***

BETWEEN KINESIS AND ENERGEIA – PHILOSOPHERS ON HUMAN MOVEMENT

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Key words: movement, motor kinesis, energia, mechanistic materialism, teleological development

Introduction. The paper concentrates on the problem of human movement and emphasizes two main trends present in history of philosophy. These currents are labeled here with two Greek philosophical notions: kinesis and energeia. The first notion will be discussed here shortly with reference to Democritus and Hobbes philosophy of nature, human body, cognition and emotions. The second notion opens a great area of organic understanding of ontological becoming, growing and changing and is strictly bound up with philosophic concept of bios, living entities, among them human beings. This concept will receive here its philosophical framework in accordance with Aristotelian teleology.

Aims. Examining different philosophical attitudes towards human movement showing the need for their integrity within the broad horizon of philosophical anthropology.

Methods. The paper has got a character of review of philosophical concepts and applies mainly phenomenological eidetic and descriptive methods together with hermeneutic comparative fusion of concepts pursuing their relative consent.

Conclusions. There have been critics arguing different limitations and discrepancies of these two attitudes toward movement. Nevertheless these concepts taken together indicate multidimensional potential of human self-realization: somatic, aesthetic, psycho-mental, moral, religious, social. In fact philosophers from these two camps demonstrate great interesting in physical education and permanent self-education in gymnastics, somatic recreation, proper hygiene, health, happiness and fulfillment of life.

104. pap.
POR **Neiva¹ Henrique P.², Filipa M. Pereira¹, Pedro G. Morouço^{2,3}, Mário C. Marques^{1,2}, Daniel A. Marinho^{1,2}**

THE EFFECT OF WARM-UP IN 100 M SWIMMING PERFORMANCE

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Key words: warm-up, swimming, front crawl, performance

Introduction. Warm-up routines before competition are frequently used by coaches and swimmers. It is supposed that performance is positively affected by warm-up, but the literature is still unclear and relatively unknown in this matter, especially in swimming.

Aim of the work. To verify the effect of typical warm-up procedures in 100 m swimming performance in national level swimmers.

Material and methods. Ten male national level swimmers (mean \pm SD; age 15.4 \pm 1.02 years old, height: 1.73 \pm 4.7 m, body mass: 62.3 \pm 3.7 kg) performed 100 m at maximal swimming velocity with a usual warm-up up and without warm-up one day after. Capillary blood samples were collected to determine blood lactate concentration ([La-]) after the swimming test (1st and 3rd min of recovery). Ratings of perceived exertion scale (RPE) were also used to quantify exercise level of exertion after each test.

Results. Mean \pm SD values of 100 m performance were different with and without previous warm-up (63.28 \pm 2.85s vs. 64.73 \pm 3.08s, respectively; $p \leq 0.05$). The swimmers performance with warm-up was 2.3 \pm 2.0 % better than without warm-up. At these two testing conditions, the values of [La-] found expressed no differences, as well as the values of RPE.

Conclusion. These results suggest that usual warm-up procedures in swimming can be beneficial to the male swimmers 100 m performance.

105. pap. POR **Novais Maria L.^{1,2}, Daniel A. Marinho^{2,3}, Vishveshwar R. Mantha^{1,2}, Rui J. Ramos^{2,3}, Abel I. Rouboa^{2,4}, J. Paulo Vilas-Boas^{5,6}, António J. Silva^{1,2}**

THE EFFECT OF DEPTH ON DRAG DURING THE STREAMLINED GLIDE: A THREE-DIMENSIONAL CFD ANALYSIS

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Key words: tests and testing; starts; turns; biomechanics; numerical simulations

Introduction. The gliding phase during starts and turns can play an important role in the final performance in swimming races (Lyttle et al., 2000; Marinho et al., 2009). Thus minimising drag could produce better results than merely increasing the effort during wall push-off since it does not increase the metabolic cost (Lyttle et al., 1998).

Aim of the work. Analyse the effects of depth on drag during the streamlined glide in swimming using Computational Fluid Dynamics (CFD).

Material and methods. The CFD analysis consisted in the use of a three-dimensional mesh of cells that simulates the flow around the considered domain. We used the K-epsilon turbulent model (Moreira et al., 2006) implemented in the commercial code Fluent® and applied to the flow around a 3D model of a male adult swimmer.

Results. The highest CD was reached at a depth of 0.25m to a glide velocity of 1.5m.s⁻¹. From this depth on and as it increases, the CD lowered, keeping unchangeable till 1.0m. The lowest CD and FD values were registered when the swimmer model was gliding at the surface at a 2.5 m.s⁻¹ velocity. To any depth, as the glide velocity of the swimmer model increased, the CD decreased, contrary to what was registered with FD, which increased with velocity.

Conclusions. The results seem to determine a decrease of drag as the depth of glide increases.

106. pap.
POR

Peixoto César

UNDERSTANDING CRITICAL INFORMATION, BEFORE AND DURING A PLATFORM JUMP: RELATIONSHIP BETWEEN DIAGNOSIS COMPETENCE AND PRESCRIPTION DURING TEACHING PROCESSES

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Key words: technical; diagnosis; prescription; motor tasks; gymnastics; learning

Introduction. The motor tasks are a whole combination of different events for several specific situations. They are dependent of three different parts. One consider the teaching through several adaptations, that we can understand like sub-routines, they allow to perform better and easier the learning process, with the induction of behavior in different skills and contexts. The second, is the own adaptation to the real model, that it is possible to adjust some kind of conditions with the propose to find the aim of the skill. The last, consider the involve sub-skills, for correcting the mistakes inside the skills.

Aim of study. It is important that teachers can have a competent diagnosis and prescription, during the learning process. The diagnosis competence, is very important, they need to know all about the skill, and everything about the learning process. The prescription competence, for pedagogical process is the other important part, because if the teachers can't modify the problems in skills, the learners can not understand and perform the skill better. Sample: The study covered 100 of boys and girls from secondary school, who wants to access the Physical Education course at university. Hypothesis: We want to know if teachers understand the influences during a platform jump between: speed; lengths from trampoline and platform; lengths from initial point and trampoline contact; lengths from last floor contact before trampoline contact.

Results. The diagnosis competence have to be related with the speed and the lengths, and we find that.

Conclusions. The prescription competence, should find pedagogical situations, applied in a context of process-product, modifications whose relationship must have a reciprocal influence between the components that contribute to the success of the task.

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107. pap.
POR

Petrica João*

THE ATTENTION OF YOUNG STUDENTS IN THE PHYSICAL EDUCATION CLASS

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Key words: student attention, invisible information, teaching process analysis

Introduction. Two types of information contribute to describe teaching and what involves it, the visible information, as behaviours or teaching strategies, and those that we can qualify as invisible, as values, attitudes, thoughts, mechanisms of decision taking, or reflection of the different actors of teaching (Pieron, 1996). Between these factors we can also include the student attention. For Wittrock (1986), the recent studies about the processes of thought of the pupils bring a distinct perspective to the theories about the effect of the teacher in the learning process, to the development of teaching theories, and to the project of teaching analysis. Therefore, in the direction to look for to know better the teaching process, to the level of that we cannot see: the thought, and particularly, the thought of those to which the learning concerns, we direct our study for the attention of the pupils, because, in accordance with Singer (1986), how much bigger it will be the attention of the person, better it will be its motor performance. In fact, it seems not to be doubt that, in education, if the pupils will not be with attention to what they are doing, their learning will leave inevitably compromised.

Problem. The basic purpose of this research was to know what students were thinking during Physical Education Classes.

Methods. For data collection we used the ATEST-PE (Petrica 2003, 2010), an instrument with a single question of closed and alternative reply, that included

almost all the reply possibilities, so that it could be filled in the fastest way. For its implementation, four different moments of the lesson were defined and after a beep or buzzer students filled out the questionnaire, interrupting the class the less possible. The questionnaire was applied during the 144 classes about pre-sports games, observed to 48 pre-service Physical Education teachers (3 classes each), involving 1117 young pupils, 10–13 years old, resulting in a total of 4468 questionnaires.

Results. The analysis of the questionnaires allowed us to get a global image of this aspect of the thought of the pupils, to be able to represent the profile of their attention in the lessons of the human movement. The attention to the task, followed of the attention to the information and the attention to the behavior are the ones that assume the biggest values.

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108. pap.
POR

Rui Paulo*, **João Petrica****, **Julio Martins*****

EFFECTS OF EXTRACURRICULAR PHYSICAL ACTIVITY AND SPORT, IN PHYSICAL FITNESS, IN BODY COMPOSITION AND PHYSIOLOGICAL PARAMETERS, THE STUDENTS OF SECONDARY EDUCATION OF THE MUNICIPALITY OF CASTELO BRANCO

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Key words: physical fitness, extracurricular sports and physical activity, body composition, physiology, health

Introduction. This research aims to assess the effects of extracurricular sports and physical activity on physical fitness, body composition (BMI and% BF) and physiological parameters that impact on health status of secondary school students. The practice of regular physical activity would have positive effects on the body (Dias et al. 2008; Lopes & Maia, 2004, Mota & Sallis, 2002), putting the question

whether it is the practice of physical activities and sports curriculum sufficient to influence the improvement of physical fitness, body composition and some physiological parameters.

Methods. The sample consisted of 250 secondary school students (both sexes), the Municipality of Castelo Branco, will be divided into three groups: control group (CG) consisting of 80 sedentary students (without practice extracurricular), experimental group 1 (EG1) consisting of 85 students who practice physical activities and sports extracurricular non-formal, and experimental group 2 (EG2) consisting of 85 students who practice physical activities and sports with supervised exercise sessions and objectives regarding the type and intensity of exercise, at least two times per week.

The study is based on the application of the test battery Fitnessgram to assess physical fitness, BMI is assessed by anthropometric measurements (weight and height) and physiological parameters through scientifically accepted equipment (blood pressure – Omron Digital Blood Pressure HEM-907; glucose, triglycerides and cholesterol – Cobas Accutrend Plus, % body fat – Scale Tanita BC-545; VO₂ máx. – Spirometer Microquark of Cosmed). Data will be processed in S.P.S.S. 17.0, by analysis of variance (Scheffé).

Expected results. Individuals in EG2 get significantly better ($p \leq 0.05$) in all tests, compared to CG. The EG1 gets results significantly ($p \leq 0.05$) better in some tests, compared to CG.

Discussion, conclusion. We conclude that extracurricular physical activity and sports with supervised exercise sessions and objectives regarding the intensity and type of exercise, helps to improve physical fitness, BMI and physiological parameters that impact on state health, of secondary school pupils of the Municipality of Castelo Branco. Physical activity and athletic extracurricular not formally presents limited effects on the improvement of those capabilities and parameters.

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109. pap.
RUS

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TYPE-SPECIFIC FEATURES OF MOVEMENT COORDINATION OF PRIMARY SCHOOL CHILDREN

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Key words: types of motor coordination, psychomotor testing, schoolchildren

Introduction. The principal problem of our research is known as a problem of „individual motor profiles” which was formulated by N.A. Bernstein in 1966.

Aim of the work. Characterization of various motor profiles among primary school age children.

Material and methods. We examined 89 Moscow schoolchildren of 8–10 years old not involved in sports. We analyzed indices from psychomotor, psychophysiology, posturography and locomotor testing during our research. Children were divided in 4 groups by applying cluster analysis.

Results. The most typical features of 1st cluster representatives are: the ability to anticipate and a high wrist speed; the 2nd cluster representatives are more successful in rapid, rhythmic, automatic actions, based on a mechanism of intrinsic programming, it is attributable to them to save an erect posture, with ineffective control of it and ability to reorganize actions. Representatives of the 3rd cluster are notable for a low level of postural control, smooth, accurate and rhythmic arm actions based on a visual feedback, and advanced sense of tempo and space sense. Representatives of the 4th cluster are the most coordinated. Their distinctive features are: preliminary programming of actions, effective posture control, effective complex hand-coordination, movement concordance ability.

Conclusions. We obtained 4 clusters which, as we suppose, can be identified as „individual motor profiles” of 8–10 years old children. The results of our research (discriminant and retesting data analysis) shows that there are no significant differences in age, gender, biological maturation, body composition within clusters, thus it can be used during sport-selection process.

Table. 1. Clusters: types of motor coordination of primary school children

Parameters	Clusters			
	1	2	3	4
Tremors level (static test)				
Tremors level (dynamic test)				
Simple reaction (elementary movement)				
Anticipation (elementary movement)				
Noise-immunity				
Ability to keep the maximal tempo (wrist)				
Smooth arm action				
Velocity of arm action				
Ability to reorganize arm actions				
Accurate arm action				
Velocity of oscillation of pressure centre («Target-test»)				
Ellips area of statokinesigramm («Target-test»)				
LFS («Target-test»)				
Points in «Target-test»				
Sense of tempo (locomotion)				
Space sense				
Complex hand-coordination				
Spatial orientation ability (locomotion)				
Movement concordance ability (locomotion)				
Ability to reorganize actions (locomotion)				
Static balancing (eyes closed)				
Accuracy				
Ability to keep the maximal tempo (locomotion)				

Colors in table:  - means value;  - smallest,  - greatest.

110. pap.
RUS **Balsevich V.K.***

ENVIRONMENTALLY FRIENDLY APPROACH TO LONG-TERM SPORTS TRAINING

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Key words: sport, environmentally friendly, sports training, rule

The purpose of the research. Substantiation of rules of organization of long-term sports training.

According to the rule of homogeneity of training influences, same training means are to be used with the same dosage of loads in training classes of one direction, consequently performed within one training pool. Here “managerial” effect consists in trainer’s precise knowledge of character, volume and intensity of loads, resulting or not in the shift in athlete’s condition and mostly information on results of certain training influences.

The rule of minimization of the contents of training influences limits the range of means of same direction, applied within one pool. Such a minimization is necessary for promoting more certain assessment of effectiveness of use of single training means. It is clear that if two or three training means are applied within one pool, it becomes much clearer for trainer and athlete which means provide for the final effect for every pool. It considerably decrease the level of uncertainty of trainer’s and athlete’s judgements on effectiveness of using this or that training mean in the same phenotypic situation.

Using the rule of necessity and sufficiency of training influences it is possible to manage the dosage of loads within one pool and in a certain measure of the occupation. Proceeding from the requirements the pool is to be finished when stabilization in development of training parameter of athlete’s kinesiological potential starts. It promotes avoiding formation of strict stereotype of athlete’s responses to training influences and timely change of the character of loads, that is transferring to the next pool.

The basic training rule: parameters of training loads are to correspond to the current state of training person and be adjusted to natural rhythm of age development of his kinesiological potential.

Conclusion. Human physical training can be determined as a specially organized process of purposeful stimulation of development and perfection of his kinesiological potential, coordinated with the rhythm of his natural development.

111. pap. **Gutnik B.***, **Skurvidas A.****, **Mitzkievichiene D.****, **Cesnavichiene V.****,
RUS **Archangelskaja J.*** **Eskina E.***, **Nash D.*****

GOAL DIRECTED MOVEMENT AND FITTS' PARADIGM ON A MODEL OF FAST REACHING TASK

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Key words: handedness, rapid aiming movements, temporal characteristics, response planning processes

Introduction. In vocational sport and daily practice many reaching tasks require both speed and accuracy. Simultaneously achieving both these requirements as are measured in the dual motor test is difficult [1, 2]. Typically, while performing a motor action, a participant is able to focus on only one requirement of the task; speed or accuracy. The views of many authors on the speed and accuracy of movements in relation to physical qualities and innate human motor abilities are contradictory. Widely known in the theory of motor control, Fitts' paradigm determines the time of motion, calculated from the distance to the target and the diameter of the target. [3,4]. However this paradigm does not take into account the time of preparation for movement, which can have a significant impact on accuracy. In addition, the literature highlights little evidence of temporal and spatial asymmetry in the production of fast and accurate movements.

The aim of our work was to investigate the influence of the duration of the preparatory phase (reaction time – TR) and duration of protractile motion of the arm (TM) on the speed and accuracy of movement. Also, the individual asymmetry of the temporal characteristics and accuracy of performance of movements were studied.

Experimenters have used goal-directed movements, performed as quickly and accurately as possible, to check Fitts' paradigm or to compare the kinematic structure of motion of the dominant or non-dominant hands. We measured three aspects of translational motion of the arm to the computerized target: reaction time (TR, sec), time of motion of the arm (TM, sec), and error in the achievement of the target ($\pm L$, mm). The group of participants consisted of 12 healthy, right-handed, untrained girls, each of whom completed 5 series of 10 discrete movements by each of the left and right arms.

Mathematical analysis of the results revealed the existence of five models of performance. Each model was represented in the participant's performance with different probability. The combination of high speed and high precision when the arm moved towards the target was found only in model 5, which combines a long period of preparation for the movement (TR) and a short time of motion (TM). The probability of its occurrence in the untrained subjects was very low (2–3%). We suggest that it may be possible to develop special methods of training, geared towards the ability to increase the probability of appearance of this model.

Asymmetry of motor action appeared clearly evident only in the parameter of accuracy (right arm committed the least errors), especially when the reaction time (TR) and movement time (TM) were close to average values of the sample. This result enables us to recommend this method for the determination of “handedness”.

The results allow us to conclude that in the process of development of new motor skills which include both precise and rapid movements we must take into account the initial values of reaction time. We also think that Fitts’ existing formula should be modified by including the parameter of reaction time.

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112. pap.
RUS **Krivolapchuk I. A.***

AEROBIC AND ANAEROBIC WORKING CAPACITY IN 13- TO 14-YEARS-OLD BOYS DEPENDING ON THE RATE OF PUBERTY

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Key words: rates of puberty, power, capacity and efficiency of energy systems

Introduction. Substantial differences in chronological and biological ages raise a number of questions regarding the necessity to take into consideration individual features of puberty in the cases of the regulation of the physical and mental work load and evaluation of adaptability.

Aims. The goal of the present study was to find out features of energy supply for muscle activity in 13- to 14-year-old boys (n = 162) depending on the rate of puberty.

Methods. A complex set of functional and ergometric tests was used in the study to estimate the efficiencies of the anaerobic alactic, anaerobic glycolytic, and aerobic working capacities of energy supply.

Results and conclusions. It was found that adolescents with moderate rates of development are characterized by higher indices of power and capacity of the aerobic

energy supply system as compared to adolescents with accelerated maturation. This group of adolescents has also been observed to exhibit a lower maximal aerobic power against a background of higher capacity and efficiency of the aerobic system functioning as compared to adolescents with slow maturation. Adolescents with moderate rates of maturation have been shown to surpass schoolboys with accelerated or slow development with respect to the power of mixed aerobic-anaerobic work. Boys with accelerated development have been found to differ from schoolboys with moderate or slow maturation by high anaerobic capacity, relatively low aerobic capacities.

This study was supported by the Russian Foundation for the Humanities (№ 10-06-00053a).

113. pap.
RUS **Krivolapchuk I. A.***

THE FACTOR ANALYSIS AND COMPLEX ASSESSMENT OF PHYSICAL WORKING CAPACITY OF SIX-YEAR-OLD CHILDREN

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Key words: children, factor analysis, physical working capacity

Aims. The goal of this work was to study the characteristics of physical working capacity of six-year-old children (n=106).

Methods. The physical working capacity of children was described using a set of functional and ergometric parameters, which made it possible to assess the power, capacity, and efficiency of mechanisms of energy supply.

Results. It was found that the physical working capacity of preschool children at this age is determined by the following five major factors: (I) aerobic capacity, (II) anaerobic glycolytic working capacity, (III) absolute aerobic power, (IV) relative aerobic power, and (V) anaerobic alactic working capacity. Sex-related differences in some parameters reflecting the physical working capacity and fitness, characterizing the anaerobic alactic and anaerobic glycolytic productivity of the body were revealed. These differences are apparently related to an advanced development of anaerobic energy-supply mechanisms of girls compared to age-matched boys. The procedure of a complex assessment of the physical working capacity of six-year-old children has been developed, which includes informative parameters characterizing the power and capacity of energy systems.

Conclusions. Differences between children with high and low physical working capacity were found to increase with an increase in the physical load aerobicity. The physical working capacity of six-year-old children can be differentiated best of all on the basis of aerobic capacity parameters.

This study was supported by the Russian Foundation for the Humanities (№ 11-06-00182a).

114. pap.
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MONITORING AND EVALUATION OF STUDENT HEALTH AND PHYSICAL ACTIVITY: METHODS, TECHNIQUES AND TOOLS

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Key words: students' health, monitoring, PD and PF indices

Introduction. Global computerization and network, unacceptably low physical activity levels and stress situations make the existing system of education one of the main health hazards for pupils. It is proven by alarming health statistics of youth, which have been showing a negative tendency over the past decades. Overloaded curriculum, focus on transfer of knowledge put children's health protection on the back burner, dramatically decrease students' motivation to do sports and physical exercises, disturb the process of their all-round development.

Method. The essence of the method lies in regular monitoring of every student's major health indices along with knowledge levels. The indices are calculated on the basis of tests on physical development (PD) and physical fitness (PF): weight, height, thorax size, vital capacity of the lungs, hand strength, physical characteristics, functional abilities of body systems, etc. The method was developed on the basis of curricula for Physical Education. It aims to carry out conceptually promising and fundamentally applied researches in education science and has an actual, potential and forecasting orientation. Public interest in youth health protection proves demand for this method. Techniques of large-scale testing include the following: taking measurements that get recorded in e-cards; calculation stage (method contains more than 50 formulas); evaluation stage that reveals quantity and quality deviations from norms set by medical science and curriculum requirements. Testing tools are a dynamometer, a spirometer, a tonometer, a stopwatch and a tape measure.

Results. Physical activity levels get integrated with knowledge levels, which allow giving complex evaluation of quality of educational services. Such monitoring approach encourages every pupil for self-knowledge and self-improvement, forming an individual path of his all-round development.

Conclusion. Monitoring PD and PF indices along with knowledge levels is an important element of evaluation of not only physical activity, but also education quality. It also allows evaluating the efficiency of innovations and investments aimed to save and improve students' health. The method developed in Kazan, host city of Universiade 2013, was approved at federal level and got tested at all-Russian advancement courses for PE teachers (2007-2011). Project titled "Monitoring PD and PF in student health protection and evaluation of quality of education" won a contest and got support from Ministry of Education and Science of the Russian Federation (2009–2011).

115. pap. **Lisovskiy Andrey, Prof. Dr. of Habil, Master Tech, Nina Lisovskaya, Mast.**
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AUTOMATIC CONTROL OF SENSOMOTORICS INDEXES IN TRAINING PROCESS OF YOUNG ALPINE SKIERS

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Key words: the younger Alpine skiing, the monitoring of sensomotoric's indicators, automation controls

Introduction. In our previous work has been established need and relevance of monitoring indicators of young Alpine skiers not only to access of special training for young Alpine skiers, but also as a means of execution forecast for high performers in alpine skiing competitions. Is the problem that the existing procedures for measurements of sensomotoriks applying these skiers require special equipment in a laboratory setting, do not reflect the specificity of Alpine skiing, do not provide the required level of accuracy of measurement in use in training process.

The aim of project. The goal of our work was the creation of specific motor tasks using computer devices for monitoring the status of sensomotoric selection for monitoring of promising young skiers during training and competition. In doing so, assumed a substantial alleviation of training intensity measuring procedures, improve the accuracy of results and ensure the storage the of the received information.

Methods. Conducted joint research staff and students of speciality "Automation, information and engineering technology" by Tchaikovsky branch and the coaches of Municipal branch of the institution „Youth Fitness Club" Edelweiss.

Results. The first engine developed by us job "Jumping on recreational» («sircles» Jumps along) "provides examinees jumps from a mug in the circle to the registration time of the signals on the screen. Route of the tested person is not known in advance. The accuracy of the job run-time, and storage of information shall be based on a special computer program. Second measuring-informative computer program is designed to record two types of specific reactions: visually-motor-motor reaction time visually on a moving object (RDO) and vision (anticipation). Objects are implemented as the ski trails at flags marking the computer screen, which grow by simulating an approximation to the athlete in skiing slopes. The program performs the processing results in an error response values. The third program used in the original stand to register exactly remember and play with alpine skies the placement of gate slopes, as well as for registration of a sense of speaking between the gate and the sense of rhythm tracks.

Conclusions. Developed specific indicators for monitoring automation sensomotoriks indexes in sportsman-skiers are able to improve the efficiency of training process.

116. pap.
RUS **Lisovskiy A. Prof. Dr. Habil. Mast. Tech., Lisovskaya N., Mast. Habil**

SENSOMOTOR MONITORING OF YOUNG ALPINE SKIERS

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Key words: alpine skiing, sensomotor monitoring, controlling automation

Introduction. In our previous works was shown the necessity of young sportsmen sensomotor monitoring. The problem was formulated: the laborious sensomotor monitoring takes the field-research equipment, often unspecific and imprecise.

Aims. The aim was to work out the computer-assisted kinetic tasks used to solve the problems of the sportsmen sensomotoric controlling.

Methods. The instructor-and-student researches of the “InfoEngineTech Automation” chair did in Tchaikovsky branch and Children sports club “Edelweiss”, as the creative cooperation.

Results. Our first kinetic task “Jumps along circles” provides examinees the order of jumping and time keeping according to signals on the computer screen. The moving direction is previously unknown by examinee. The task accuracy and the time of jumping were registered with the computer program. The second program supports measurement techniques of reaction of alpine skiers and submits the following information: time of visual-motor reaction to the “coming object” (RCO) and foresight reactions of anticipation. Objects are realized on the screen as the skiing track flag marking with the increasing in size simulating. The third program was used for the memorizing not just the track gate placing, but also the rhythm and time of sportsman’s movement between. Seeing and memorizing the track gates on computer’s screen was allowed to examine the visual sportsmen memory.

Conclusions. The computer devices were used in training process of young alpine-skiers.

117. pap.
RUS **Lubysheva L.I.***

SPORTS CULTURE IN RUSSIAN EDUCATIONAL ENVIRONMENT

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Key words: sport, culture, education, culturological approach, educational subject, students, schoolchildren

The aim of the present research was to substantiate the phenomenon of sports culture as a resource for construction of Russian educational policy.

Methods. Sociological analysis.

Research results and substantiation. The new system of ideas on the values of physical and sports culture presupposes rejection of its pragmatic use only as phys-

ical training, learning of motor actions. Culturological approach in understanding of the modern sport promotes not only teach physical exercises, form human physical and sports potential, but actively influence the motivation sphere of the engaged ones, form his personal qualities and sports way of life. It provoked the necessity of shifting accent from general physical education to mastering the values of sports culture. In children, mass, school sport the basics of personal sports culture are laid. While growing athlete masters more knowledge, skills and abilities, uses innovation technologies for results and performs in high-rank competitions. Further development of personal sports culture takes place in this period, the athlete is required to have professional attitude to sports activity, maximum realization of abilities, skills, psychological spirit, self-discipline. High concentration and commitment is required for achievement of high sports result, victory and record.

Conclusion. If the basics of personal sports culture are laid in children sport, such an athlete most likely won't allow himself to use dope, unfair means, demonstrate his popularity. Athletes showing phenomenal sports results are mostly idols of millions of people, show high human qualities and thus have elite level of sports culture, determined as professional sports culture.

118. pap.
RUS **Malkin V., L. Rogaleva**

SETS OF COACHES AND SPORT RESULTS OF YOUNG SPORTSMAN

Ural Federal University, Ekaterinburg, Russia

Key words: relation, coach, sportsman, measurement

Introduction. The research organized at school of a Olympic reserve has shown, that almost 70% young sportsmen instability of sport outcome and many from them leave sport, having not realized their possibilities completely very often. The reason of such situation was revealed during research of it and mutual relation between the sportsmen and coaches in sports groups. It was revealed 2 types coaches: the coaches are having set on sports result only and coaches with professional – pedagogical set. Dynamics of parameters of a psychological climate after 3 years of trainings was investigated. The technique the trainer – sportsman was used for research. In this technique the relation of the sportsman to the trainer on emotional, behavioral, professional components from 6 points were measured.

Result. The deterioration relation between coaches and sportsmen was observed in groups coaches with set on result. It was marked the reduction of estimations on emotional (4,4 and 2,6 < 0,001), behavioral (5,6 and 3,2 < 0,001), professional (6,4 and 3,1 < 0,001) components of the relations. This leads to the increase of parameters „of absence of co-operation” (4,1 and 5,6 < 0,01), „disagreement” (4,2 and 6,1 < 0,01)”, coldness in the relations” (5,0 and 6,4 < 0,001) „indifference” (3,6 and 6,1 < 0,001) and „dissatisfaction” (4,2 and 6,3 < 0,001) in sport activity. On the contrary the deterioration in mutual relation between coaches and sportsmen is not observed in groups of the coaches with professional – pedagogical set. The preser-

vation level on emotional (6,4 and 6,5), professional (7,3 and 6,5) and behavioral (6,3 and 6,2) components in relations and the authentic improvement of parameters on scales „warmth” (5,0 and 6,8), «cooperation” (4,9 and 5,3), interest (3,0 and 3,8) and satisfaction (4,2 and 4,8) is simultaneously marked in these groups. Higher and stable level of sports results at the sportsmen in groups of the trainers with professional – pedagogical installation was simultaneously marked.

Discussion. Thus given researches allow to assume that lower results and higher elimination of the sportsmen in groups of the trainers with set on only on sports result is explained also by that adverse psychological climate, which develops in these groups. At the same time the distinction on a scale „successfully” between sportsmen was not marked (3,6 in groups with set on result and 3,4 in groups with professional – pedagogical set). Thus It testifies that the decrease of motivation to employment by sports, felling dissatisfaction in groups with set only on sports result is determined not as result of decrease of sports successes at the given sportsmen, but those mutual relation, which develop in these groups.

119. pap.
RUS **Rogaleva L., V. Malkin**

THE SYSTEM OF PSYCHOLOGICAL SUPPORT IN YOUTH SPORT

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Key words: development, young generation, psychology

Introduction. The development of children’s and youth sport is not only the most important factor for forming of good health of young generation but it also makes a foundation for developing the sport of highest achievements Preparing a sportsman means the developing of his physical, psychological qualities, technical and tactical skills. At the same time as the praxis of children’s and youth sport indicates, the efforts of coaches are directed only at the achievement of sport results. Existing system covers generally the improvement of both physical qualities and technical, tactical skills to the prejudice of psychological and personal qualities of a young sportsman that does not favor his character formation when we consider him as a personality. Under the influence of this guideline the young sportsman’s education is coming out of his coach’s view that has a negative influence on achievement of sports results. Such a situation is caused by the absence of psychological support in children’s and youth sport. There are no recommendations for working with young sportsmen in syllabuses of children’s and youth sports schools as well. Thereby children’s trainers can not organize the training process in a proper way that has been proved by a considerable elimination of young sportsmen in the first training phase. Taking in consideration the situation described before it is necessary to create a psychoeducational system to support the young sportsman activities. This system appears to include the improvement of personal qualities, forming of sports motivation, psychological stability, self-control ability that will facilitate sports achievements. The most important personal qualities for achieving mentioned objectives are self-determination,

purposefulness and responsibility. No less significant fact is development of such psycho-physiological characteristics as attention focusing, psychical self-control, psychological stability, the improvement of them will advantage the sport results.

Methods. To achieve mentioned objectives we introduce a technology for psychological support of young sportsmen. This technology includes several stages. The aim of the first stage is forming of positive motivation for sports activities. The second stage is devoted to individualizing. The third stage is the stage of perfection.

Results. As the researches on using this technology for young sportsmen showed, self-control rates increased from 34 to 52%, responsibility rates from 20 to 48%, aspiration level from 2,57 to 2,79, attention focusing from 9 to 5,2. The acquired results allow us to consider that this technology gives an opportunity for a trainer working with young sportsmen to carry out effective psychological support.

120. pap.
RUS

Shakhanova A.V.*, Lyausheva S.A.**

INFLUENCE OF TRAINING LOADS ON ONTOGENETIC DEVELOPMENT AND REGULATOR-ADAPTIVE POTENTIALITIES OF YOUNG FOOTBALL PLAYERS

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Key words: young football players, ontogenetic development, training loads, an integrated model, adaptive potentialities

Adaptation of children and teenagers is specific: their organisms adapt to large training loads against a background of intensive process of growth.

The aim is to create a morpho-functional and regulator-adaptive model of ontogenetic development in conditions of football training.

Methods include longitudinal definitions of PWC170 (kgm/min/kg) and $VO_2\max$ (ml/min/kg) indicators, wave structure of heart rhythm variability and somatotype using hardware-software complexes.

Results show that HF-waves dominate in a spectrum of heart rhythm variability at age of 11 years. The age of 12 years is a central period in shaping regulator-adaptive mechanisms. At age of 14 years, tension of these mechanisms occurs along with pubertate jump of growth. Heterogeneity of forms of somatic development is observed at retarded and accelerated puberty. Negative adaptive situation develops at transition from one puberty stage to another. Age dynamics of PWC170 and $VO_2\max$ is closely interfaced to dynamics of sexual and somatic development and to a somatotype. Young sportsmen of mesomorphic somatotype have the highest PWC170 and $VO_2\max$ indicators. Activity of their cardiovascular system is more economical owing to dominating HF-waves in a spectrum of heart rhythm variability. An integrated model of growth, development and adaptation of children's organism to conditions of football training was created.

121. pap.
RUS **Son'kin Valentin^{*1,2}, Ritta Tambovtseva^{*1,2}, Galina Maslova^{**1}, Diana Bukreeva^{**1}, Rimma Vasilieva^{**1}, and Vladimir Demin^{**1}**

AGE DEVELOPMENT OF MUSCULAR FUNCTION ENERGY SUPPLY

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Key words: muscle function, energy supply, children and adolescents, fiber composition, physical working capacity

Introduction. The investigation of energy supply evolution in children and adolescents is a necessary way to optimize motor function development for sports and health.

Aim of the work is to make some representations about the ways of muscle metabolic activity development in the course of ascending ontogenesis.

Material and methods. We present a review of our more than 30 years investigations including human and experimental animal data collected with numerous physiological, anthropological, biochemical and histochemical methods.

Results. The aerobic source reaches a high level of development even in 9–11 years that is caused by specificity of energy metabolism development in skeletal muscles. The anaerobic glycolytic source becomes more powerful only in the beginning of puberty under the influence of sexual hormones. The greatest development of the phosphagenic source also is provided in puberty due to certain reorganizations of functioning of the creatine kinase in skeletal muscles. The structure of muscular fibres in skeletal muscles passes some stages of consecutive changes. Oxidative fibres prevail till 11–12 years whereas with the beginning of puberty the quantity of type II fibres promptly increases. Age dynamics of muscles performance development is highly modulated by individual constitution type.

Conclusions. Age changes of muscle working abilities in youth are caused by tissue and systemic reorganizations which form limits of training conditions for children and adolescents.

122. pap.
ROM **Nichifor Florin*, Dumitru Iulian***

CULTURAL SPECIFICITY WITHIN A SPORTS ORGANISATION (SPORTS CAMP)

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Key words: intercultural management, cultural specificity, cultural dimensions.

Introduction. The research aims to identify and analyze cultural specificity elements within the sports camp Oglinzi Târgu Neamț (Romania), in comparison to other two sports camps (Muncel Iași and Arted Durău, of the same geo-cultural area), focusing upon: the activity of the manager and of the management team, employees' attitude, clients' behaviour in the context of the efforts made for the camp to function well.

The purpose of the research is to analyze the staff management structures (Human Resources) of a camp, taking into account the origin and cultural belonging, as well as the way the cultural specificity potential is valorised within a sports camp: studying the value system, the norms, attitudes, beliefs (according to Hofstede, Fons Trompenas, Edward Hall).

Means and methods. The research focused upon adapted certain organizational culture evaluation surveys according to Hofstede's model (Survey H 2 2006, with an Alpha Cronbach reliability index of at least 0.65 for each of the five factors). After selecting the items of this 60 items survey we developed two new forms: Survey A – with 50 items applied to the management staff of the three camps; and Survey B – with 20 items to follow the clients' feedback in the three camps. We applied the surveys in order to identify the cultural dimensions of G. Hofstede, F. Trompenaars, and Ed. Hall, as well as the extent to which they are valorised in the three camps studied. The research sample comprises 332 subjects, of whom 34 are represented by the management staff of the three camps (14 persons in the Oglinzi camp, 10 persons in the Arted camp, and 10 persons in the Muncel camp). The rest of 298 are represented by clients of the three camps (171 persons in the Oglinzi camp, 77 persons in the Arted camp, and 50 persons in the Muncel camp). In order to see any differences in the approach of the management cultural dimensions that we studied, we used the ANOVA One Way test.

Results. The highest average value for the dimension “distance in relation to the power” was obtained in the Arted Durău camp, indicating an organizational culture where there is little distance between the bosses and the subordinates. The lowest average value was obtained in the Muncel Pașcani-Iași camp, which suggests a higher hierarchical distance perceived by the employees and the clients. In the Oglinzi Târgu Neamț camp, the employees and the clients saw a greater distance in relation to the power than those of Arted Durău, but it was at the same time lower than those of Muncel Pașcani-Iași.

Conclusions. The cause-effect interpretations have helped understand the cultural influences upon the management of a sports camp. The two statistical hypotheses have been partially confirmed by the results obtained and quantitatively expressed. We have found arguments to motivate the need for the management of a sports camp to have a better insight on the cultural specificity of their field, as well as the necessity to valorise the organizational cultural differences.

123. pap.
ROM **Popescu Veronica**

COMPARATIVE ANALYSIS OF THE FAIR-PLAY VARIABLES, SELF-DETERMINATION AND SOCIAL INTEGRATION ATHLETES

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Key words: fair-play, attitude, training, performance

Problem statement. Importance self-determination in the conduct of fair play athletes

Aims. The aim of this research is to emphasize the moral dimension's presence and its necessity into athletes training, reflected into the fair-play attitudes and behaviors. The main objective is to identify some possible correlations between variables: fair play, moral values, to highlight at athletes their fair-play into competitions and training. The issue aims to study the likelihood of a direct correlation between variables like general fair play, fair play in competition, fair play and self-determination into society.

Research methods. The research was conducted on a total of 150 subjects prepared by several variables (gender, age, sports, skill level). Analysis and interpretation of results was performed by using SPSS 11.0 for statistical analysis Pearson bivariate correlation between next variables: general fair play, fair play in competition, fair play and self-determination into society.

Results. In qualitative terms, the correlations found between variables of fair play in competition, general fair play and fair play in society point to the fact that athletes who exhibit a fair play behavior in competition will manifest the same type of behavior in social life. Norms, rules, and sports standard orders, as well as social norms and rules of social life mark on the athletes' behavior, which are internalized and behave in a spirit of fair play.

Conclusions. Fair play does not mean only to follow the rules of the game, it transcribes the attitude that the athlete must have: to respect the opponent and keep his physical and mental integrity. An athlete will behave in an attitude of fair play when he will think to others. Moral values (altruism, honesty, faith, dignity, responsibility) and psychosocial ones (self, love, openness, social recognition, independence) are mainly related to individual networking with peers and social and moral desirability.

124. pap.
ROM **Ungurean Bogdan*, Cojocariu Adrian*, Abalasei Beatrice***

CARDIO-RESPIRATORY FUNCTION IN CHILDREN WITH MENTAL DISABILITY AND CHILDREN WITH DOWN SYNDROME

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Key words: mental disability, heart rate, respiratory rate.

Introduction. In the present paper we assess how and to what extent mental disability influences heart rate and respiratory rate of children from special educational level.

The aim of the study is to identify the possible malfunctions of two physiological parameters (heart rate and respiratory rate) due to the mental disability. As a hypothesis, we consider that there are significant differences between children with mental disability and children without mental disability regarding heart rate and respiratory rate at rest.

Material and methods. We included in our research 35 subjects from Gura Humorului city (Romania), aged between 12 and 16, with various degrees of mental disability, from special educational level. The measurement of heart rate at rest was realized with the Beurer electronic device. The respiratory rate at rest was determined by the number of normal breathe in-breathe out cycles per minute (by putting the palm on the sternum region). The measurements were taken at the same moment of the day (in the morning, between 10 and 12), the subjects sitting on a chair.

Results. There were no significant differences ($p>0.05$) regarding the heart rate among the four groups. Also, the respiratory rate frequency increases at the same time with the degree of mental disability.

Conclusions. There is the possibility for children with mental disability to compensate low heart rates with higher respiratory rates. The high values of the variation coefficient for the heart rate in the case of children with severe mental disability and with Down syndrome could constitute a future research theme for a more minute exploration of the cardiac function for these subjects.

125. pap.
SER

Jevtic Branislav*, Milos Djordjevic**

RESIDUALS OF SWIMMING AND ABILITIES IN WATER AND ON LAND

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Key words: residuals effect of exercise, swimming, motor abilities and skills

Introduction. After the training practices and exertion that last several weeks, months or more, and the accumulation of their loads, there is a considerable impact on many functions of the organism in terms of their improvement. Training leaves marks or residuals – improvement of the cardiovascular, respiratory, muscular, skeletal, motoric and neuromuscular system, which in theory is called the residual.

Aim of the work. Research of residuals can be considered a trend in training technology, whereby this research is marked by a small quantity of samples, limited duration, partial or total interruption of training, and a few studies related to motor skills. The subject of this paper considers 10 PE students and the effects of 30 days of non-swimming on the residuals of for 4 months of swimming lessons had on them.

Material and methods. Measurements of motoric and functional abilities in the water and on land were made at the end of the lessons and at the end of the interruption of swimming for 30 days, which led to the following conclusions (Results):

- swimming kinetics changed (duration, frequency and length of strokes) in the direction of extension of the stroke duration;
- volume of swimming at the 20 minutes test was reduced by 5% as the measure of swimming endurance
- force and the propulsive power of forearm and shoulder muscles measured on the isokinetic dynamometer decreased by 10%
- strength and endurance of leg extensor muscles was reduced by 6%
- extent and intensity of running the Shuttle run test remained the same.

Conclusion. The results of this study point to the existence of close connections between capabilities that provide persistence in swimming and capabilities on land, as well as to a large decrease of monitored parameters after 30 days absence of swimming.

126. pap.
SLO

Cepková Alena

PHYSICAL FITNESS AND MENTAL HEALTH OF STUDENTS OF UNIVERSITY

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Dynamics of changes in the way of life increases the demand for social adaptability of humans to the changed living conditions. It belongs to the transition to university studies. Increases the psychological stress, reduce the demand for movement and physical exertion. Predominant is sedentary lifestyle. For university students dominated activities focused on education, in order to acquiring knowledge in specialized fields. Physical education is in many cases the only one physical activity during their study. Assessment of the state of physical development, physical fitness of students is an important part in terms of comprehensive development of students. The proof is on the various research works (Buková 2010, Mária Kalinková – Vladimír Šutka 2010, Palovičová 2003) in which the authors evaluate the dynamic level of physical fitness and physical development students of university.

Object of investigation was a students from FME STU Bratislava. 4 measurements: n = 320 (A) 2.sem. ac.year 2008/09, n = 238 (B) 1.sem. ac.year 2009/10, n = 264 (C) 2.sem. ac.year 2009/10, n = 194 (D) 1.sem. ac.year 2010/11. Testing conducted on the hour of physical education (PE), at the beginning of the semester. On each on the hour PE we tested the current mental state (CMS). Physical fitness we have searched by UNIFITTEST

Individual measurements are documented, that during the study to students with no significant changes in tests. We found that students belong to a group of people, with almost no risk cardiovascular diseases and diseases resulting from obesity.

Results of UNIFITTEST: lie-set60s was 40 to 42 repetitions, jumping from place to achieve 215 cm, in pull-ups made from 5 to 7 bends. Its mean the students

achieve average values. In CMS up to 80% of students had an hour before a negative current mental state, this means that they were sad, tired, no mood (0%) and only some 20% had before PE current mental condition excellent, happy, cheerful, with vigor, active (100 %). After PE up to 67% of its students are marked with CMS in a great, happy, cheerful, with vigor and only 20% are marked with CMS in their sad, tired, no mood. Very important to confirm the positive impact of physical activity on the current mental state, which encourages students to play an active approach to the sport and raise awareness of their own health and indirectly to improving physical fitness. Students with better physical fitness were more resistant to stress and mental stress, they were more balanced.

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127. pap.
SLO

Kokinda Marek, Milan Turek, Róbert Kandráč

CONSTRUCTION OF THE FACTOR MODEL FOR THE FITNESS ASSESSMENT IN ICE HOCKEY PLAYERS

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Key words: construction, factor model, diagnostics, ice hockey

Introduction. The selection of appropriate and verified methods in both specific and general conditions has to be performed on the basis of diagnostics, through which the indefinite character of exercises is eliminated.

Aim of the work. The purpose of the study was to devise a probability model the application of which would refine the diagnostics of parameters of actual and continuous state in ice hockey players, using factor-analytical procedures.

Material and methods. Tests and test-related norms in the test battery 1 of the Methods Department of the Slovak Ice Hockey Federation (MD SIHF) include general and specific tests for individual age categories. Using the materials of MD SIHF, we devised a test battery 2 for the assessment of general and specific motor fitness. Test battery 2 included field and laboratory tests measuring strength, lower-body flexibility, skating speed and agility. The results were processed by the procedures of correlation and factor analysis.

Results. In the test battery 1 of the MD SIHF four factors, which are indicators of conditioning abilities, were extracted. With regard to the conducted analysis, we may conclude partial incompleteness of the battery and the need to complement the battery with test items, which are more indicative of skating performance. The saturation of five factors within the test battery 2 demonstrated hierarchy of individual parameters, which are actually indicative of skating performance.

Conclusion. With high degree of probability, it is possible to conclude incidence of common base of running parameters (factor model 1), which despite different character of load bears identical base. This contradiction represents certain knowledge paradox indicating that the implementation of these items into the test battery does not sufficiently assess the general fitness in ice hockey players and their number seems to be redundant.

128. pap.
SLO

Uvažek Marian

EVALUATION OF GAMES PERFORMANCE IN BEACH VOLLEYBALL DEPENDENCY LEVELS ATTACK FROM LEVEL OF QUALITY RECORDINGS

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Aim of the study. Volleyball is in the objective analysis of games currently in predominant method of evaluating game performance. This method is based on observation and analysis activities player during the match. Evaluate the quality of implementation of individual gaming action. The aim of this paper was to examine how influences of quality levels attack hit the level of quality recordings.

Material and method. The task was to explain causal chain of consequential relations of the individual gaming action. Studied group consisted of 19 representative teams, couples in beach volleyball, which was attended by European Championship 18 years players. We based on empirical experience that the quality of previous gaming activities of the individual significantly affects the quality of not only immediately following, but also in order for further gaming activities of the individual. At the level of the whole file, we found no significant relationship $\chi^2 = 68.173$, $p < 0.01$. Thus, the level of quality offensive impact significantly depended on the level of quality pass. The objectively-logical point of view, it follows that a higher force attacks hit after acceptance submissions is dependent on exact pass, after which the young players have erred significantly less or ineffective attack. With decreasing levels of quality pass, decreasing the level and quality of attacking hit.

Conclusion. For the sporting success of teams in that game and the match is important that every beach volleyball player completely handled game all the activities of individuals, regardless of how often in that game and the game frequently, and what role players in the match are met. Is optimal when both players in the team are universal.

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129. pap.
SLO **Zemková Erika, Ollé Gábor, Hamar Dušan**

ENHANCEMENT OF POWER IN CONCENTRIC PHASE OF CLOSED CHAIN EXERCISES WITH DIFFERENT COORDINATION DEMANDS

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Key words: back squat, hip sled, jump, power output

Introduction. Theoretically, the difference in power in concentric phase of exercises performed with and without countermovement (CM) can be considered as an indicator of the capability to utilize elastic energy. Jumping is commonly used for this purpose. However, hip and knee extensors involved in jumping are usually exercised by performing the hip sled or back squat. The question remains whether familiarity with these exercises plays a role in potentiation of power in concentric phase of lifting.

Aim of the work. The study compares the difference in power output of concentric-only and CM closed chain exercises with different coordination demands in individuals with resistance training experience.

Methods. A group of 24 men (age 22.2 ± 3.6 y, height 181.9 ± 9.5 cm, weight 81.8 ± 9.8 kg) performed in random order jump, back squat and hip sled with 60% 1RM (e.g., the weight of 60 kg for jump and back squat and 90 kg for hip sled was used). A PC based system FiTRO Dyne Premium was used to monitor the power in concentric phase of lifting. The difference in power output obtained from exercises with and without CM (ΔP) was used for the analysis.

Results. The ΔP was significantly ($p < .01$) greater during back squat than during jump (71.1 ± 12.0 W and 38.0 ± 6.7 W, respectively) in most of the subjects ($n=19$). Contrary to this, rest of the group ($n = 5$) performed significantly ($p < .05$) better during jump than during back squat (73.1 ± 18.7 W and 50.5 ± 13.1 W, respectively). However, there were no significant differences in ΔP during hip sled in both groups (80.5 ± 13.7 W and 89.1 ± 16.0 W, respectively). Different enhancing effect of hip sled as compared to jump and squat may be ascribed to different force and velocity requirements (e.g., a resistance of 90 kg vs. 60 kg + body weight). Also different demand on coordination during exercises performed from a supine and an erect position has to be taken into account. However, during weight-bearing exercises, most of the subjects were able to better utilize elastic energy in back squat rather than in jump. This may be attributed to good technique in squat of fitness-trained subjects, who, in turn, were not familiar with barbell CMJs. It is because jumping provides more demand on balance and weight bearing forces than squat.

Conclusion. These findings showed that most of the subjects with resistance training experience are able to better potentiate the power in concentric phase of countermovement squat than jump. This fact has to be taken into account in testing because lack of familiarity with the test may underestimate the true capability to utilize elastic energy.

130. pap.
SLV

Vodicar Janez*, Bojan Jost*

THE FACTOR STRUCTURE OF THE VARIABLES OF THE LENGTH OF THE JUMPS AND CHOSEN MORPHOLOGICAL CHARACTERISTICS OF SKI JUMPERS AND THEIR EQUIPMENT

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Key words: ski jumping, morphology, equipment

Introduction. Ski jumping technique is determined mostly with the morphological characteristic of ski jumpers- ski system. In the previous ten years, there has been a major selection according to their Body Mass Index. Jumpers with smaller BMI were more successful.

Aim of the work. This research project was carried out with the purpose of finding the factor structure relation between the length of the jumps and selected morphological characteristics of ski jumpers and their equipment.

Material and methods. The best Slovenian ski jumpers (n=29) jumped seven times on the jumping hill in Hinterzarten (HS95m) without the break between rounds on August 20, 2008. Analysis was made on the variables that determine the length of the jumps (seven variables), the age of ski jumpers and 19 morphological variables of ski jumpers and their equipment.

Results. The four factors that were ruled out explained 82% of total variance (TV). In the first dominant factor of the basic morphological profile, accounting for 41.3% of total variance, the basic morphological variables showed the highest projections with a smaller correlation with the variable length of the jumps. The specific morphological variables with dominant projections of variable length of jump formed a homogeneous structure of the second factor, which may (with good reason) be called the specific morphological factor of ski jumpers; it explained 20.5% of the total variance. According to the scale of factor loading, the following morphological variables were predominant in this factor: body mass index (-0.60) and body mass (-0.53). The third, more specific factor of the volume of legs explained 14.3% of total variance; the projection of variable thigh circumference (0.74) was prevalent. A small number of high factor variable saturation was also seen in the fourth factor of morphological index: lift, which accounted for 6.6% of total variance.

Conclusions. The results of the factor analysis are interesting primarily because they reflect the specificity in expressing of ski jumping morphological factors, as

it is conditioned by ski jumpers' specific movement techniques. In the previous decade, the development of equipment and flight technique resulted in the selection of extremely light jumpers.

131. pap.
TUR **Karli U.***, **Acikada C.****, **Hazir T. ****

VALIDATION OF FOOT TO FOOT BIOELECTRICAL IMPEDANCE ANALYSIS TO HYDROSTATIC WEIGHING IN ELITE MALE WRESTLERS

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Key words: validation, hydrostatic weighing, BIA, body composition and wrestling

Introduction. Foot to foot bioelectrical impedance analysis (BIA) provides an affordable and practical assessment of body composition (BC). However, use of inappropriate equations in BIA measurements can lead systematic prediction errors.

The aim of this study was to compare foot to foot BIA to hydrostatic weighing (HW) in elite senior male wrestlers, and to develop regression equations for estimating BC.

Methods. Hundred highly active elite male senior wrestlers (mean \pm SD, age: 21.10 \pm 2.904 yr; height (Ht): 171.853 \pm 7.188cm; body weight (BW): 78.654 \pm 15.715kg) were participated in this study. Each subject's percent body fat (%BF), fat mass (FM) and fat free mass (FFM) was assessed by using BIA and reference measurement HW. Paired t test, Simple and Multiple Linear Regression Analysis was performed for statistical analysis.

Results. Results of paired t test revealed that there was significant ($p=0.001$) difference between %BF, FM and FFM values obtained from HW (%BF: 9.821 \pm 3.475; FM: 8.191 \pm 4.920kg; FFM: 70.463 \pm 11.341kg) and BIA (%BF: 11.494 \pm 3.970; FM: 9.585 \pm 5.259kg; FFM: 69.064 \pm 10.994kg). The BC values obtained using BIA were related with those obtained from HW regarding to %BF ($r=0.818$, $p=0.001$), FM ($r=0.935$, $p=0.001$) and FFM ($r=0.986$, $p=0.001$). However, BIA significantly overestimated %BF (BIA-HW=1.673 \pm 2.298%) and FM (BIA-HW= 1.394 \pm 1.866kg) and underestimated FFM (BIA-HW=-1.399 \pm 1.873kg) compared to HW. By the use of Multiple Linear Regression Analysis two equations were derived for FFM to use in BIA measurements. The explanatory variables of the equations were BW, Ht², impedance (Z), and impedance index (Ht²/Z). R² and SEE of the equations are given as followed: R²=0.985, SEE =1.304kg (EQ1); R²=0.984, SEE =1.332kg (EQ2).

Conclusion. The data as an outcome of this study indicated that foot to foot BIA presented no expected accuracy in estimating BC of elite senior male wrestlers. Therefore, prediction equations with high R² and low SEE were derived for FFM of elite male wrestlers to use in BIA measurements. Population specific equations should be developed for accurate estimation of BC in specific homogeneous groups.

132. pap.
UKR **Chermit K.D.***

SPORTS LATERAL STRESS (PROBLEM STATEMENT)

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Key words: a lateral dominant, dextrastress, laewisstress, lateral stress, a principle of taking laterality into account, sports training

Introduction. Bilateral regulation at realization of movements and adaptation of an organism to unusual environment generates at left-handers a condition characterized by the term „dextrastress”, which described initially the states arising at violent re-teaching left-handed children to write by the right hand. The phenomenon of dextrastress is observed in other kinds of impellent activity including sports and professional training.

The aim of the work is to theoretically prove that there is a problem of lateral stress and this phenomenon should be taken into account at construction of sports training system.

Methods of theoretical research, such as an axiomatic method, idealization and a hypothetical-deductive method are used.

Results. According to dialectic laws of the nature, dextrastress should have the opposite display, laewisstress (left-hand stress), which is often disregarded in system of movement training. Dextrastress is displayed at the pronounced left-handers rather than at all left-handed sportsmen. Laewisstress affects the overwhelming majority of sportsmen since under the influence of right-handed culture ambidextrous individuals, inclined to right-handedness or to left-handedness, get a right-handed dominant. As a result they encounter a problem of insufficient skill in realizing movements to the left.

Conclusion. Existence of dextrastress and laewisstress provides occurrence of the generalized phenomenon of lateral stress, which should be regarded as a principle of construction of system and process of sports training.

133. pap.
UKR **Chernyak A.N.*, Lyakh U.E.** , Zenin O.K.*****

QUATTITATIVE EVALUTION OF PSYCHOPHYSIOLOGICAL CONDITION OF A PERSON

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Key words: psychophysiological condition, neural network modeling, speed of processing of information, subjective evaluation

Backgrounds. The abstract is devoted to the quantitative evaluation of psychophysiological conditions of the person. The quantitative evaluation can be expressed through successfulness of carried-out activity based on the data of the speed of

processing of information, pulse rate and the results of analysis of a differentiated self-evaluation test of the functional condition of an examinee in the following categories: self-evaluation of health, activity and mood. The possibility of an evaluation of 18 successfulness of carried-out activity with the help of nonlinear neural network model was shown in the study. The advantages of neural network modeling before classical methods of linear discriminant analysis are justified in the case of presence of nonlinear connections between investigated variables. The method of numerical simulation proves the presence of nonlinear connections between the parameters of the model. It is established that the speed of processing of information substantially contributes to the evaluation of successfulness of carried-out activity, which characterizes individual abilities of people in general. But, usually, the better results are demonstrated by a person, the greater is the influence of subjective factors on successfulness of activity.

134. pap.
UKR **Sokrut Valery***, **Igor Shvirenko****, **Elena Povazhnaya*****, **Vadim Popov******

REHABILITATIVE APPROACH IN A SPORTS MEDICINE

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Key words: sports medicine, rehabilitation, principles of organization.

Introduction. Sports Medicine (SM) – a range of medicine, which includes a prevention, treatment and rehabilitation of pathological conditions, diseases and injuries. It is associated with lack or excess of a physical activity.

Aim. Rehabilitation diagnosis should be based on a definition of the main pathogenetic syndromes.

Methods. History diseases and clinical investigations were carried out in an athletes and sportsmen. The research includes 746 persons, age from 18 till 48.

Results. The research showed that diseases and injuries due to physical activity, are accompanied by impairments of an adaptation. We observed disneurotic syndrome – 57%, dishormonal syndrome – 27%, disimmune syndrome – 32%, dismetabolic syndrome – 63%. We occurred the general disorders (the impairments of blood circulation -34%, disalgia – 74%, inflammatory syndrome – 82%) too.

Conclusions. Determination of pathogenic syndromes allowed:

- to justify the rehabilitation approach in sports medicine which is based on the use of complex treatment (remedies and additional technique, treatment exercises);
- to develop and describe the preventive and rehabilitative model of syndromes, which occur most frequently (disvegetative syndrome – 83%, hypertensive syndrome – 34%, asthmatic syndrome – 22%, articular syndrome – 65%, skin syndrome – 35%);
- to justify and apply the adaptive nutrition which corrects the regulatory and functional systems of the organism;

- to develop a principles and methods of psychotherapy, which corrects the mental state of a person and accounts the “vegetative passport”.

Conclusion. Determination of pathogenic syndromes in SM will allow to improve a prevention and treatment of the pathology which associated with physical load.

135. pap.
UKR

Sokrut Valery*, Igor Shvirenko, Elena Povazhnaya**, Inna Zubenko****

THE REHABILITATION PROGRAM „LONGEVITY”

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Key words: longevity, rehabilitation, adaptation, reactivity

Introduction. Longevity is an optimal duration of life with preservation of its quality. It's a general adaptation, which is determined by the reactivity of the organism. It depends on the condition of the nervous, endocrine, immune and metabolic systems.

Aim of the work. Extension of longevity by identifying organism reactivity and its correction use by of rehabilitation factors.

Methods. History disease, clinical, physiological and biochemical investigations. The research includes 1226 persons, age from 29 till 65.

Results. The research showed that healthy people have normal reactivity of an organism. It is a basis of health and good adaptation to stress. Patients younger than 40 years have a hyperreactivity. The sympathetic disfunction forms it. Excitation processes in the central nervous system prevail. Elevated level of catabolic hormones in the blood circulation, immune deficiency and acidosis were observed. Patients older than 40 years have a hyporeactivity. The parasympathetic disfunction forms it. Inhibit processes in the central nervous system prevail. Elevated level of anabolic hormones in the blood circulation, allergic reaction and alkalosis were observed. We have developed a longevity rehabilitation program, which are based on the correction of the adaptation, vegetative regulation and reactivity. We have received a positive result when have used these programs.

1. The rehabilitation program „Vegetative passport” – definition of vegetative balance and its recovery in patients with sympaticotonia or parasympaticotonia.
2. The rehabilitation program „Mental activity” – normalization of processes of excitation and inhibition in the central nervous system and improve the blood supply of a brain.
3. The rehabilitation program „Hormonal balance” – the rehabilitation of a hormonal disfunction.
4. The rehabilitation program „Immune adaptation” – the rehabilitation of the patients with allergic reactions and immune deficiency.
5. The rehabilitation program „Adaptive nutrition” – the rehabilitation of the dismetabolic impairments.

Conclusion. Reactivity of the organism must be identified to increase of a longevity. The proposed rehabilitation program can be used for the correction of reactivity impairments.

136. pap.
UKR **Sokrut Valery*, Igor Shvirenko**, Elena Povazhnaya**, Inna Zubenko**,
Irina Tereschenko*****

THE REHABILITATION PROGRAM „VEGETATIVE PASSPORT”

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Key words: sympaticotonia, parasympaticotonia, vegetative passport

Introduction. The concept „vegetative passport” shows the person tendency to sympaticotonia or parasympaticotonia and characterizes features of an forms emotional condition, behavior, probability of some impairments and diseases as dis-vegetative syndrome (DVS).

Research objective is studying of displays and diagnostics DVS at patients and healthy people for working out of rehabilitation actions.

Methods. It is executed anamnestic, clinical, physiological, biochemical researches (2000-2010) at patients and healthy – only 1226 persons, age of 29–65 years.

Results. It is established that diseases and the traumas proceed from infringement of adaptation to DVS at 83 % studied. In a clinical feature of the DVS one of topic symptoms dominates (on a frequency of an occurrence): cardiovascular (pain, hypo- or hypertonic), asthmatic, hypothalamic, abdominal, skin, thermoregulation and musculotonic phenomena. Ergotropic type reactions prevail at the initial stage of pathology due to an activation of nonspecific systems of the adaptation. Compliance of a clinical symptoms to “vegetative status” is defined clearly at a late stage of disease. DVS as is correlates with exchange, immune and hormonal shifts in an organism, causing reactance infringements. This should be considered at all stages of rehabilitation.

Conclusion. One of basic rehabilitation principles is an elimination or reduction of the DVS-symptoms. Principles of rehabilitation in patients with DVS are based on the use of adaptive methods (remedies and complementary methods, such as homeopathy, acupuncture etc.), adaptive nutrition, natural and artificial physical factors, treatment exercises.

137. pap.
SLV **Jošt Bojan*, Janez Vodičar***

CORRELATION BETWEEN LENGTH OF THE JUMPS AND CHOSEN KINEMATIC VARIABLES AT THE EARLY FLIGHT POSITION IN SKI JUMPING

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Key words: ski jumping, kinematic analysis, take off phase

Introduction. Ski jumping is very popular sport discipline in which movement of ski jumpers is strongly determined with appropriate ski-jumping technique.

Aim of the work. The purpose of this research was to establish a correlation between the variables of the length of the jumps and selected kinematic variables at the end of the take-off phase of ski jumping.

Material and methods. The research was done with a sample of elite Slovene ski jumpers (N=29) participating in an experiment on a jumping hill in Hinterzarten (HS95m) on 20 August 2008. The dependent variables were the lengths of the jumps (n=7) and the independent variables (n=7) were the chosen kinematic characteristics of ski jumping early flight technique. One camera was filmed the flight position at 15 m after the take-off bridge operating at 50 fps perpendicular to the sagittal plane. The image space was calibrated using calibration rounds along the observer area. The 2-D model of jumpers' body and skis consisted of six segments. Statistical analysis was performed to determine linear and nonlinear correlation and factor component analysis.

Results. The most significant correlation with the length of the jump was found in the following variables: height of flying curve, angle of flying curve, aerodynamic index of flying in vertical direction and the angle between body and skis.

Conclusions. A smaller body angle relative to the horizontal axis during the first 0.6s after the take off supports a better aerodynamic position in the early phase of flying. The best ski jumpers had bigger height of flying curve at the point of 15 m after the take-off bridge and a smaller angle of flying curve. This characteristic is a consequence of the take-off technique being the most important movement phase in ski jumping, because it determines the initial velocity of flying, the angle of early flying curve, the angular momentum of rotation of the body and the aerodynamic position of the jumper/ski system during the flight.

Lp

1. pap.
POL **Anna Poznańska ***, **Zuzanna Filar ****, **Katarzyna Filar-Mierzwa ***

THE ROLE OF EURHYTHMICS AND DANCE CLASSES IN INFLUENCING THE PHYSICAL AND MUSICAL DEVELOPMENT OF YOUNG SCHOOLCHILDREN

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Key words: motor development, dance, eurhythmics, 6-year old children

Introduction. Dance classes with music have a comprehensive impact on child's development – they train both the movement and musical efficiency. In particular, this is significant at the early stage of education, when it is possible to direct the training of the efficiency of child's movements and the sensitivity to music and thus effectively improving child's predisposition.

Aim of the work. The objective of the work consists in determining the influence of the dance and eurhythmics classes on the motor and music development of children of kindergarten age.

Material and methods. The material of the work consists of the results of the research focusing on children taking part in dance or eurhythmics classes, in both these forms of classes and on children not receiving any such training. All children who were examined (n=90) were six years old and they went to kindergartens in Krakow. The motor efficiency of the children was determined on the basis of the selected "Eurofit" tests. The musical aptitudes were measured by Edwin E. Gordon's Intermediate Measures of Music Audition test.

Results. In terms of motor capacities, the best results in more than a half of the examined children were achieved by those who participated in dance classes. The best results in the melody and rhythm test were achieved by the children who attended both dance and eurhythmics classes.

Conclusions. Additional stimulation, both in the form of dance and music classes, decisively favors better motor and musical development of the examined children. Dance classes may play a proper role in training the sense of rhythm in children of kindergarten age.

2. pap.
POL **Józef Bergier, Ph.D. Barbara Bergier, Ph.D. Zofia Kubinska**

LEISURE TIME AND NURSES' PHYSICAL ACTIVITY

Pope John Paul II State School of Higher Education in Biala Podlaska, Poland

Key words: nurses, physical activity, the amount of free time.

The aim of this study is to recognize nurses' physical activity depending on their free time.

Material and method: The study was conducted in 2010 among the nurses participating in the bridging undergraduate studies in nursing at the State School of Higher Education in Biała Podlaska. As a research method the authors used the IPAQ questionnaire-the enlarged version.

Results. The nurses are characterized by a 73.2% high physical activity at 26.8% moderate one. 76.4% of respondents indicated that the amount of free time is too small, the sufficient amount of time concerned only 12.2% of the respondents and for a similar group (11.4%) the amount of time is not enough. The differences in physical activity were found depending on the amount of free time. The examined group of respondents with sufficient free time was characterized by the highest level of activity – 5.075 MET, the group with little time – 4.813 MET, and the one which did not have leisure time merely 4.477. One should note that similar regularities have also been found in various types of physical activity such as intensive labor and walking. Also in particular areas of physical activity in the individuals with the largest share of free time (sufficient) the greatest activity in the recreation and sport-603 MET was noted, in movement – 921 MET and in work at home – 1.400 MET.

Conclusions

1. Most nurses are characterized by a high level of physical activity and too little amount of free time.
2. The level of physical activity is proportional to the amount of free time and it is higher in the group with the sufficient amount of spare time.
3. The greatest differences in the areas of physical activity in favor of the group characterized by sufficient amount of free time concern the participation in recreation and sport.

3. pap.
POL **Paweł Ciężczyk*, Agnieszka Maciejewska**, Marek Sawczuk****

ASSOCIATION OF THE AMPD1 T34C POLYMORPHISM IN POLISH POWER-ORIENTED ATHLETES

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The aim of our study was to describe *AMPD1* genotype distribution among groups of Polish power-oriented athletes representing the highest level in Poland, and to investigate potential association between genetic polymorphism in exon 2 of the *AMPD1* gene and power-oriented athlete status.

Methods. One hundred & fifty eight male Polish power-oriented athletes were genotyped by PCR-RFLP. The genetic control group comprised 160 unrelated male volunteers.

Results. Statistically significant differences in genotype distribution were observed when the entire group of athletes (89.25% CC, 10.75% CT, 0.00% TT; P=0.002)

were compared with controls (75.00% CC, 23.75% CT, 1.25% TT). A significant deficiency of the T allele compared to controls (13.13%) was noted in all sub-groups (short distance runners (5.21%, $P=0.032$); short distance swimmers (5.56%, $P=0.031$); weightlifters (5.36%, $P=0.024$)), while this trend was even stronger when comparing the allele frequency with the controls in the whole group of athletes (5.38%, $P=0.0007$).

Conclusions. Our results indicate a lower frequency of *AMPD1* exon 2 T34 allele in the group of elite Polish power-oriented athletes. This data suggests that the C allele may make it more likely to attain the elite-level status in power-oriented sports.

4. pap.
POL **Henryk Duda***

ASSESSMENT OF GROUP ACTIVITIES IN THE GAME FOOTBALL PLAYERS (FOR EXAMPLE, MATCH POLAND: GERMANY IN THE EURO 2008 TOURNAMENT)

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Background. To assess the efficiency of the athlete, it is necessary praxeological ratings category utilitarian evaluations (Łasiński 1988, Naglak 1994). According Panfil (2000) introduction praxeological ratings for sports activities will investigate the mechanism of success and failure in sport and, consequently, allow to organize and rationalize this important area of social life. Using Rankings utilitarian is especially important for sports games in which the impact of sub-team players on the outcome varies. Thus, evaluating the contribution of individual players in the result obtained will objectified control. Taking this into account in the activities of research work analyzes the activities of group of football players and the Polish National Team Germany – Team quarterback football game in the tournament group stage of Euro 2008 championship tournament.

The main aim of the study was adopted to determine the activity, efficiency and reliability of group performance on the defensive and offensive players with different levels of team sports (world ranking) on the example of Polish and German teams in Euro 2008 tournament. Main research hypothesis assumed that: sporting success is dependent on the assessment praxeological players.

Test methods. For the purposes of research performance of the job evaluation was made by observation of actions players in the game proper, proposed by Panfil and Bacelle (2006).

Conclusion. Analysis of test results confirmed the wide variation observed in the operation of teams, so it can be concluded that the introduction of ratings praxeological sports game in action is an important direction of exploring the mechanism of success and failures. This fact is confirmed in the study also allows the rationalization process in an organized training players.

5. pap. POL **Dybek Tomasz¹, Szygula Renata¹, Klimek Andrzej², Tubek Sławomir³**

THE AEROBIC AND ANAEROBIC CAPACITY AND SELECTED BLOOD COUNT PARAMETERS AFTER 10 SESSIONS OF WHOLE BODY CRYOSTIMULATION

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Key words: cryotherapy, aerobic and anaerobic capacity

Introduction. Systemic effect of low temperature suggests that sessions in a cryogenic chamber might improve athletes' capacity as a standard element of training.

Aim of the work. The authors decided to evaluate the aerobic and anaerobic efficiency as well as on selected blood count parameters one day and ten days after a series of 10 whole body cryostimulation sessions (WBC), in healthy individuals.

Material and methods. The volunteers (n=32) underwent 10 sessions of WBC in a cryogenic chamber. Blood samples (RBC, WBC, PLT, HGB, HCT), aerobic and anaerobic efficiency, lactate concentration in capillary blood were taken before the first session (first measurement), one day after the last session (second measurement) and ten days later (third measurement).

Results. No significant differences were observed in values of aerobic capacity and lactate concentration after 10 sessions of WBC. Wingate test showed no significant differences between records in I, II and III measurement. Only the T_{OBT} was significantly shorter in men both in second and third measurement compared to the first one (6.12±1.49 s vs 3.79±1.14 s and 3.64±2.11 s). The WBC sessions resulted in significant rise of the haematologic parameters.

Conclusions. 10 sessions of whole body cryostimulation did not affect aerobic and anaerobic capacity in the tested group, although improved the blood count parameters and this positive effects of cryostimulation persist in the tested group for 10 consecutive days.

6. pap. ISR **Iosif M. Feigenberg*, Waclaw Petryński****

PROBABILISTIC PROGNOSIS IN SPORT KINETICS

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Key words: motor control, probabilistic prognosis, sensorimotor performance planning

Introduction. The efficacy of any human motor performance is limited by three factors: speed of movement, economy of motion and accuracy of movements. The

authors hypothesize that all of them are strongly influenced by probabilistic prognosis (PP).

The aim of the work. The main task was proving the assumption that the human behaviour is mainly of active and not reactive nature. So the most important factor influencing the run of sensorimotor events is the PP rather and not the sheer reaction to extrinsic stimuli.

Material and methods. To demonstrate this, the series of five experiments has been carried out. To the examinee the specific light stimuli were presented, to which the suitable choice response should be made. The measurements of reaction time enabled drawing conclusions about importance of the PP.

Results. In all the five experiments the crucial role of the PP has been confirmed. As the movement is the only externally observed symptom of human's brain activity, its observation enables building a model of information processing including intelligence, intuition and instinct. In all these mechanisms the PP plays the crucial role. In sport, the PP enables clear differentiation between tactics and strategy. According to function of PP, the sport disciplines might be divided into three groups: of negligible function of PP (e.g. track-and-field sports), of important function of PP (e.g. combat sports and team games), and of decisive function of PP (e.g. chess, bridge).

Conclusions. The presented experiments confirmed the hypothesis that active behaviour of a human is determined by PP rather and not by stimuli received from environment.

7. pap. POL **Joanna Grzybek***, **Dariusz Mucha****, **Sebastian Grzybek*****, **Anna Gumulka******

WHEELCHAIR BALLROOM DANCING A SIGNIFICANT FORM OF REHABILITATION WITHIN THE SCOPE OF PSYCHOPHYSICAL HOMEOSTASIS

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Key words: wheelchair dancing, dance therapy, motivation, psychophysical homeostasis

Introduction. Dance therapy or dance movement therapy is a form of physiotherapy considered to be *Thérapie de l'art.*, or other words healing through art, namely dance movement. Healing through art has its beginnings in the era before Christ, and its initial forms, which we can call dance surfaced around 80 thousand years BC. Dance is a complex and multi aspect phenomenon, and through movements of the body and music comprehensively affects various human spheres, such as: physical, emotional, mental and spiritual. Wheelchair dancing is one of the forms

of dance therapy which is actively pursued by a dozen or so pairs, which, when compared to other European countries such as Holland for example, is an insignificant number

Aim of the work. An evaluation of ballroom dancing by individuals with motor disabilities on their psychophysical homeostasis.

Material and methods. 15 wheelchair dancers who participated actively in dance activities were included in the research. The following methods were employed: interviews with the dancers, document analysis, own scale for evaluating physical abilities from 1 to 5.

Results. Almost three quarters of the group claimed that training helps them to get rid of energy (73%). According to the sample, training has an equally large part in improving self-confidence (67%) as well as helping to meet people (60%). Almost half of the sample group regarded training to have an influence on better self acceptance (47%). Over two thirds of the dancers regarded dance training to have developed their self-confidence (67%). A characteristic which is polished by dancing, according to more than half of the dancers, is patience (53%). The sample considered the following to be next: friendliness (33%), regularity (33%) and the ability to work in a group (33%).

Conclusions. The research confirmed that dance training is a significant form of motor rehabilitation within the scope of psychophysical homeostasis for wheelchair dancers. It manifests itself predominantly through an opportunity to get rid of excess energy, improving self-confidence and a better acceptance of one's self and the surroundings as well as making it easier to meet people. An effect of this form of therapy is a definite improvement in the self-assessment of each person in the sample group.

8. pap. SRB **Branislav Jevtic**

SCIENTIFIC SYSTEM IN OLYMPIC PROGRAMME MANAGEMENT

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Key words: scientific system, olympism, high performance sport, Olympic Games, event management

Introduction. While in theory a number of concerns in the area of description of the sporting event appear, such as the size, importance, regularity of happening (specific, mega, large and small sport events, occasional, ad-hoc), all agree that the Olympic Games (OG) are major and mega events. Participation in the Olympics (winter and summer) is a priority of every athlete, sports system and the society. More than 76% of examinees worldwide considers them to be more than sport and more than 72% considers them to be more than a sport event and more than participation and wining. The games are a good role model for children

(72% of the examinees); they are striving, optimism, inspiration, friendship, glory of youth, but the Olympics are also “clash” of nations and a race for medals, just like the sports and political structures of almost all countries throughout the world see them. A particular challenge for the entire Olympic Movement and the Youth Olympic Games which, in accordance with the age of athletes (14-18 years) and cultural and educational programmes, represent a new and unique challenge for the participants and the entire Olympic Movement.

Aim of the work. Programmes (of the Olympic Committee of Serbia) for participation in the Olympics Games are taking place on various organizational levels and at different times. Common point for managing these programmes including the management of the Olympic Games is application of numerous scientific fields and disciplines. Topic of this study is the Olympic Programme management through a scientific system. Beside **Exercise Science** (aimed to make comprehensible the human biology through physical activity) and **Sport Science** (uses biology and psychology in understanding the mechanics of the sport) the study will show widened framework of the scientific system, which supports the management of the Olympic programme, and that includes the philosophy of the Olympism (culture and education, sustainable development, etc.), management of major sport events, information technologies, but also scientific disciplines that are applied in the study of certain branches and disciplines of sport.

Results. The result of this work should give an answer to the following:

- Philosophy of Science and expansion of existing scientific system in function of sport and physical exercise,
- Models of analysis of the relationships and connections that occur in the process of building up an Olympian;
- The structure and fragmentation of scientific system

Conclusion. The work will contribute to the activities of scientific organizations (IASK) in the part of establishing and building up a unique scientific system, research orientation, including some new professional and research profile and jobs.

9. pap.
POL **A. Karpińska***, **K. Podciechowska****, **W. Starosta*****

COMPARISON OF THE LEVEL OF GLOBAL MOVEMENT COORDINATION, SPACE-TIME ORIENTATION AND JUMPING ABILITIES OF PEOPLE WITH DIFFERENT TYPES OF FUNCTIONAL ASYMMETRY – A PILOT STUDY

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Key words: functional asymmetry, global movement coordination, jumping abilities, space-time orientation

Introduction. Functional asymmetry relates to the division of activities and their specialization in relation to the organs and senses. It results from the dominance of one of the cerebral hemispheres. In functional asymmetry lateralization is homogeneous – right or left sided – in heterogeneous lateralization – it is crossed and undetermined. In previous studies no effect of the type of asymmetry on the level of coordination abilities was found.

Aims. 1. Comparison of the level of movement coordination, space-time orientation and jumping abilities of people with different types of functional asymmetry. 2. Attempt to determine the dominant direction of rotation in individuals with homogeneous and heterogeneous functional asymmetry.

Material and methods. 34 persons with different types of lateralization were tested. Measurement of global coordination and jumping abilities were carried out with Starosta's tests. The level of space-time orientation was determined with the use of modified test of Maciejewski-Stronczyński. To assess the type of asymmetry Zazzo's tests were used.

Results. The subjects were characterized by low levels of movement coordination. People with uniform lateralization – right or left sided achieved higher results in the maximum rotation in a jump from two legs in both directions than people with crossed and undetermined asymmetry. The highest level of coordination (the maximum rotation in the jump from two legs) occurred in patients with left-sided asymmetry. The lowest results were obtained by the tested subjects with undetermined lateralization. In the more difficult task – the maximum rotation in the jump with one leg – the results were similar, the better were the subjects with homogeneous lateralization. The biggest differences in the maximum rotation in the jump from two legs occurred in patients with left-sided lateralization. They received higher scores in the rotation to the right. The smallest differences were observed in subjects with right-hand lateralization. In the maximum rotation in one-leg jumps, rotations to the left were dominant. The level of space-time orientation depending on the type of asymmetry was varied. It was higher in individuals with uniform asymmetry – right and left sided. Differences in results were not statistically significant. The highest level of orientation occurred in subjects with left-sided lateralization. There were no significant differences in jumping in subjects with homogeneous and heterogeneous asymmetry. This resulted from the structure of jumping abilities, which are formed by strength, speed coordination abilities and technique. In the maximum jump with two legs slightly better results were obtained by the subjects with crossed and undetermined lateralization. The results of jumping abilities on the right and left leg in both groups did not differ significantly. In people with left-sided and undetermined lateralization, vertical jump from left leg dominated, and in people with undetermined asymmetry the results of the right and left leg were the least diverse.

Conclusions. The highest level of global coordination was characterized by people with left-sided asymmetry, while the lowest – with the lateralization undetermined. There were differences in the dominant direction of rotation in subjects with different types of lateralization. In individuals with left-sided and crossed asymmetry rotations to the right dominated, whereas in people with undetermined lateralization – to the left. In subjects with right-sided asymmetry, there was no dominant direction of rotation. The biggest differences in the dominant direction of rotation in the

first task – the maximum rotation in the jump from two legs was observed in individuals with left-sided lateralization. The highest level of orientation was observed in subjects with left-sided lateralization. There were no significant differences in jumping abilities in individuals with homogeneous and heterogeneous asymmetry.

10. pap.
RUS **Vladimir Korenberg***

ANALYSIS OF HUMAN MOTORICITY – A KINESIOLOGICAL APPROACH

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Keywords: activity, scientific approach, modelling, motor activity, motor task, duality, motor habit, voluntary motor performance

Introduction. Nowadays it became clear that exploring the human motoricity separately by physiology, biomechanics, psychology and pedagogics turned out to be ineffective. While analyzing and investigating motor sub-activities, it is necessary to adopt an integrative approach, which joins together all the mentioned sciences, as well as specific parts of other disciplines (theory and methodology of physical education and sport, medicine, sociology, logic, philosophy, cybernetics etc.).

Aim. Formation of theoretical bases of kinesiology as an independent discipline of science.

Methods. Logical analysis of the representation of problem under consideration in the listed sciences, modelling, systemic synthesis of theoretical depictions.

Results. The author has reviewed and analyzed many basic psychological, pedagogical and biomechanical approaches developed in the period of recent 50 years. It enabled integrative and complex analysis of human motoricity, specific to kinesiology, and resulted with rationalizing – to some extent – the system of notions in the listed sciences. The following notions have been presented and substantiated: reliability of motor activities and solutions of motor tasks (1963, 1979), qualitative analysis of motor activity (1965, 1979), functional conception of preserving one's own body stability (1965, 1971), conception of "two-stageness" of organism reactions etc.

Conclusion. The obtained results enabled developing the more productive approach to the exploration of human motoricity, performing more effectively analyses and syntheses, as well as learning the essence of human motoricity, what might be useful also in learning, how to solve the motor tasks of any type.

11. pap.
POL **Szymon Krasicki*, Janusz Brudecki**, Magdalena Wójciak**

SPORTS ASPECTS OF HIGH MOUNTAIN SKIING

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** Katedra Antropologii, AWF Kraków

Key words: high mountain skiing, recreation, sport

Aim of the work. Observed a significant increase in popularity of high mountain skiing was a reason to take research designed to better define this winter activity, especially the sports variety.

Research, using the author's questionnaire, a total of 105 people were practicing recreational and professional high mountain skiing. Analysis of the literature and the results of surveys indicated that, in defining the high mountain skiing sports must take into account its variation, which was not previously distinguished. Upward trend was found high mountain skiing in Poland, particularly clear in recent years. In terms of its sporting varieties documented that our professionals have a younger age, less seniority than the Slovaks, who present a higher level of sports. Preparing for the winter season our professionals differ from the Slovaks and the training loads of athletes cross-country skiing. Respondents saw the further development of high mountain skiing see their organizational and financial improvement and, among others, inclusion of our most important competitions for the World Cup cycle.

12. pap.
RUS **I. A. Krivolapchuk***

THE FACTOR ANALYSIS AND COMPLEX ASSESSMENT OF PHYSICAL WORKING CAPACITY OF SIX-YEAR-OLD CHILDREN

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Key words: children, factor analysis, physical working capacity.

Aims. The goal of this work was to study the characteristics of physical working capacity of six-year-old children (n=106).

Methods. The physical working capacity of children was described using a set of functional and ergometric parameters, which made it possible to assess the power, capacity, and efficiency of mechanisms of energy supply.

Results. It was found that the physical working capacity of preschool children at this age is determined by the following five major factors: (I) aerobic capacity, (II) anaerobic glycolytic working capacity, (III) absolute aerobic power, (IV) relative aerobic power, and (V) anaerobic alactic working capacity. Sex-related differences in some parameters reflecting the physical working capacity and fitness, characterizing the anaerobic alactic and anaerobic glycolytic productivity of the body were revealed. These differences are apparently related to an advanced development of anaerobic energy-supply mechanisms of girls compared to age-matched boys. The procedure of a complex assessment of the physical working capacity of six-year-old children has been developed, which includes informative parameters characterizing the power and capacity of energy systems. **Conclusions.** Differences between children with high and low physical working capacity were found

to increase with an increase in the physical load aerobicity. The physical working capacity of six-year-old children can be differentiated best of all on the basis of aerobic capacity parameters.

This study was supported by the Russian Foundation for the Humanities (№ 11-06-00182a).

13. pap. **Hugo Louro¹, Ana Conceição², Marco Branco³, Vitor Milheiro⁴, Marta PRT Martins⁵, Aldo Costa⁶**

KINEMATIC ANALYSIS OF THE LOWER LIMB WHILE PERFORMING A SQUAT AT A STEP PLATFORM – EXPERT AND NON EXPERT COMPARISON

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Key words: kinematic analysis, fitness, step, expertise level

Introduction. Exercise has become an essential requirement for a healthy lifestyle. Society has increasingly come to value physical activity, the standard of living that it requires, and especially the potential benefits it provides. However, we should not forget that exercise can, in addition to its benefits, bring potential harm if it is inappropriate or misleading.

Aim of the work. The main goal of this study was to identify performance differences between experts and non experts, while doing a squat with one inferior limb standing on a step.

Material and methods. Sample involved 7 subjects (4 experts and 3 non experts; aged $20 \pm 1,3$ years). The following material was used: one step platform, two Sony[®] video cameras and APAS[®] software to analyse the squats. Mann Witney test was used to compare means. Significance level was set at $p \geq 0.05$.

Results. Non expert subjects obtained the following mean variable values: angle of the ankle was $100.97 \pm 19.1^\circ$; angle of the knee was $135.70 \pm 23.53^\circ$; angle of the hip joint was $109.93 \pm 22.23^\circ$, and distance between feet was $42.54 \pm 19.96^\circ$. Expert subjects obtained the following mean values: angle of the ankle was $99.43 \pm 17.60^\circ$; knee angle was $142.95 \pm 23.21^\circ$; angle of the hip joint was $111.01 \pm 20.38^\circ$ and feet

distance was $42.63 \pm 18.54^\circ$. Differences were found only at the angle of the knee variable. In the remaining variables, there were no differences among expertise level.

Conclusions. A biomechanical perspective of the movement is required and very useful to determine errors that less experienced people can commit. We considered that there were no differences between groups, meaning that expertise level does not influence exercise performance.

14. pap. **Marcin Maciejczyk***, **Jadwiga Szymura****, **Magdalena Więcek***, **Joanna POL Gradek*****, **Jerzy Cempla******

THE CHANGES OF PHYSIOLOGICAL COST OF RUNNING DURING PUBERTY IN OVERFAT BOYS

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Key words: oxygen intake, physiological cost, obesity, boys, exercise

Introduction: The overfat boys have lower ability to perform long-term efforts – during exercise they finish efforts much more earlier due to fatigue than boys with normal body composition. It can be result of high physiological cost of physical work.

The aim of the study was to evaluate the changes in physiological cost of running during puberty in overfat boys.

Material and methods. The study was conducted on 18 boys with excessive level of bodyfat ($\%F=26,97\pm6,39\%$ - GROUP O) and 17 with normal level of body fat ($\%F=11,59\pm3,93\%$ - GROUP P). The boys performed the graded test and next few days later submaximal run (6 min) on mechanical treadmill with speed $7,5 \text{ km}\cdot\text{h}^{-1}$. During the test the heart rate (HR), oxygen intake (VO_2), pulmonary ventilation (VE), breathing frequency (FR) and tidal volume (TV) were measured. The study was performed twice: first at age 11-12 years and second two years later (13-14 years old). The age of peak of height velocity (A-PHV) was assigned (Group O: $12,8\pm0,86$ years old, Group P: $13,4\pm0,65$ years old) on the base of measurements of body height every 4 months beginning at age 9-10 years old.

Results. The intensity of work in both tests ($\%\text{VO}_2\text{max}$, $\%\text{HRmax}$) was significantly higher in overfat boys and decreased with age in both groups. The global values of VO_2 in boys with excessive level of body fat was significantly higher than in boys with normal body composition and increased with age in both groups. The relative to body mass values of VO_2 decreased in both groups during observation and the significantly lower values were noted in comparative group. The heart rate was higher (about $7 \text{ b}\cdot\text{min}^{-1}$) in both test in overfat boys. The pulmonary ventilation and tidal volume during run were significantly higher in group O but there was no significant difference between groups in breathing frequency. The economy of breathing was improved with age in both groups.

Conclusion. The level of physiological parameters (physiological cost of work) during run in boys with high level of bodyfat is significantly higher than in comparative group and it can cause fatigue earlier than in boys with normal body composition. During puberty the difference in the level of physiological parameters between groups was maintained.

15. pap. **Hamid Reza Maleknia***, **Fazllolah Fathollahi Shorabe****, **Khosrow Jalali**
IRN **Dehkordi*****, **Bahare Sheykh Saraf******

A COMPARISON OF THE EFFECT OF TWO TYPES OF RESISTANCE, ENDURANCE TRAINING ON GROWTH HORMONE (GH) SECRETION IN AGING MALE

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Keywords: resistance, endurance training, GH, aging

Summary

Introduction. World's, particularly in light of Medicine scientific advances, has witnessed increasing elderly population. spontaneous reduction in human growth hormone release after the teenager with a 7-year half-life is reduced exponentially.

Aim of the work. A comparison of the effect 8 weeks of resistance, endurance training on growth hormone (GH) secretion in aging male

Material and method. 45 elder randomly to three groups: control (n=15), Endurance Group (n=15), resistance groups (n=15) were replaced. strength training program for 8 weeks and trained three sessions per week. endurance training group 8 weeks and trained three sessions per week. Blood samples collected from all subjects before the training program, four weeks after the last training session at the end of the eighth .

Results The data that resulted from compare of three group showed that the level of GH in resistance group and Endurance Group compare control group were significantly higher ($p < 0.05$). the level of GH in resistance group showed a significant higher compare than Endurance Group ($p < 0.05$).

Conclusions. the results of this study showed that resistance, endurance training may stimulate the response of GH factors in aging male and increase level of GH .

16. pap. **Rogaleva L.***, **Malkin V.****, **Teriaeva M.*****
RUS

THE SYSTEM OF PSYCHOLOGICAL SUPPORT IN YOUTH SPORT

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Key words: system, youth sportsman, psychological support

Introduction. The development of children's and youth sport is not only the most important factor for forming of good health of young generation but it also makes a foundation for developing the sport of highest achievements. At the same time as the praxis of children's and youth sport indicates, the efforts of coaches are directed only at the achievement of sport results.

Existing system covers generally the improvement of both physical qualities and technical, tactical skills to the prejudice of psychological and personal qualities of a young sportsman that does not favor his character formation when we consider him as a personality. Under the influence of this guideline the young sportsman's education is coming out of his coach's view that has a negative influence on achievement of sports results.

Aim of the work. Such a situation is caused by the absence of psychological support in children's and youth sport. There are no recommendations for working with young sportsmen in syllabuses of children's and youth sports schools as well. Taking in consideration the situation described before it is necessary to create a psychological system to support the young sportsman activities. This system appears to include the improvement of personal qualities, forming of sports motivation, psychological stability, self-control ability that will facilitate sports achievements. The most important personal qualities for achieving mentioned objectives are self-determination, purposefulness and responsibility. No less significant fact is development of such psycho-physiological characteristics as attention focusing, self-control, psychological stability, the improvement of them will advantage the sport results. To achieve mentioned objectives we introduce a technology for psychological support of young sportsmen. This technology includes several stages. The aim of the first stage is forming of positive motivation for sports activities. The second stage is devoted to individualizing. The third stage is the stage of perfection.

Results. As the researches on using this technology for young sportsmen showed, self-control rates increased from 34 to 52%, responsibility rates from 20 to 48%, aspiration level from 2,57 to 2,79.

17. pap.
IRN

Mansoorh Arefi Nia* Behnam Ghasemi**

ASSESSMENT OF INCIDENCE OF INJURY IN ELITE KARATE PLAYERS DURING A SEASON OF RACING

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Keywords: muscular strength, flexibility, injury, karate, demographic

Introduction. Always check the stress factors, in order to plan and reduce the impact of these factors in the form of effective training, s have been considered by trainers and planners of various sporting disciplines teams.

Aim of the work. The aim of this work was to assess the relationship between influence of injury and rate of fitness in karate players of national super league of iran.

Material and methods. This review, like the rest of the country's elite karate players fields of interest and importance is placed. Therefore, in this study a 30-member group of athletes with a mean age of $(06 / 3 \pm 83/22)$, mean weight $(72 / 8 \pm 21/68)$ kg in national super league were selected and pre-season testing isometric muscle strength of joints shoulder, hip and knee in this group by Nicholas' powermeter device and test flexible were done by Leyton fleximeter. To extract the relationship between muscle strength and flexibility tests and Pearson Chi square, the calculation of the relationship between demographic characteristics of the injury rate is used. Demographic characteristics through a questionnaire including information about age, weight, history of injury and skill level were extracted.

Result. As a result, between previous injury as risk factor damage and injury, with parameters a significant relationship was obtained, while the demographic characteristics of muscle strength and flexibility did not show significant relationship.

Conclusion. Despite the lack of significant relationship between strength and flexibility with sports injuries Karate players, data from the study of design and rehabilitation training program for people affected with the aim to prevent re-injury support.

18. pap.
POL **Maria Alicja Nowak*, Leonard Nowak****

REALIZATION OF HEALTHY LIFESTYLE BY WOMEN UNDERTAKING PHYSICAL ACTIVITY

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Key words: physical activity, women, values, lifestyle, health behaviors

The aim of the study was to determine the influence of recognized health values and physical fitness on implementing chosen health related behaviors.

Material and method. Between 1999 and 2004, 1361 women aged 20–75 were studied. They were inhabitants of cities in the West of Poland engaged in physical activity (purposive selection). The studied women were divided into three groups, depending on the recognition of health value and/or physical fitness or other values. The diagnostic poll method was employed (questionnaire, interview and PRO-ZET attitude scale). For the verification of the research hypotheses concerning relations between values recognized (declared) and implemented (reflected in behaviors) by physically active women and social-demographic factors, an independence χ^2 test and multiple correspondence analysis were used.

Results and conclusion. It was shown that what was most valued for physically active women were health and family happiness, with physical activity in the middle of the scale. Women who recognized the value of health and physical fitness were found to have been physically active longer than others ($p \leq 0.01$), were more

often able to reach proper body weight (BMI) ($p \leq 0.05$), and consumed moderate amounts of alcohol ($p \leq 0.05$). However, no such dependence was found between participation in health checkup examinations, neither smoking. Also, social-demographic factors like age, marital status, education, professional activity or women's fertility had influence on the realization of healthy lifestyle.

The revealed difficulties in the realization of the healthy lifestyle require education in valuing physical culture starting from the first years of human life.

19. pap.
IRN **Iman Nazerian***, **Alireza Zamani****

THE COMPARISON OF COMPETITIVE TRAIT ANXIETY, COMPETITIVE STATE ANXIETY, AND SELF-CONFIDENCE AMONG MALE ATHLETES OF CONTACT SPORTS AND IN-CONTACT SPORTS

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Key words: competitive trait anxiety, competitive state anxiety, self-confidence, contact sports, and in contact sports

The present study is devoted to the Comparison of Competitive trait anxiety, Competitive state anxiety, and Self-confidence in Contact sports (handball, Basketball, Karate, and Handball) and three in-contact sports (volleyball, track and field, badminton, and swimming). Subjects were consisted 150 male athletes for each major and totally, 1200 people were selected randomly from 12 Provinces. For collection data used Sport competition anxiety test (SCAT) = α 0/825) and Competitive state anxiety inventory (CSAI-2) = α 0/839). Data analyzed by t test and Pearson's correlation coefficient. Results showed that what athletes of contact sports in the comparison with athletes of in-contact sports had greater competitive Trait anxiety (•) but less self – confidence (•). Significant correlations were seen between trait anxiety and level of championship (•), state anxiety and level of championship (•), and self-confidence and level of championship (•). Differences between Competitive trait anxiety with level of championship (•), Competitive state anxiety with level of championship (•), and Self-confidence with level of championship (•) were significant.

20. pap.
POL **Palka Tomasz***, **Lech Grzegorz****, **Tyka Anna*****, **Stawiarska Aleksandra******, **Cebula Agata*******, **Tyka Aleksander*******, **Krawczyk Robert*******

THE DIFFERENCES IN AEROBIC AND ANAEROBIC PERFORMANCE LEVEL OF JUDO ATHLETES AT VARIOUS AGE GROUPS

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Key words: judo, VO_2 max, PP

Aim of the work. The aim of the study was to determine whether professional judo athletes' age and sports experience influence their physical capacity components and which of these factors, taking age group into consideration, differ the most.

Materials and methods. Twenty seven male professional, best Polish judo athletes at senior, junior and youth junior age performed exercise test to exhaustion and Wingate test. The tests were preceded by morphological body measurements.

Results. The study revealed that the maximal oxygen uptake (VO_2 max) did not vary according to judo athletes' age nor sports experience. However the differences among groups, noticed in exercise duration over TDMA threshold were statistically significant. The anaerobic-glycolytic capacity, measured by total work load (TW) in Wingate test differed depending on age group. The average results were the highest for seniors, the lowest for youth juniors. The anaerobic-phosphagenic-capacity level, illustrated by relative peak power results (RPP) reached the highest values in senior group, however no statistically significant differences were observed.

Conclusions. The conclusions reached were that the long-term, specific training judo athletes' program improved more anaerobic energy metabolism efficiency than aerobic one. What is interesting, the greater amount of total work over TDMA threshold was recorded for senior judo athletes, comparing to junior age. It is due to earlier anaerobic energy metabolism occurrence during exercise, which may have vital effect on the effectiveness of judo fights.

21. pap. ESP **Rivilla-Garcia J.*, Lorenzo J.*, Sampedro J.***

DIFFERENCES IN THE JUMP CAPACITY DEPENDING ON THE DEGREE OF OPPOSITION IN THE HANDBALL JUMP THROW

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Key words: handball, jump throw, opposition, elite players

Introduction. In handball, the most common shot at the goal is the jump throw made from 9m to the goal (Wagner et al., 2008). This throw is realized by opposition of the goalkeeper and, frequently with a defensive player between the thrower and the goal.

Aim of the work. The present study had for aim to analyze the influence of different degrees of opposition in the duration of the time of flight in the jump (jump capacity) in jump throw in professional team handball players.

Material and methods. Forty five top level handball players were evaluated in three jump throw test with different degrees of opposition in which a maximum jump was requested: 1) without opposition (T1), 2) with the opposition of the goalkeeper (T2) and 3) with the opposition of the goalkeeper and a defensive player (T3).

The jump capacity was estimated from the time that the player was remaining in the air during the jump shot and was measured by a high speed video camera. A one-way ANOVA with repeated measures was used to analyze eventual differences in the duration of the time of flight for each round of throws.

Results. The analysis of differences between averages stated that the T3 was lower than T1 (8%; $p < 0.01$) and T2 (7%; $p < 0.01$). Significant differences were not found between T2 and T1. On the other hand, the analysis of correlations revealed average values of correlation between the T3 and T1 ($r = 0.645$; $p < 0.01$) and between T3 and T2 ($r = 0.554$; $p < 0.01$), whereas the correlation between T1 and T2 was raised ($r = 0.869$; $p < 0.01$).

Conclusions. The results state a marked influence of the defensive opposition in the jump capacity during the jump throw. Nevertheless, the presence of the goalkeeper does not seem to influence negatively the same one. On the other hand, the relation between test is significant and positive, diminishing major all that is the degree of opposition.

22. pap.
RUS **A. Tambovsky***

SPORTS OPHTHALMOERGONOMICS AND ITS SOME POSSIBILITIES

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Introduction. Works of Russian and foreign experts and the results of our research allowed to prove a new direction in the preparation of sportsmen - "sports ophthalmoergonomics", which purpose is the optimization of a vision process of sportsmen, promoting formation and perfection of a technique-tactical component of its sports skill. Its methodology and the primary goals were formulated, and the corresponding methodical arsenal was designated either.

The purpose of the given work is the concrete definition of the efficiency of the decision of sports ophthalmoergonomics problems.

Methods. Sports kind, the qualifying level and specific features of the sportsmen were considered at a choice of a method of the decision of the concrete problem. 1080 sportsmen, belonging to 12 different kinds of sports, took part in the research.

Results. The methods and means of sports ophthalmoeconomics promote the effective mastering of new technique-tactical actions in sports, their perfection and adequate application in various conditions in a training competitive activity. So, accordingly, the accuracy and technique-tactical actions reliability raised on 2.1–11.9% and 5.2–13.3% at reduction of the time of tactical decision problems on 0.3–1.6 seconds.

The important component of technique-tactical actions of the sportsmen is a visokinematic picture of a sports situation in the form of its existential characteristic of an eye motor activity at the visual fixing of a concrete sports situation.

Conclusions. Sports ophthalmoeconomics is a high-grade structural component of training and competitive processes of sportsmen.

23. pap.
IRN **Alireza Zamani***, **Iman Nazerian****

THE COMPARISON OF TRAIT ANXIETY, STATE ANXIETY, AND SELF-CONFIDENCE AMONG MALE ATHLETES OF TEAM SPORTS AND INDIVIDUAL SPORTS IN THE COUNTRY

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Key words: Trait anxiety, State anxiety, Team sports and Individual sports and Self-confidence

The present study is devoted to the Comparison of the Trait anxiety, State anxiety and Self-confidence in three Team sports (Volleyball, Basketball and Handball) and three Individual sports (Track and field, Wrestling and Badminton). Subjects were consisted 90 male athletes for each major and Totally 540 people were selected randomly from 12 Provinces. For collection data used Sport competition anxiety test (SCAT) = α 0/825) and Competitive state anxiety inventory (CSAI-2) = α 0/839). Data analyzed by t-test and Pearson's correlation coefficient. Results showed that what athletes of individual sports in the comparison with athletes of group sports had greater Trait anxiety but less self – confidence. Correlation between components somatic and cognitive of state anxiety similarly, between somatic component of state anxiety and trait anxiety, and somatic component and trait anxiety at r were average and positive, but between cognitive component of state anxiety and self-confidence at r was poor and negative. Likewise, correlation between somatic component of state anxiety and self-confidence at r was poor and negative.

24. pap.
POL **Monika Bigosińska***, **Zbigniew Szygula****

EVALUATION OF HEALTH BEHAVIOUR OF YOUNG WOMEN – STUDENTS OF PWSZ IN NOWY SĄCZ – THE PHENOMENON OF SELF-HEALING OR HEALTH MONITORING

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Key words: preventive action, health monitoring, smoking, alcoholic beverages, medicines over-the-counter

Introduction: Health behaviour can be considered as: negative or positive. An example of the positive health behaviour is a preventive action concerning obeying doctor's recommendations or awareness of having regular health monitoring. The negative health behaviour is represented by smoking, overusing of alcoholic beverages as well as overusing of medicines.

Objective of the article: The objective of the article is evaluation of preventive health actions and chosen types of negative health behaviour.

Methods and research materials: The research was conducted on 168 women at the age of 20 – students of PWSZ in Nowy Sącz. The research makes use of a survey which contains questions concerning obeying doctor's recommendations, smoking or drinking alcoholic beverages

Results of the research: 70,33% of the examined students have their medical examination done on a regular basis. 88,6% of the women obey doctor's recommendations. The majority takes over-the-counter medicines. The source of the students' knowledge concerning the medicines they use are doctors (59,5%) and commercials (31,5%). The most common medicines are non-steroidal anti-inflammatory medicines (60,71%). Over-the-counter medicines are most frequently used in case of pains (77,3%). Over half of the students being tested occasionally drink alcoholic beverages like beer, wine or vodka. Only 14,8% smoke cigarettes.

Conclusion: The majority of the women take preventive actions to stop civilization disease from occurring, such as: regular health monitoring or obeying doctor's recommendations. The most conspicuous negative health behaviour is overusing of over-the-counter medicines.

25. pap.
POL **Monika Bigosińska***, **Zbigniew Szygula****

EVALUATION OF HEALTH BEHAVIOUR OF YOUNG WOMEN – STUDENTS OF PWSZ IN NOWY SĄCZ – NUTRITION AND PHYSICAL ACTIVITY

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Key words: Women, health behaviour, BMI, WHR, nutrition, physical activity

Introduction: Diet and physical activity are the key points included in the Global Health Strategy introduced by the World Health Organization in 2004 in Geneva.

Objective of the article: The objective of the article is evaluation of the health behaviour of the young women concerning methods of nutrition as well as intensity, types and motivation necessary for physical activity.

Methods and research materials: The research was conducted on 168 women at the age of 20 – students of PWSZ in Nowy Sącz. The research makes use of a survey which contains questions concerning methods of nutrition, different types of physical activity as well as the reason for it. The body mass and height were measured, which allowed to calculate women's BMI. The body fat mass was calculated with Tanita's scale. The waist and hip measurements were used to calculate WHR.

Results of the research: Over 68% of the women don't eat meals regularly at the same time of the day (68,4%). Over half of them never or hardly ever have snacks between meals. 54,1% of the women eat products known as "fast-food" more often than once a month. 51,1% of the students use butter and 48,2% use sugar once or more times a day. When the research was conducted, 94% of them were not on a diet. Half of them are proud of their figures and 62% are not afraid of putting on weight. Everyday physical activity is chosen only by 37,5% of the young women. The vast majority mentions a walk as a most common type of physical activity. Other types described by the students are: cycling and team sports. The aim for physical activity is to improve their health or shape their figures. 79,1% of the students have proper BMI and 55,9% have proper body fat mass. Most of them have gynoidal type of figure.

Conclusion: In spite of the fact that most of the young women have proper BMI their health behaviour in relation to the methods of nutrition they prefer and their physical activity is improper.

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Lp

1. pos
IRA **Khodadoost Mostafa*, Parisa Amirifarsani**, Zohreh Darvishibashbarat*****

THE EFFECT OF GENERAL PHYSICAL EDUCATION ON SUBCUTANEOUS BODY FAT AND BMI IN UNIVERSITY STUDENTS

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Key words: subcutaneous body fat, body mass index, non-athlete obese student

Introduction. The courses about general physical education are good opportunity for transportation and expansion of health culture in all students. Thus, the effectiveness of these courses should be evaluated because of the fast and increasing changes that take place in all around.

Aim of the work. The aim of the present study was to investigation the effect of general physical education courses on subcutaneous body fat and body mass index in obese non-athlete university students of Khuzestan province.

Material and methods. The study covered 55 non-athlete fat students: 28 people experimental group ($30.68 \pm 3.37\%$ BMI) and 27 people control group ($30.55 \pm 3.3\%$ BMI). Experimental group participate in general physical education courses one session per week, and control group do typical activities according to the university schedule. The research performed as test-retest.

Results. There wasn't a significant difference between pre-test and post-test of experimental group and also between experimental and control groups in subcutaneous body fat ($p < 0.05$). There wasn't a significant difference between pre-test and post-test of experimental group and also between experimental and control groups in body mass index ($p < 0.05$).

Conclusions. The lack of difference between pre-test and post-test within the groups, and the comparison of experimental group with control group show that the performance of the courses in the form of present relatively traditional ways can't affect students physically.

2. pos
IRA **Mohammadi Farzad*, Reza Baledi*, Mostafa Khodadoost*, Arash Asefirad****

THE EFFECT OF BANDWIDTH FEEDBACK ON CONSISTENCY & ACCURACY FORCE PRODUCTION TASK IN NON ATHLETE STUDENTS

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Key words: Bandwidth feedback, consistency, accuracy, non athlete students

Introduction. Feedback is one of the most important issues in motor learning discussion. Feedback improve learning and skill performance, it is a rule that is true for all individuals learning. Though absolute frequency feedback results in individual performance improvement, but on the other hand it will lead to learning decline due to the lack of process procedure for identifying errors in a condition without feedback. There are many methods used for preventing the influence of frequency feedback that cause feedback dependency, including bandwidth feedback that is as the end of feedback reduction in some trial. The main purpose of this research was the comparison of the effect of bandwidth feedback procedures (5%, 10% and 15%) on Consistency & accuracy Force Production Task in non athlete Students.

Methodology. The present research is semi-experimental and is performed by participation in four stages as pre-test, acquisition, retention and transfer. The research design is as pre-test - post-test with 3 experimental groups. The Participants of research consisted of 60 non-athlete volunteer students that were right-handed and were randomly divided in to three groups, including 5% bandwidth feedback, 10% bandwidth feedback, and 15% bandwidth feedback. None of the subjects were aware of the research aim and had no previous experience in such a test. Measuring apparatus is a manual dynamometer, YAGAMI Model. The above device has a display plate and a grip that the subject produces target force by pressing this grip. The data are registered for consistency analysis and force accuracy in the form of variable error (VE) and overall variability error (E).

Results. The results of one -way variance analysis test show there isn't any significant statistical difference between 3 feedback groups of 5% bandwidth, 10% bandwidth and 15% bandwidth in terms of force production consistency and accuracy variables, and all these 3 manipulating lead to performance improvement.

Discussion and conclusion. The current result supports the Guidance Hypothesis. According to the Guidance Hypothesis, when feedback is always available during practice, it actually becomes part of the task, so that when it is withdrawn later in a retention test, part of the task is withdrawn with it and performance suffers. Finally, these researches results show that each of these Bandwidth feedback presenting methods aren't preferable on others and generally are efficient in consistency and accuracy of force production. Choosing suitable methods and presenting feedback added with decreased frequency, in addition to efficient learning, is also time consuming.

3. pos
ITA **Magno Francesca*, Danilo Marasso*, Simona Nebiolo*, Giulia Bardaglio PhD*, Giovanni Musella*, Emanuela Rabaglietti PhD **.**

RELATION BETWEEN PERCEIVED ATHLETIC COMPETENCE AND ACTUAL MOTOR COMPETENCE IN CHILDHOOD

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Key words: athletic competence, motor competence, children, motor skills

Introduction. Perceived athletic competence has a relevant role in physical activity of children because it can affect the decision of the child about whether or not to execute a task (Eccles et al., 1993; Fanunza et al., 2007). Furthermore, the links between perceived athletic competence and persistence of participation at physical activities and sports has already been widely demonstrated (Ulrich, 1987; Weiss & Amorose, 2005; Wrotniak et al., 2006).

Aims. The general goal of this study was to explore the relationship between perceived athletic competence and actual motor competence in children attending the 3rd class of primary schools in two cities of North-West Italy. The specific objective was to investigate the relationship between children's perceived athletic competence (evaluated by a self-report questionnaire) and the actual level of coordinative motor skills of children, measured with a checklist of systematic observations, the CMSS (Bardaglio et al., under evaluation), and the TGMD (Ulrich, 1975);

Methods. The participants were one hundred children, aged between 8 and 9 years ($M = 8.4$, $SD = .4$), 47% males. First, we divided children into three groups: children at high perception of athletic competence (value $> M + \frac{1}{2}SD$, $N = 41$), children at low perception of athletic competence (value $< M - \frac{1}{2}SD$, $N = 30$) and children in between ($N = 29$). Second, we performed a MANOVA with Perceived athletic competence as the independent variable and CMSS and TGM as dependent variables.

Results. Multivariate analysis showed that there is a general effect of perceived athletic competence on the actual level of motor skills, measured by both instruments [$F(4,192) = 4.71$; $p = .001$; $\eta^2 = .09$]. Univariate analysis and post-hoc test showed that the CMSS discriminates middle and low groups from high group, while TGM could only discriminate between low and high groups.

Conclusions. In accordance with literature, children aged 8-9 years have a good awareness of their real motor competence (Harter & Pike, 1984; Rudisill et al., 1993). However, CMSS seems more sensitive in differentiating among groups.

4. pos
ITA **Vittori L.N***, **E. Foschi***, **P Maietta Latessa****, **F. Grigioni*****, **I. Corazza*****, **C. Tentoni****

PREVALENCE OF POSTURAL DISORDERS IN PATIENTS HEART FAILURE

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Key words: heart failure, postural disorder, heart transplant, stabilometric platform

Introduction. Heart failure is the major cause of mortality in the United States today, exceeding the deaths caused by AIDS and high malignancy cancer. For patients with a poor prognosis, cardiac transplantation is a therapeutic option. A heart transplant operation can cause chest pains, internal rotation of the shoulder, internal rotation of the arms and kyphosis.

Aim. The purpose of this study is to examine whether there is a difference in the prevalence of postural disorders between those who have already undergone heart transplant surgery.

Material and methods. In a survey, 188 patients (149 men and 89 women) with heart disease were analysed at Bologna's Sant' Orsola hospital. Of these, 97 patients (age $55,75 \pm 12,364$) had already undergone a heart transplant and 91 (age $53,30 \pm 10,23$) were awaiting a transplant. Using the Correcta stabilometric platform the patients were subjected to some postural tests aimed at identifying several variables: Vel. Bar Tot (total speed of the center of gravity), Bar area Tot (total area of the center of gravity), Length Gom Tot (Length of Skein), Var Vel Tot (the total velocity variance) both eyes open and closed. Statistical analysis. Comparing the average results of the t-test of the two groups, we observe that there is not a statistically significant difference ($P\text{-Value} > 0.05$) Vel. Bar Tot, Bar area Tot, Length Gom Tot, Var Vel Tot both eyes open and closed.

Conclusion. The results show that the transplant, while being able to normalise respiratory and hemodynamic values at rest, is not in itself capable of changing significantly the indices of the posture.

5. POS
ITA

Vittori L.N.*, **P. Mazzuca****, **G.Belli***, **P. Maietta*****, **C. Tentoni*****

EFFECTS RESISTANCE EXERCISE AND STRENGTH TRAINING ON ANTROPOMETRIC MEASURE AND IMPROVEMENT OF PHYSICAL EFFICIENCY IN ADULT WITH METABOLIC SYNDROME

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Key words: resistance, strength, physical efficiency, metabolic syndrome

Introduction. OMS recognize physical exercise represents a therapeutic tool for the prevention and treatment of various diseases and its reduction is one of the major risk factors for disease.

Aim. The objective of this study was to analyse the different type of effects resistance training combined strength training on index form and antropometric measure on subjects with metabolic syndrome.

Material and methods. 19 subjects have been recruited (6 mens, 13 women) with metabolic syndrome, sedentary for least 6 months, with mean \pm SD age 59 ± 9

years, BMI 33 ± 5 kg/m². They have been subjected to anthropometric measures (skinfold and circumferences), 2km Walkin test, to value the physical efficient, and followed 2 times' weekly training sessions for 3 months, consisting of a: 30min aerobic activity to 50% of CF bikes (calculated by Karvonen), and 45 minutes of strength training (40%).

Results. Comparing the average results of the t-test there is a statistically significant difference (P-Value > 0.05) of index form ($t = 0.0017$), triceps ($t = 0.001$), biceps ($t = 0.003$) abdominal ($t = 0.036$) and thigh skinfold ($t = 0.039$). The values of the circumferences did not show any significant value.

Conclusion. Considering the chronological age of the subjects, rather different, which implies different responses to physical exercise in addition to those intrasubjective, the analysis reveals a correlation between regularity and intensity of physical activity on modification of anthropometric values (muscle and fat mass) and index form of the subjects with metabolic syndrome.

6. POS
JAP

Toriumi Takashi*, Aiko Morishita*

KINEMATIC ANALYSIS OF EGGBEATER KICKS OF JUNIOR WATER POLO PLAYERS

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Key words: eggbeater kicks, 3D motion analysis, junior players, water polo

Introduction. In water polo, when receiving a pass or hitting a shot, players need to raise their body to a high position above the water surface. The key technique for maintaining such a high position is eggbeater kicks, which basically produce an upward thrust due to alternating circular leg movements that include the cyclic operation of the knee and the ankle. The correlation between the ability to perform eggbeater kicks in water polo and the optimal position of the knee and the ankle is unknown.

Aim of the work. The purpose of this study is to investigate the technique of eggbeater kicks by using 3D motion analysis and to identify the factors that help players maintain height above the water.

Material and methods. In this study, we selected 13 male junior water polo players. For image analysis of eggbeater kicks, 2 video cameras that could take 30 pictures per second with a shutter speed of 1/100 s were used.

Results. The duration of performing eggbeater kicks while holding the 15-kg weight ranged from 11.7 to 73.4 s. From the results of 3D motion analysis of the hip, knee, and ankle joints, the distances from the greater trochanter to the knee and ankle joints were determined; maximum height of knees and ankles represented the maximum values of each of them during 1 cycle of eggbeater kicks.

Conclusions. There are two characteristic points of the eggbeater kicks in junior water polo players. The ability to perform eggbeater kicks correlates with maxi-

imum height of knees and ankles. However, the relationship between maximum height of knees and the ability to perform eggbeater kicks is stronger than that between maximum height of ankles and the player's ability.

7. ^{pos}
^{POL} **Aniol-Strzyżewska Krystyna*, Włodzimierz Starosta****

THE COMPARISON OF INFLUENCE OF SPECIFIC EFFORT ON THE CARDIOVASCULAR SYSTEM OF ELITE WRESTLERS (CLASSIC AND FREE STYLE)

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Key words: wrestlers, supples manikin throw, cardiovascular system

Introduction. Together with Polish coaches we sought the most difficult test for assessing athlete's specific endurance. It was supples manikin throw, which was added to the complex of tests of the specific efficiency of the wrestlers.

Aim of the work. An attempt at assessing the effect of a specific endurance exercise on the changes in heart rate and arterial pressure among Polish wrestlers, in different phases of the interolympic period of training.

Material and methods. In the four-year periods between the Olympic Games in the last decades of the last century was tested 556 members of the Polish National Team; 145 seniors, 91 juniors and 44 younger juniors (free style) and 94 seniors, 106 juniors and 76 younger juniors (classic style). In the abovementioned test a standard manikin weighing 30 kg was used. This motor task requires all qualities needed by wrestler during the fight on the competitions and its duration was the same, as the duration of the wrestler's fight: 2 x 3 minutes, with 1 minute interval. Number of throws executed in the test showed the special preparation of the sportsman, and the blood pressure with pulse rate were adequate to the amount of work done during the test.

Results. In both groups of wrestlers was observed, that the new test as a constant exercise showed the positive changes during the 4- years training. This result should be interpreted as an answer of cardiovascular system of the wrestlers for the standard effort. Heart rate in juniors after the test was in the competition period lower than in the preparatory period. In seniors heart rate was accompanied by a higher number of throws attained in the test. Gaining by numerous competitors a "zero" value of diastolic blood pressure means testifies, that was made the sport effort, which is on the limit of a competitors possibilities. The same situation occurred in both styles of wrestlers fight.

Conclusions. The specific endurance trial establishing a model pattern of changes in heart rate and arterial pressure. That pattern was used by coaches as a supplementary index of recruiting the national representation.

8. pos
POL **Bigosińska Monika***, **Zbigniew Szygula****

EVALUATION OF HEALTH BEHAVIOUR OF YOUNG WOMEN – STUDENTS OF PWSZ IN NOWY SĄCZ – NUTRITION AND PHYSICAL ACTIVITY

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Key words: women, health behaviour, BMI, WHR, nutrition, physical activity

Introduction. Diet and physical activity are the key points included in the Global Health Strategy introduced by the World Health Organization in 2004 in Geneva.

Aim of the article. The objective of the article is evaluation of the health behaviour of the young women concerning methods of nutrition as well as intensity, types and motivation necessary for physical activity.

Methods and research materials. The research was conducted on 168 women at the age of 20 – students of PWSZ in Nowy Sącz. The research makes use of a survey which contains questions concerning methods of nutrition, different types of physical activity as well as the reason for it. The body mass and height were measured, which allowed to calculate women's BMI. The body fat mass was calculated with Tanita's scale. The waist and hip measurements were used to calculate WHR.

Results of the research. Over 68% of the women don't eat meals regularly at the same time of the day (68,4%). Over half of them never or hardly ever have snacks between meals. 54,1% of the women eat products known as "fast-food" more often than once a month. 51,1% of the students use butter and 48,2% use sugar once or more times a day. When the research was conducted, 94% of them were not on a diet. Half of them are proud of their figures and 62% are not afraid of putting on weight. Everyday physical activity is chosen only by 37,5% of the young women. The vast majority mentions a walk as a most common type of physical activity. Other types described by the students are: cycling and team sports. The aim for physical activity is to improve their health or shape their figures. 79,1% of the students have proper BMI and 55,9% have proper body fat mass. Most of them have gynoidal type of figure.

Conclusion. In spite of the fact that most of the young women have proper BMI their health behaviour in relation to the methods of nutrition they prefer and their physical activity is improper.

9. pos
POL **Bujas Przemysław****, **Dariusz Tchórzewski******, **Janusz Jaworski****

ASYMMETRY OF SUPPORTING AND STABILIZING FUNCTION OF THE LOWER EXTREMITIES IN ALPINE SKIERS

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Key words: asymmetry, coordination motor abilities, balance

Introduction. Each of sports including skiing has specific requirements for the competitor's balance. This specificity also refers to the asymmetry in this issue, as each of the ski competition requires efficient mechanisms for bilateral control of athlete's stability.

Aim of the work. Investigate the level of asymmetry in terms of stabilizing function of the lower extremities in alpine skiers.

Methods. The subjects of our studies were 3 women and 8 men - alpine skiers. There was identified the level of functional asymmetry during balance test and stabilometric measurement. For this purpose we used Libra's balance platform of EasyTech company and stabiographic platform CQ Stab. In addition, we measured the rapid response to auditory and visual stimuli with the use of the using the APR-t apparatus and the stimulus generator.

Results. The results reveal asymmetry mainly within the indicators of frequency of foot pressure and velocity of COP oscillations. Recorded values indicate a predominance of the left lower limb, and correlation coefficients between the frequency response and corrective measures of amplitude stability generally take significant negative values. There were no associations between indices for static equilibrium and balance and rapid response.

Conclusions. Asymmetry found in young skiers in the stabilization function corresponds to the observation made in non-practicing youth and adults. Further studies need to determine the relationship between the level of asymmetry and the effectiveness of a skier during the competition.

10. pos
POL

Bujas Przemysław**, **Dariusz Tchórzewski******, **Janusz Jaworski****

SIZE OF FUNCTIONAL ASYMMETRY OF LOWER LIMBS IN ALPINE SKIERS

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Key words: asymmetry, biomechanical indicators, lateralisation

Introduction. Functional asymmetry is a phenomenon significantly influencing the result of sport. In sport disciplines of high symmetry it is the underlying difficulty in achieving success in individual cases. On the other hand, its high level may underlie a number of injuries.

Aim of the work. Examine the level of functional asymmetry of the lower extremities in alpine skiers.

Methods. 3 women and 8 men took part in the studies. There were defined their level of asymmetry in motor tasks requiring the disclosure of conditional abilities. the studied indicators were: maximum and the relative strength developed in conditions of isometric contraction (knee and hip extensors) and kinematic indica-

tors describing SJ jump on the platform. The results were analyzed separately for dominant and non-dominant leg.

Results. The coefficients of asymmetry in most subjects oscillate around a value of 10% or exceed it, and its direction in most subjects indicates a stronger muscles of left leg. Individuals with a stronger asymmetry of the knee extensors are characterised by lower level of asymmetry of the hip extensor. Analysis of jump revealed the value of SI (symmetry index) at or above 20%, which indicates significant asymmetry. Its direction confirms the dominance of the left lower limb.

Conclusions. Young alpine skiers have a strong asymmetry of strength abilities. This could be an obstacle to their further development and also provide direction for further proceedings aimed at symmetrisation.

11. pos
POL

Bukowska Anna

FACILITATION OF GAIT IN PATIENTS AFTER STROKE BY USING RHYTHM

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Key words: stroke, gait, rhythm, Neurologic Music Therapy

The aim of the research is to show how rhythm can facilitate process of gait reeducation for patients after stroke.

Case study. The patient was a 75-years-old male who has been suffering from left hemisphere stroke since August 2010. His functional problems appeared mostly in gait. The right side of his body was not active, associated reaction of the right upper limb appeared during walking. He was not able to do the weight-shifting to the right side, steps were not long enough, it was hard for him to keep his balance. Also he had trouble walking up and down the stairs.

Methods. The one-month treatment was based on sensomotoric techniques derived from Neurologic Music Therapy concept (NMT). As a preparation of gait phases Therapeutic Instrumental Music Performance (TIMP) was used. The patient's stand and swing phase of gait, trunk activities and balance reaction were trained by task-oriented exercises with simple music instruments. Then his gait was reeducated by Rhythmic Auditory Stimulation (RAS). Rhythm and music were also used during walking the stairs.

Results. The assessment taken before and after the treatment include several functional tests as Barthel Scale (for daily live activities) and Berg Balance scale, Tinetti Test, Tandem test, Time Walking test, The timed „Up and go” test, Dynamic Gait Index (for gait and balance). The patient has improved significantly in all of them.

Conclusion. The case study shows that rhythm and repetition can stimulate motor-learning and help patients after stroke improve their gait on different kinds of surfaces and stairs. Still, to confirm the results this research should be continued on a bigger group of patients.

12. pos
POL **Czech Piotr¹, Czesław Giemza¹, Barbara Szpotowicz³, Magdalena Kępińska³, Michał Kuczyński^{1,2}**

EFFECT OF WHOLE-BODY CRYOTHERAPY ON POSTURAL CONTROL

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Key words: whole-body cryotherapy, COP, postural balance

Introduction. Whole body cryotherapy (WBC) is an increasingly common form of rehabilitation. It is often recommended for patients with Parkinson's disease, multiple sclerosis and other diseases that are associated with deteriorated body balance control but the impact of WBC on postural balance is not fully understood.

Aim of the work. The aim of this study was to compare a single exposure with repeated exposures to WBC on postural performance and control in young people.

Material and methods. We investigated the effect of WBC on postural control in twenty-four young people (21-24 years old). We measured center-of-pressure (COP) variability, range, mean velocity in bipedal quiet stance with eyes open: before, immediately after a single exposure and after a series of WBC.

Results. Our studies indicate that a single exposure to WBC increased the COP variability, range and mean velocity in the sagittal plane ($p < 0.05$) and the COP range in the frontal plane ($p < 0.05$). In contrast, there were no significant differences in postural performance after a series of 10 treatments compared to the baseline.

Conclusions. Single exposure of WBC deteriorated the balance probably as a result of „thermal shock”, which influenced on the muscles and nervous system. A series of 10 treatments WBC induced adaptations and did not affect on the balance in healthy young people.

13. pos
POL **Fiedor Marian*, Kinga Tucholska****

SELF-ACTUALIZATION AND THE CHARACTER IN A PSYCHOLOGICAL DIAGNOSIS OF ATHLETES

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Key words: self-actualization, psycho-biological model of personality, students, diagnosis

Introduction. Self-actualization is considered as an effect of full involvement in interpersonal and social relations taking the support for others in their development into account as well as pro activity and cooperation in realization of tasks or life's challenges.

Aim of the work. Whether there are relationships between level of personal self-actualization and characterological variables and how do they look like?

Material and methods. In the research took part 171 students of University School of Physical Education in Krakow. There were applied:

- Temperament and Character Inventory (TCI) by R. Cloninger in adaptation of E. Hornowska
- Synergistic Self-Actualization Questionnaire (KSAS) by Z. Uchnast (2010).

Results. The higher level of self-actualization, the more improved:

- capability to self-directing expressed in responsibility, firmness, resourcefulness and self-discipline
- tendency to cooperation linked with empathy and understanding
- capability to self-transcendence connected with creative transgression of self, transpersonal identification with the World as well as spirituality and wisdom.

Conclusions

- There is a relationship between self- and characterological variables in R. Cloninger's theory,
- The KSAS Questionnaire and TCI Inventory complement each other in a psychological diagnosis and so-called well functioning.

14. pos
POL

Jednorz Gabriela*, Zofia Ignasiak**

EVALUATION OF MORFOFUNCTIONAL DEVELOPMENT LEVEL IN ADOLESCENTS ECOLOGICALLY THREATENED REGION IN ASPECTS OF SOCIOECONOMIC FACTORS

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Key words: children's development, physical fitness, socioeconomic factors

Introduction. Dynamic development of the civilization and increasing industrialization cause many beneficial transformations for man and a lot of threats to his health. The strongest determinant of human health is lifestyle and mainly young people suffer from the effects of a bad lifestyle. Socioeconomic factors of their families are diversifying the society, both in terms of health behaviour, as well as developmental parameters.

Aim. Analysis and the evaluation of morfofunctional development level in adolescents from Legnica and determining the relation between socioeconomic factors of families and the development of their offspring.

Material and methods. The subjects selected for study were 253 pupils (15 years old) from Legnica (Copper Mine District). In research basic somatic parameters, functional abilities (Eurofit) and socioeconomic factors of families were measured.

Results. The level of somatic development of a teenager from Legnica is above the average for population of Polish young people, but the level of motor development

is below that average of population. The number of children in the family, the level of parents education, physical activity of the family are the factors which established the biggest connection with children morphofunctional development.

Conclusions

1. Young people from Legnica achieved results above 50percentile relating to all-Polish norms in somatic development what can result in urban character of city.
2. Weaker results in efficiency tests could be caused by the influence of extrinsic factors, especially by environmental pollution which influences more functional than somatic parameters.
3. The high level of parents education and low number of children in a family are connected with higher level of their children's development.

15. pos
POL **Kozłowska Małgorzata***, **Beata Juras****, **Joachim Raczek*****, **Grzegorz Juras******

PHYSICAL ACTIVITY IN BOYS AND GIRLS AGED 10–12 YEARS FROM CHOSEN REGIONS OF THE WORLD AND THEIR GLOBAL MOTOR FITNESS

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Key words: physical activity, leisure time, motor fitness

Introduction. Physical activity should be considered today not as a simple choice of something to do in addition, but as a MUST. Thus that opinion based on many researches, only 20 percent of children used to exercise anything in their leisure time.

Aim of the work. The main aim of the study was to estimate the influence of physical activity on the somatomotor development and motor fitness of 10-12 years old children of Subcarpathia in comparison to chosen populations of the World.

Material and methods. The research was conducted on 219 girls and 224 boys aged from 10 to 12 years from the Subcarpathia's Łańcut county. Control group consisted of 4431 pupils from Germany, Brasil, Japan and South Africa. That data was collected as a part of international research project "Motorische Entwicklung in der Lebensspanne". Basic somatic parameters were measured first. The following sports tests were use to estimate chosen motor abilities: explosive power (vertical reach jump), speed (50 m run), flexibility (forward trunk bending), precise coordination (balance walk), fast coordination (side step-test) and endurance (8 minutes run). The data concerning the physical activity of the subjects was collected with the use of standardized questionnaire.

Results. There were no significant differences notices in basic somatic features across the same age and sex in different countries ($p > 0,05$). Japanese reached the

best results in global motor fitness while Brazilians and South Africans the worst. Polish were significantly better than last mentioned two nations while German were insignificantly better than Polish. Motor activity influence the level of global motor fitness in investigated populations ($p < 0,05$). The level might depends on the relations between school exercises and activities in leisure time. Relatively many hours of school exercises and activities in sport clubs were typical for Polish pupils. Simultaneously, there is a lack of activities in recreational clubs.

Conclusions. The continuation of longitudinal researches of the state of physical and motor development of children and youth in Poland in the context of effectiveness assessment of the functioning education systems in Poland seems to be valid.

16. pos
POL **Kusiak-Obora Beata***

UTILIZATION OF SOCIAL REHABILITATION VALUE OF PHYSICAL CULTURE

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Key words: behavior, social rehabilitation, physical activity

Introduction. Sizes disturbances in behavior and the diversity of these abnormalities were motive to reflect on determining the mechanisms and triggers them. At this point it should be pointed toward the education and social rehabilitation of physical assets, which may be a way of interaction and cooperation with young people. The work is attempt to indicate the possible use of valuable physical exercise in the value of working with difficult youth.

Aim of the work. The statement usefulness of social rehabilitation values of physical activity based on research conducted among participants in the Wroclaw program 'Coach housing estate'.

Material and methods. The study were used observation sheet made by Thomas M. Achenbach and police bill of crime rates in Wroclaw.

Results. Based of the study found: *the low level of security in the neighborhoods of Wroclaw; *differences in behavior disorders and type of externalizing disorders advantage; *various symptoms of disorder in the behavior.

17. pos
POL **Lamcha Łukasz*, Włodzimierz Starosta****

NEW METHOD OF RECORDING AND ANALYSING THE CONTENTS OF LEADING VOLLEYBAL PLAYERS' PERFORMANCES

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Key words: volleyball, registering of the game, program, playing performance analysis.

Introduction. The tremendous progress observed in all sport games, including volleyball, forces us to seek new methods of more detailed recording and analysis of sports techniques and related performance effectiveness of athletes, including the right and left handed ones. This latter aspect was subject to little research [Starosta, Lamcha, 2009].

Aims. 1. Registering the course of the game using two cameras. 2. Analysis of the effectiveness of the game of the right-handed and left-handed volleyball players using an own computer program. 3. Comparison of the effectiveness of the game of right and left handed players.

Methods. The registering and testing of program for the analysis of technical activities was performed on players of the top four volleyball teams participating in the World League final round in 2007: Brazil, Bulgaria, France and Poland. The observation of technical activities was performed on 30 left handed athletes and three right-handed. The studies used the indirect method of observation, which was the video recording and the recording of the material on the DVD media. It allowed a multiple analysis of various technical – tactical activities. For a more detailed analysis the free of charge computer programs for image processing were used. All measures were introduced to the own author's technical program created by using Visual Basic, which allowed for a detailed analysis of the effectiveness of every individual player.

Conclusions.

1. The analysis of the results showed that the use of two cameras during the registration of the meetings is necessary in order to achieve reliable assessment of the technical performance of the right and left-handed volleyball players.
2. The use of the own program for the analysis of the technical effectiveness has much improved and accelerated the analysis of the results.
3. Programme used for the analysis allowed for the observation of the effectiveness of every individual players at any time of the competition.
4. The own program to analyze the effectiveness of volleyball players performance can become an additional and useful tool for practitioners and theorists, and not only of this particular sport game.

18. pos
POL

Ladyga M., Borkowski L., Szczypaczewska M.

CHANGES WITH AGE IN THE AEROBIC FITNESS IN MASTER CYCLISTS

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Key words: master athletes, performance, aging, cycling

Introduction. In recent years there has been an increase in interest in research area related to the enhancement of the physical fitness of the master athletes. Research comparing master athletes to their sedentary peers has found that many of physiological changes that occur with aging are actually the result of a long-standing

sedentary lifestyle or disuse [Coggan et al.1990] It has also been suggested that an increase in the number of competitive years of sport participation can attenuate the decline anaerobic fitness normally associated with aging [Pollock at al.1987]].

Aim. The purpose of this study was to elucidate the rate of age-related decline in aerobic fitness in master cyclists

Methods. Fifteen healthy master cyclists aged 39,1–62,5 years, participated in this study. The subjects performed graded bicycle exercise until volitional fatigue. Maximal oxygen uptake $VO_2\max$, oxygen uptake (VO_2AT) and power output (PAT) at 4 mmol•l⁻¹ LA were determined.

Results. The $VO_2\max$ values declined with age at an average yearly rate of 0.50 ml• kg⁻¹• min⁻¹ ($r = -0.60$, $p < 0.05$), but PAT values increased with age 0.034 W kg⁻¹•year⁻¹ ($r = 0.52$, $p < 0.05$). The PAT and VO_2AT values increased with number of training years 0.030 W kg⁻¹•year⁻¹ ($r = 0.61$, $p < 0.01$) and 0,26 ml•kg⁻¹•min⁻¹•year⁻¹ ($r=0.49$, $p < 0.05$) respectively.

Conclusions. The rate of age-related decline of $VO_2\max$, was lower than those recorded for moderately active former elite oarsmen in our previous study (Ładyga et al.2008)]. Interestingly, declining $VO_2\max$ values were in contrast to an observed increase in PAT and VO_2AT . The increase with age in anaerobic threshold of master cyclists in this study is consistent with an age-related increase in lactate threshold in older runners [Coggan et al.1990] and with an increase in VT1 in masters-level cyclists [Peiffer et al. 2008]

19. ^{pos}
^{POL} **Nosiadek Leszek*, Przemysław Bujas**, Piotr Krężałek*****

RECOGNIZING OF TABLE TENNIS PLAYERS' PREDISPOSITIONS USING BIOMECHANICAL METHODS

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Key words: table tennis, predispositions recognition, reaction time, static equilibrium, dynamic equilibrium, biomechanics

Introduction. Used during the table tennis players' selection and training process valuation based on tests of general fitness is not a sufficient criterion for estimate the table tennis predispositions. Also, tests carried out by the trainers to valuate the special efficiency allow to identify the current athlete's technique level only. Selected biomechanical measurements could improve the widely used system for recognise tennis players' predispositions.

Aim of the work. To determine the suitability of selected biomechanical measurement methods to valuate special predispositions of table tennis players with different technique levels.

Material and methods. The study included 12 active table tennis players; (8 men and 4 women, 11-39 years) with different technique quality levels. Reaction time was investigated after simple stimulus (auditory and visual) using the APR-t apparatus and the stimulus generator, EMG and dynamometer. Static equilibrium indicators were measured using stabilographic platform CQ Stab and equilibrium in dynamic conditions with the Libra (EasyTech) balance platform. Measurements were also done of maximum force associated with elbow joint muscles and knee extensors. The last issue examined was the dynamics of the lower limbs during jumping on the two platforms system (PJS-2D type - JBA).

Results. Investigation of different methods for determining the response time to a simple stimulus, allowed the comparison of their usefulness in the table tennis players' selection process. Static and dynamic tests of balance and measurements of limb dynamic properties were used for identification of the relationship they have with the quality level of players' technique.

Conclusions. Application of proposed biomechanical measurements is the valuable extension and refinement of the system widely used by coaches for validate the suitability of players to perform table tennis.

20. pos
POL **Nowacka Estera***, **Teresa Leszczyńska****, **Aneta Kopec*****,
Katarzyna Pysz-Izdebska*

ASSESSMENT OF INTAKE OF B-GROUP VITAMINS BY THE MEMBERS OF THE POLISH TEAM IN CANOE SLALOM

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Key words: B-group vitamins, daily diets, nutritional pattern, canoe slalom

Introduction. Intensive physical exertion requires higher intake of vitamins that are essential for the proper way of many biochemical processes in the human body.

The aim of this study was to assess the average daily intake of B-group vitamins by the members of the national team in canoe slalom, in relation to current recommendation for the Polish population.

Material and methods. Among 37 athletes (8 women and 29 men), aged 16 - 27, participated in these studies. The assessment was performed by 24-hour dietary recalls collected in the training and the start season of 2009. Intake of vitamins B1, B2, PP, B6, B12 and folate from the daily diets and supplements was evaluated with using Diet 4.0, software (IZZ, Warsaw, Poland). Obtained results, separately for men and women, were compared to the estimated average requirement (EAR) and to the upper level (UL) value.

Results. Supplements used by sportsmen's of both genders significantly increased intake of B1, B2, PP, B6 vitamins and folate. Average daily diet of women provided vitamins B1, B2, PP, B6, B12 and folate in amounts of 111, 167, 98, 127, 164

and 67 % of EAR value, whereas diets with supplements in 159, 209, 136, 290, 178 and 81 % respectively. Average daily diet of men met requirements for vitamins B1, B2, PP, B6, B12 and folate in 139, 175, 147, 181, 210 and 89 %. Diets together with the supplements caused higher intake of following vitamins, i.e. 204, 200, 174, 330, 231 and 100 % of EAR value. Assessed athletes did not exceed the UL value for these vitamins.

Conclusions. Obtained results showed that among analyzed B-group vitamins only intake of folate by sportsmen both genders should be corrected.

21. pos
POL

Perzyńska-Biskup Anna*, **Leon Biskup****, **Stanisław Sawczyn*****

TYOLOGY OF CAREERS IN FORMER AND CURRENT FEMALE GYMNASTS

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Key words: sport, gymnastics, woman, career, professional work

Introduction. The group of competitive sport disciplines which have developed educational schemes for even the youngest athletes include an extraordinarily spectacular and attractive gymnastic sports, with particular focus on those practiced by women

Aim of the work. Therefore, the author decided to analyse biographies of gymnasts and to determine the effect of competitive sport activity on the process of formation of patterns of life careers among women involved in gymnastic sports on a competitive level, currently and in the past.

Material and methods. The investigations were carried out among a group of 482 athletes of two generations: currently involved in gymnastic sports and former gymnasts. The women included representatives of three gymnastic disciplines: artistic gymnastics, rhythmic gymnastics and acrobatic gymnastics. A basic technique of collecting empirical material was an in-depth sociological interview, using V-Cramer coefficient which confirms statistically significant relationships.

Results. The results of the study demonstrated that, despite some intergenerational disproportions, both in the group of current athletes and those who have already ended their sport careers, patterns of life careers which prefer building professional future based on close relationships with sport are dominant.

Conclusions. Hence, one can assume that the sport as a specific life road is perceived by former athletes with an autotelic approach: they treat it as an amateur level sport, whereas current athletes approach the sport instrumentally and participate in it in a highly professional manner.

22. pos
POL **Skrzek Anna***, **Ignasiak Zofia****, **Rożek Krystyna***, **Sławińska Teresa****,
Domaradzki Jarosław**, **Kochan Katarzyna****

INVOLUTIONAL CHANGES OF THE MOTOR SYSTEM AND QUALITY OF LIFE OF OLDER ADULTS

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Key words: old age, women, body build, physical fitness, bone density testing, quality of life

Introduction. The effects of the involution processes may be the following: the loss of the stability of the body, lower muscular power, lower scope of mobility of joints, lower density mineral of bone tissue and worsened resistance. These changes limit locomotion and motor possibilities of elderly people.

Aim of the work. The aim of the current work is the analysis of the involution changes in motor system in relation with quality of life older women.

Material and methods. A group of 193 women took part in the experiment. They were divided into three groups according to age: 1. the first group consisted women aged 50 (N=46, mean of age – 55,6±3,1), 2. the second group – women aged 60 (N=90, mean of age – 64,8±2,9), 3. the third group – women aged 70 (N=57, mean of age – 74,9±3,2). A few measurements were done: basic somatic traits (body height and weight), densitometry using EXA-300 apparatus, isometric muscular force of knee joint using multifunctional rehabilitation–diagnostic armchair and body balance using ACCUGAIT platform. The shortened version of the questionnaire WHO QL-100 was used to gather information about the quality of life. Additionally, two more general questions were asked concerning the satisfaction of life and the health.

Results. Characteristic changes in somatic features like decrease in body height and growth in BMI were observed. Research findings showed the decrease of bone mass mineral density as well as the force in the muscles of flexion and extension of the knee joint. Vertical stability parameters (area and path length of the stabilogram) suggested worse stability of the body with age. Significant correlation coefficients suggest strong relations between analysed parameters and age.

Conclusions. Research findings proved the different correlations between involution changes in motor system and the subjective view of the life quality.

23. pos
POL **Socha Teresa***, **Stanislaw Socha***

RECOGNISING FUNCTIONAL ABILITIES OF FEMALE BODY

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Key words: athletics, world records, functional abilities, women

Introduction. It has been accepted in the theory of sport training that the sport results present objective and comprehensive criteria for the assessment of the functional abilities of the human body. Correspondingly, the world records in various sport disciplines illustrate the level of the functional abilities of the human body.

Aim of the work. The purpose of this paper is to assess and discuss functional abilities of female body on the basis of world records in 23 athletics disciplines, with a particular focus on the athletics disciplines that have been introduced in 1980s.

Material and methods. The materials used are lists of actual women world records in athletics.

Discussion. In athletics as many as 23 disciplines are open for women participation hence; it offers particularly rich possibilities to investigate into the functional abilities of the female athletes. An area of special interest appears to be world records set by women in 1980s. It seems worth noticing that despite of 30 years of added training experience and knowledge the world records from 1980s remain unbeatable. As a reason behind such a state of affairs, a use of the pharmacological substances, which were not listed as disallowed substances at that time, is often mentioned. The opinion that the exceptional functional abilities of the female athletes, as illustrated by the world records from 1980s, should be exclusively attributed to the possible use of the pharmacological substances does not, however, appear fully justified. An achievement of the sport results such as the women world records in athletics from 1980s can appear unlikely or simply impossible without the support of the pharmacological substances. Nevertheless, it seems reasonable to argue that the driving force behind these extraordinary results was not only the pharmacology but a combination of the pharmacological support with sound training methods.

24. ^{pos}
^{POL} **Spieszny Michał*, Ryszard Tabor**, Tomasz Klocek***

THE CHANGES IN THE ANAEROBIC POWER OF THE HANDBALL PLAYERS DURING THE SEASON

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Key words: handball, anaerobic capacity, Georgescu's test, Vandewalle's test

In the study, the results of two measurements (January and May 2011) were analyzed. Their subjects were the handball players that represented in the season 2010/2011 in the Polish 1st league games the sport club from Bochnia „Stalprodukt”.

The main aim of the thesis is the attempt to determine the character and the quality of changes in anaerobic power of the examined players in the second round of the league competition.

The scope of the research involved the measurements of basic somatic features (body height, height in sitting position, body weight and lean body mass) and Georgescu's and Vandewalle's tests and Spieszny's test of speed and force capacities.

As it **results** from the analysis of the acquired results, the anaerobic power of the examined players, which was assessed during each test, diminished in most cases. However, the much more perceptible changes were related to the time of obtaining the force and maintaining it during Vandewalle's test.

25. ^{pos}
^{POL} **Starosta W.*, Karpińska A.****

THE LEVEL OF GLOBAL MOVEMENT COORDINATION AND FLEXIBILITY (AMPLITUDE OF MOVEMENTS) IN THE ANNUAL CYCLE AND THEIR INTERDEPENDENCE IN A 13-17-YEAR-OLD BALLET SCHOOL FEMALE STUDENTS

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** University School of Physical Education in Poznań (Poland)

Key words:

Introduction. In the science of movement, interdependence of movement abilities in the ontogenetic development still belongs to poorly recognized. This important issue still did not undergo the continuous research. Flexibility in the structure of movement abilities is a matter of controversy. In many sports, dance and circus arts flexibility throughout the body, including the lower extremities, is important because it determines the precise execution of many technical elements and coordination complex movement connections.

Aims. 1. Determination of the level of global movement coordination and amplitude of movement in the hip joints in ballet school female students of different ages. 2. Determination test of the variability of the level of global movement coordination and flexibility of movement in female students in the annual cycle. 3. Evaluation of correlation of the level of flexibility of movement in the hips and global movement coordination.

Material and methods. Measurement of the global movement coordination was performed on ballet schools female students with the help of two test tasks and a coordinationmeter devised by W. Starosta [1978, 2003, 2006]. To measure flexibility, the test for amplitude of movement in the hips elaborated by W. Starosta [1978] was used.

Results. The female students were characterised by fairly high level of global movement coordination which „rose” with the age. In a more complex test task, the level of global movement coordination increased in the surveyed girls in most periods of research. The girls were characterised by an extremely high level of the flexibility of movements in the hip joints. There were no significant differences in the amplitude of movement when raising the right leg and the left leg.

Conclusions. 1. Ballet schools female students were characterized by relatively high level of global movement coordination, increasing till the age of 15 to 17 years. This level increased in the first semester of education. 2. The level of the flexibility of movement in the hips was extremely high in the female students, and

there were no significant differences in the flexibility of movement when raising the right leg and the left leg. It was the highest in the girls of 15-16-years. The flexibility increased during the school year and fell slightly after the summer break. 3. A few moderate correlations were found between the results of the test of the flexibility of movement in the hip joints and the global movement coordination.

26. pos
POL **Sterkowicz Stanislaw*, Stanislaw Żak****

THE SPORT LEVEL IN RELATION TO AGE, PHYSICAL DEVELOPMENT AND SPECIAL FITNESS OF THE SPORTSPEOPLE THAT PARTICIPATED IN THE OLYMPIC VOLLEYBALL TOURNAMENT (BEIJING 2008)

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Key words: volleyball, body height, body weight, BMI

Introductory information. The following factors were analyzed in the light of the sport level of the female volleyball players (n=144) and male volleyball players (n=144) that participated in the Olympic Tournament Beijing 2008: their age, body height and body weight, BMI factor and arm reach that was measured in relation with the height of the net during attack and defense.

Method. In establishing the relations between the results, a bivariate ANOVA analysis with interaction was used. The research was performed on three groups of sportspeople (they were teams that finished the tournament on the positions: 1-4, 5-8, 9-12).

Results. It has been proven that a bigger body weight in relation to similar body height, and greater experience were conducive factors to better sport achievements in the Olympic Games. Moreover, it was observed that a positive influence on the game effects had the relative arm reach, in attack as well as in defense.

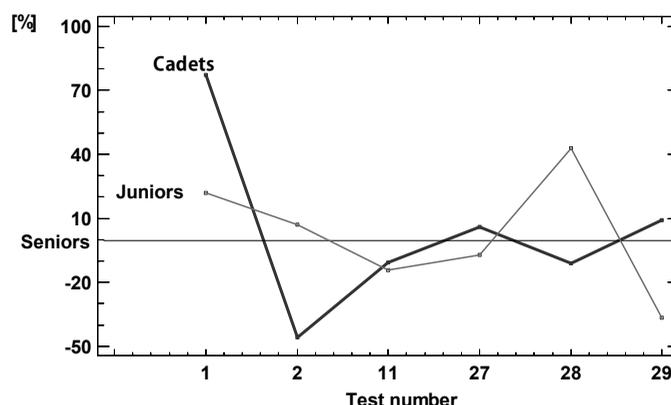
27. pos
POL **Sterkowicz Stanislaw, Grzegorz Lech, Janusz Jaworski, Tadeusz Ambroży**

COORDINATION MOTOR ABILITIES OF JUDO CONTESTANTS AT DIFFERENT AGE

Introduction. Judo is generally considered as a sport which combines strength and endurance. In this sport, with predominance of open movement habits, an important role can be played by coordination abilities.

Aim. The main aim of the present study is to carry out comparative analysis of the indexes of coordination motor abilities (CMA) among judo contestants at different age.

Methods. The study group was comprised of 25 judo contestants during competitive season (7 seniors, 10 juniors and 8 cadets). The scope of computer tests encompassed: kinaesthetic differentiation of movements, simple reaction time, complex reaction time, spatial orientation, visual-motor coordination, rhythmization, speed, accuracy and precision of movements, ability to adapt movements, eye-hand coordination. Global movement coordination (Starosta's test) and balance (Flamingo) were tested. Significance of differences was assessed by means of one-way ANOVA ($p < 0.05$). In intergroup comparisons, the levels obtained for seniors were considered as 100% (see figure below).



Results. The factor of experience (age category and sport experience) has overwhelming effect on the sense of balance, which is the highest in seniors, medium in juniors and the lowest in cadets (test 1). Category of juniors exhibits the most of beneficial differences in terms of global motor coordination compared to cadets (2), minimal complex reaction time in relation to seniors (11), spatial orientation (27) and indexes of reaction to moving objects (28-29). Seniors are characterized by longer minimal complex reaction time compared to juniors (11) and stagnation of results in the test of global motor coordination (2), spatial orientation (27) and reaction to moving objects (28-29).

Conclusion. Significant differences in CMA observed between age categories are the effect of sport training. Moreover, they result from regularities of ontogenetic development.

28. ^{pos}
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THE DEPENDENCE OF PHYSICAL EFFICIENCY TEST RESULTS IN YOUTH FROM NOWOGARD TOWN (WEST POMERANIAN DISTRICT IN POLAND) ON BODY MASS COMPONENTS

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Key words: physical efficiency test, youth, body mass components

Introduction. Human performance and physical efficiency depend more on body mass components than body size. Moreover, gender differences impose to it.

The aim of work is to evaluate a relation between results of 16 physical efficiency tests, carried out in youth from the college in Nowogard (West Pomeranian district in Poland), and subjects' body mass components.

Material and methods. The research was carried out among 83 girls (age 18.06 SD 1.118 years; body height 164.99 SD 6.209 cm; body mass 58.89 SD 9.887 kg) and 146 boys (age 18.03 SD 1.089 years; body height 179.30 SD 6.590 cm; body mass 72.74 SD 11.447 kg).

Results. Body composition significantly differed between genders. The analysis of clusters was used to study the dependence of 13 physical efficiency variables (common for both genders) on body mass components. To analysis of clusters standardized variables and both gender together were taken under the consideration, because standardization was carried out within the gender and chronological age. Mean values in both clusters differed significantly. In one cluster were positive values (N=109) and in the second – negative (N=116), then these clusters represented better and worse results. The analysis of variance (with body mass components as dependent variables) showed significant differences in body mass, fat and water contents, in these two groups of clusters. However, muscle mass did not significantly differed.

Conclusions. The level of obesity differentiated both gender in regard to physical efficiency tests results. Obesity measured by body proportions influenced more negatively on physical efficiency tests results in boys (as much as 8 tests) than in girls (only one test). In boys it was noticed more wider variability range of studied features than in girls.

29. pos
POL Szpotowicz Barbara*, Magdalena Kępińska*, Zbigniew Szygula**, Piotr Czech***

WHOLE-BODY TREATMENT OF CRYOGENIC TEMPERATURE ON CHOSEN BIOCHEMICAL AND PHYSIOLOGICAL BLOOD INDICATORS

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Key words: whole-body cryotherapy, morphology, immunological response

Introduction. Whole-body cryotherapy is one of the methods of applying cold. More than thirty years ago, for the first time in history it was applied by Yamauchi [1989] in order to treat the patients with rheumatoid afflictions. Since then, scientists all over the world have been exploring the influence of low temperatures ranging from -100 to -160 degrees centigrade on human body. The body's response to low temperature is manifested by positive changes in the hormonal system, cir-

culatory, nervous, muscular and immune system, it has a significant impact on the mechanisms of regeneration and tissue mobilization [Zalewski et al. 2007]. It was noted that cryotherapy has an impact on increasing white blood cells (WBC), in particular lymphocytes and monocytes [Lubkowska et al. 2009]. Increased amount of erythrocytes, hemoglobin concentration, hematocrit, platelets, MCV (mean corpuscular volume) and decrease of MCHC (mean corpuscular hemoglobin concentration) was observed by Stanek et al. [2006]. Jackowska et al. [2006] found that systemic cryotherapy causes increase of C3 and C4 protein concentration (antibacterial activity) in serum and increase level of immunoglobulins IgA, IgG. Conversely, Straburzyńska-Lupa et al. [2007] discovered decrease in amount of erythrocytes, hemoglobin, hematocrit after cryotherapy. The procedures of whole-body cryotherapy differ in particular study, the number of examined people is low, the variability in gender and age occur, blood samples are collected in various periods of time and the temperatures in cryogenic chamber are also changeable.

The aim of the work is to introduce literature review about the influence of whole-body cryotherapy on chosen biochemical and physiological blood indicators.

30. pos
POL **Szymura Jadwiga***, **Joanna Gradek****, **Magdalena Więcek*****, **Marcin Maciejczyk*****, **Jerzy Cempla******

DYNAMICS OF CHANGES IN OXYGEN INTAKE AND HEART RATE DURING SUPRAMAXIMAL EFFORTS IN OVERFAT GIRLS

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Key words: obesity, girls, supramaximal efforts, oxygen intake, heart rate

Aim of the work was to determinate dynamics of changes in oxygen intake and heart rate in girls with excessive level of body fat (F%) aged about 10 years.

Material and methods. The study was conducted on 20 girls with excessive level of body fat and 20 with normal level of body fat ($33.2 \pm 5.6\%F$ vs. $14.5 \pm 4.9\%F$). The girls performed the graded test, next week the „Force-velocity test” and next few days later supramaximal efforts on cycloergometer (three 10s with 30s pause for rest between efforts and after 1min of rest two 30s with 30s pause for rest between efforts). The intensity of supramaximal efforts was calculated individually in relation to the value of Pmax and MAP.

Results. Total values of VO₂ (l.min⁻¹) was significantly greater in girls with excessive body fat than among girls with average level. The VO₂, expressed in relative to body mass values (BM), were lower in obese girls ($p < 0,05$). There was

no significant difference between comparative group in relative to free fat mass (FFM) values of VO₂. The dynamic of changes in oxygen intake were similar in both groups. No significant differences in heart rate were noted.

Conclusions. Higher values of VO₂ (l.min⁻¹), during supramaximal efforts (when intensity was calculated individually in relation to the value of P_{max} and MAP) noted in group of overfat girls indicate a higher cost of physical exercise incurred by overfat girls.

31. pos
POL **Teległów Aneta***, **Zbigniew Dąbrowski***, **Anna Marchewka***, **Aleksander Tyka***, **Marcin Krawczyk****, **Jacek Głodzik***, **Henryk Szklarczyk****, **Zbigniew Szygula***, **Zbigniew Tabarowski****, **Jan Bilski******, **Katarzyna Filar – Mierzwa***

THE INFLUENCE OF WINTER SWIMMING ON BLOOD RHEOLOGICAL PROPERTIES

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Keywords: winter swimming, hematological parameters, blood rheology.

The aim of this study was to assess the influence of regular immersions and swimming in cold water on blood rheological properties of individuals voluntarily involved in such activities. These studies were intended for better understanding reactions of the organism and especially blood rheological properties occurring due to rapid cooling in cold water and their long term effects.

Methods. The study was carried out on 12 male winter swimmers from Krakowskie Stowarzyszenie Morsów “Kaloryfer”. During the winter season (from November to April) they regularly once a week immersed for 3 minutes in cold (from 2°C to 7,2 °C) waters of the Zakrzówek lake. To analyze morphological and rheological blood parameters venous blood was sampled from each winter swimmer twice at the beginning of the season (starting in November) and after its completion at the end of March. The following hematological parameters were measured: red blood cell (RBC), hemoglobin (Hb), hematocrit (Ht), mean corpuscular hemoglobin concentration (MCHC), erythrocyte elongation index at shear stress, aggregation index (AI), the amplitude and total extent of aggregation (AMP), half time describing the kinetics of the aggregation process ($T_{1/2}$), blood plasma viscosity (BPV).

Results and conclusion. In this study the main finding is an increase in erythrocyte deformability indices (EI) after the whole season of regular immersions in cold water at the whole range of shear stress values. This evident increase in erythrocyte elasticity after the swimming season represents some kind of protection facilitating passage of such cells through the vascular bed constricted due to regular immersions in cold water for 6 months. Winter swimming, represents short-term expo-

sure to cold, and induces strong non-pathological modifications of hematological parameters: a decrease in MCHC, AMP, a strong increase in the elongation index and decreased blood glucose level. This phenomenon indicates adaptive reactions occurring within the microcirculation of winter swimmers. Our study helped to elucidate changes occurring in the blood of subjects regularly swimming in cold water and decide whether such activities can actually improve health status of humans.

32. ^{pos}
^{POL} **Tokarz Renata***, **Ewa Orłowska****

STUDENTS' POPULARITY IN CLASS BY EXAMPLE OF SMS (SCHOOL OF SPORT'S CHAMPIONSHIP) IN LIGHT OF SOCIOMETRIC RESEARCH

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Key words: popularity, class

Introduction. Because of the constant competition and rivalry, there is a characteristic, dominating atmosphere in the sports class. More often than usual, the roles of individual members in the group undergo constant change, where winners become losers and losers become winners, improving the class' team building.

Aim of the work. To find out how popularity is distributed among students in a sports class and what it is determined by.

Material and methods. Sociometric techniques, analysis of the school documents, interviews and open observation.

Results. Working with a class does not always bring or allow the desired results in sport and studying/science. Sociometrical choices, the split second decisions revealing students' assessments of each other, tend to be surprising/unexpected for adults as well as for the students. A school class, like any other small social group has got its own formal and informal faces.

Conclusions. Students who have outstanding achievements in sports enjoy a high popularity among the school group; academic marks together with social activity, consolidate their recognition among peers. The results of the sociometric research can be helpful for teachers, educators and trainers in their daily practise. The knowledge of the structure of a class or sport's group as well as the relationships between students will help to verify a teacher's own estimation about their class as a group together with information about each student's place in the informal structure of the class.

33. pos
POL **Tucholska Kinga*, Marian Fiedor****

COMMUNICATIVE ACTIVITY AND TENDENCY TO AGGRESSIVE BEHAVIOR AMONG FUTURE PHYSICAL EDUCATION TEACHERS AND SPORTS COACHES

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Key words: communicative activity, aggressive behavior, students, profession of a teacher and a coach.

Introduction. Profession of a teacher, as well as profession of a coach, is highly incriminatory. The way of functioning depends on inter alia: attitude towards working, type of personality, personality traits (e.g. aggressiveness) and given communicative competence.

Aim of the work. In this paper posed the question whether there is relationship between level of communicative activity (measured with SAK) and tendency to aggressive behavior (measured with BPAQ) and what is its nature.

Material and methods. The study covered 120 students University School of Physical Education, Krakow.

Methods. The Aggression Questionnaire; Buss A., Perry M. (BPAQ) and (SAK) Necki Z.

Results. High level of active communication appears to be changeable with increased tendency to verbal aggressive behavior. However, low level of communicative activity is not changeable with tendency to expression aggression in the form like burst of anger or hostility.

Conclusions. It seems reasonable to consider using the BPAQ method in the battery of methods that check predisposition to work as a teacher and a coach.

34. pos
POL **Wąsik Jacek***

KINEMATICS AND KINETICS OF TAEKWON-DO SIDE KICK

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Key words: taek-won-do, the side kick technique

The aim of the paper is to present an analysis of the influence of selected kinematic factors on the side kick technique. This issue is especially important in the traditional version of taekwon-do, in which a single strike may reveal the winner. Six taekwon-do (International Taekwon-do Federation) athletes were asked to participate in this case study. Generally accepted criteria of sports technique biomechanical analysis were adhered to. The athletes executed a side kick three times (in

Taekwon-do terminology referred to as yop chagi) in a way which they use the kick in board breaking. The parameter values obtained were used to determine the mean velocity value changes in the function of relative extension length of the kicking leg. The maximum knee and foot velocities in the Cartesian coordinate system were determined. The leg lifting time and the duration of kick execution as well as the maximum force which the standing foot exerted on the ground were also determined. On the basis of the values obtained the mean values and the standard deviations were calculated. The correlation dependence ($r=0.72$) shows that a greater knee velocity affects the velocity which the foot develops as well as the fact that the total time of kick execution depends on the velocity which the knee ($r = -0.59$) and the foot ($r = -0.86$) develop in the leg lifting phase. The average maximum speed was obtained at the length of the leg equal to 82% of the maximum length of the fully extended leg. This length can be considered the optimum value for achieving the maximum dynamics of the kick.

35. pos
POL **Wiecha Szczepan***, **Magdalena Więcek****, **Marcin Maciejczyk****, **Anna Tyka*****, **Jadwiga Szymura ******, **Aneta Teległów*******

EXERCISE HEAT ACCLIMATION EFFECTS ON SERUM TOTAL ANTIOXIDANT CAPACITY IN TRAINED AND UNTRAINED MEN

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Key words: exercise heat acclimation, total antioxidant status, athletes

Introduction. Exercise, thermal stress or disease induced higher production of reactive oxygen and nitrogen species (RONS). It is well known that training increase basal level of antioxidant capacity and acclimation reduces heat stress, but there is no reports of exercise induced heat acclimation on total antioxidant status level of trained and non professional training men.

Aim of the work. The aim of the study was to examine effects of exercise heat acclimation on serum total antioxidant capacity/status (TAC/TAS) in athletes (TRA) and untrained men (CON).

Methods. 12 men (6 trained; 6 control) completed series of 12 acclimation trainings (90 min in 35°C; 60% RH) on cycloergometers with the intensity of 55%. Blood samples were taken before and immediately after exercise in the first and the last training session. TAS/TAC level, rectal temperature (Tre), physiological strain index (PSI), cumulative heat strain index (CHSI) and body mass changes (Δ BM) were measured.

Results. Heat acclimation increased basic levels as well as postexercise levels of TAS/TAC in both groups ($p=0,080$). TRA group had higher TAS/TAC levels than CON group ($p=0,067$). There was no significant correlation between, heat stress (PSI and CHSI) or exercise dehydration with TAS/TAC changes.

Conclusions. Heat acclimation seems to increase TAS/TAC level in both trained and untrained men. However higher TAS/TAC level was noticed in athletes.

36. pos
POL **Więcek Magdalena***, **Marcin Maciejczyk***, **Jadwiga Szymura****, **Jerzy Cempla*****

COMPARISON OF THERMAL RESPONSES AND PHYSIOLOGICAL STRAIN IN UNTRAINED MEN AND WOMEN DURING THE GRADED TEST

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Key words: aerobic capacity, gender differences, thermoregulation, physiological strain index

Introduction. The efficiency of thermoregulation (elimination of endogenous heat) is one of the factor which improves physical capacity.

Aim of the work. of the study was comparison of thermal responses, heart rate and physiological strain index (PSI) in untrained men and women during the graded test.

Methods. The study was conducted on untrained 16 men and 16 women aged 19-23 years old with correct body composition. The women have correct, two-phase menstrual cycle. The graded test was performed on cyclergometer twice: in women in half of follicular and luteal phase of menstrual cycle, in men in two weeks periods. The, HR, Tre, Tsk, SR and PSI were evaluated.

Results and conclusions. There was no significant difference in the level of analyzed parameters between follicular and luteal phase of menstrual cycle. The level of HR, Tre, Tsk and SR noted in the end the graded test was significantly ($p<0,05$) higher in comparison to resting level in both groups. During the test the level of HR and Tre was slightly higher in men but the difference between men and women was not significant. Also the physiological strain index was higher in men, but the skin temperature (Tsk) was significantly lower in women. The sweating rate (SR) was significantly higher in men during all graded test and its positive correlates with increase of rectal temperature and physiological strain index.

37. ^{pos}
^{POL} **Zabrocka Agnieszka*, Tomasz Dancewicz****

EVALUATION OF SPORT MASTERY IN DANCE SPORT ATHLETES AT THE BEGINNING STAGE OF SPORT TRAINING PROCESS

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Key words: dance sport, training, directed physical fitness

Introduction. Dance sport is an irrational discipline, sports art and is analyzed according to the methodology of science of the arts and sciences related to the theory of training. The assessment in the dance sport except physical fitness and technical skills is affected by such elements, which are not subject of retraining, e.g. costume and choreography. They are important because of the competition rules (Rokita, Bajdziński 2006, Kuźmińska 1996, Pilewska 2003). Dance sport disciplines is acyclic, a large volume and variety of motor tasks in which there is early specialization. To practice dance sport high level of coordination is required. This discipline requires also a complex technique, aesthetics, and above all execution skills of movement, choreography according to the rhythm of the music (Fostiak 1996).

The aim of this study was to evaluate the sport mastery in dance sport athletes at the beginning stage of sport training process, by separating the aesthetic factors conditioning the sport result and the dance class from sports agents, such as the level of motor preparation and technical skills.

Methods. The studies involved 60 contestants of dance sport at the age of 6-9 years. Tests were conducted three times, at the beginning of training, after one and two years of training. To assess mastery level Directed Physical Fitness Test was used (Rokita, Bajdziński 2006). On the floor two circles with a diameter of 30 cm apart from each other by 5 meters are prepared. The task is to move from one to the second circle (in both sides) through the execution of eight rotations type: "chene" in a given rhythm (metrum 2 / 4, the rate of 40 cycles per min.). The assessment tasks affects five components: the behaviour of the given rhythm, technique of the arms and head, behaviour profiles, maintain direction, space utilization, work technique of the lower limbs. Assessments are made using the card test and scoring scale from 5 to 20 points. From the basic ability to coordinate the turnover requires the ability to comply with: balance, spatial and temporal orientation, and kinaesthetic differentiation movement rhythm. The assessment of the test influence: the ability to work the legs, torso, arms and head, precision and harmony of movement, sensation of time and attention.

Results. The results achieved after two years of training in Directed Physical fitness Test showed increasing levels of motor preparation and technical skills by 29%. Larger increase was observed between first and second phase of studies.

Conclusions.

1. Dance sport specific will improve the level of motor preparation and technical skills of the dancers in the early stages of training.
2. The high level of motor preparation and technical skills, and confirmed the importance of differences between studies in all stages of the dancers in the early stages of training may indicate the usefulness of this during the selection and pre-selection in dance sport.
3. The high level of component (maintaining applied rhythm; technique of shoulder and head; behaviour profiles, maintain direction, space utilization, work technique of the lower limbs.) affecting Directed Physical Fitness Test scores promising hope for the future of high sport results.

38. pos
POL **Zapotoczna Dominika***

VIZUALIZATION IN SPORT – RESEARCHES REVIEW

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Key words: sport psychology, multi-sensory imaging, visualization, mental training

Introduction. Sport visualization is the technique used to enhance sport performance. Following Fannings (2001) definition, visualisation is creating a sensual image by an individual in order to achieving a conscious change of oneself. This psychological tool gives an opportunity of working with competitors on different parts of their activity, for example: learning new moves or enrichment well-known one, supporting rehabilitation or enhancement of self-confidence (Perry, Morris, 1998). Research of Guillot, Nadrowska, Collet (2009) shows that physically and mentally practicing indicates achieving higher scores by basketball players than groups, who were only physically trained and not trained. McWhirter and McWhirter (1983) describe a case study of a runner, whose speed was decreasing during competitions. Usage of visualization provides him to achieve better scores. What seems to be interesting, Barton (1996) did not notice any differences in performing between climbers from experimental (which used imagery) and control group. However Jones, Mace, Bray, MacReg and Stockbridge (2002) pointed on positive psychological effect of visualization training on climbing performance, namely higher level of self-efficiency in choosing proper climbing technique. What is more, research of Olsson, Jonsson and Nyberg (2008) shows, that high jumpers, who were creating an internal perspective visualization, rarely threw down a crossbar while jumping.

The aim of the work is to introduce literature review about the impact of imagery training on sport performance.

39. pos
POR **Moreira Pelágio***, **César Peixoto****

INTERACTION ANALYSIS BETWEEN A BASIC TRAMPOLINE SKILL (3/4 BACK SOMERSAULT WITH HALF TWIST) AND THREE COMPLEX ONES (FULL; HALF IN HALF OUT; FULL IN FULL OUT)

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Key words: Gymnastics techniques; Multiple somersaults; Trampoline; Full in Full out;

Introduction. The main purpose of this study, is the framework within, training the concepts to creating models to enhance the practice of training. We sought, in the scope of a „model for analyzing sports performance”, to find new level, to the progress of trampoline gymnasts through analysis, definition and structuring of specific sports activities factors. The work herein takes on analyzing sports performance of a $\frac{3}{4}$ back with $\frac{1}{2}$ twist „soon” skill. We carried out the description of the characteristics of skill and underlying concepts and strategies.

Main aims. What kind of importance and repercussion can have a basic technical learning for the gymnast’s carrier? What kind of causes would, provoke qualitative transformations? What kind of interaction is it between take off, main action and landing phase.

Methods. Every skills for the study, are back performed, straight position and they begin with $\frac{3}{4}$ back, half turn (Pike). Subjects: Our sample was, 5 Portuguese gymnasts from trampolines with international level, and they performed 45 skills (9 of each ones - $\frac{1}{2}$ Pike; Full; Hi Ho; Fi Fo; 1 $\frac{1}{2}$ front). Five international judges evaluated the quantitative skills, and five national coaches evaluated the qualitative skills. Statistical analysis: ANOVA, U Mann-Whitney ($p < .05$).

Results.

1. Take off phase: - Between Trunk / Ankle » There are significant differences, between $\frac{3}{4}$ back with $\frac{1}{2}$ full and Back Full, Half in Half out, Full in Full out.
2. Take off phase: - Between Trunk / Horizontal (CG) » There are no significant differences » between $\frac{3}{4}$ back with $\frac{1}{2}$ full and Back Full; Between Full Back and Half in Half out; Between Half in Half out and Full in Full out.
3. Mainly action (Skill) phase: - Between Trunk / Ankle » There are no significant differences, between all the four Skills ($\frac{3}{4}$ back with $\frac{1}{2}$ full; Back Full; Half in Half out; Full in Full out), during the aerial phase.
4. Landing phase: - Between Trunk / Horizontal (CG) » There are no significant differences, between Back Full, Half in Half out and Full in Full out.

Conclusions.

1. The most important phase it is the Take off.
2. We confirm that earlier learning’s (basic skills) are fundamentally for the Technical gymnast’s carrier.

3. The correct learning of $\frac{3}{4}$ back with half turn, can conditioned all the Technical development.

40. pos
PRT **Romão B.*, Ferreira V.*, Peixoto, C.***

CHARACTERIZATION OF EXPECTATIONS OF FOOTBALL COACHES IN THE 1ST LECTURE OF TRAINING IN WEEK

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Key words: football, second medium, behavior

Introduction. The orientation of a team is a complex process that essentially relies on communication and the relationships established between the coach and players. The instructional coach behavior and the mastery of different techniques of this statement are therefore fundamental (Metzler, 2000). The purpose of this study was to identification and characterization of expectations of coaches about 1st lecture of week workout.

Methods. Our sample was 23 football coaches. As a tool we use a questionnaire with 43 questions (grouped in 4 dimensions of instructional analysis: objective, direction, order, and content), focused on the plan/coach expectations during the first lecture of week training; uses a scale of Lickert with five levels (1-”nothing”; 2-”very little”; „3-” medium; 4-”very”; 5-”very much”), which was validated by expert opinion.

Results & Discussion. The coaches valorize the week planning as structure (87% of cases) and give significant levels of importance to this specific time instruction; 39.1% ‘medium’; 47.8% ‘very’ and 13% ‘very much’. Consider that this first introductory talk has a significant importance in the performance of the team (43.5% ‘very’ and 52.2% ‘very much’). Most trainers say this lecture should be directed to the team and there is a significant enhancement of aspects of the last game.

Conclusion. With their instruction, in ‘General’, the coaches have the following expectation: a) give some descriptive and evaluative information, with a positive trend; b) much information as a question; c) enough information directed to the team; d) talk information is more than the visual or auditory-visual. Compared to the ‘Last Game’ the coaches expect: a) give much information about the collective performance; b) some appreciation of the result; c) lots of information about the positive aspects but some that concerning negative aspects of performance; d) much information about the behaviors of discipline. In relation to the ‘Next Game’ the coaches expect: a) give lots of information about the performance of the team; b) some instruction about individual performance and about the result; c) some information about the next opponent.

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41. pos
SLO **Zemková Erika***, **Miklovič Peter****, **Dunajčík Aleš****, **Hamar Dušan***

MONITORING OF POWER DURING NON-WEIGHT-BEARING CLOSED CHAIN EXERCISE

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Key words: mean power, hip sled, peak power, weights lifted

Introduction. Estimation of maximal power using the maximal effort single reps with increasing weights is considered as a more suitable alternative for the assessment of strength capabilities than traditional 1RM approach (Hamar, 2008). This is applied mainly in rehabilitation where non-weight bearing closed chain exercises are preferred. However, contrary to jumps or squats, much less is known about the power output during exercises performed under non-weight-bearing conditions.

Aim. The study estimates within the session inter-trial reliability of the maximal values of peak and mean power in entire concentric and acceleration phase of hip sled exercise performed with different weights.

Methods. A group of 34 men (age 23.1 ± 3.1 y, height 185.4 ± 10.2 cm, weight 83.9 ± 12.6 kg) performed two repetitions of hip sled with stepwise increasing weights up to 1RM. The system FiTRO Dyne Premium based on precise velocity sensor with sampling rate of 100 Hz was used to monitor peak power (P_{peak}) and mean power in entire concentric phase of lifting (P_{mean total}) and in its acceleration segment (P_{mean acc}). For each parameter the intraclass correlation coefficients (ICCs) and the coefficients of variation (CVs) were determined between trials.

Results. As expected, P_{mean total} increased from lower weights, reached a peak of 433.5 ± 28.6 W at 76.9% 1RM and then, towards higher weights, decreased again. However, maximal values of P_{peak} and P_{mean acc} (1417.1 ± 91.2 W and 745.4 ± 42.4 W, respectively) were produced at 61.5% 1RM. Within a test session P_{mean total} and P_{mean acc} exhibited high reliability across the entire range of weights lifted (ICC = 0.91–0.96, CV = 3.2–6.4) except for P_{peak} (ICC = 0.68–0.75, CV = 19.3–23.0). It is because, subjects in final phase of hip sled shifted the device beyond the contact with the feet, namely at lower weights. This drawback can be avoided by starting the testing procedure with higher weights and/or the use of mean power in acceleration phase instead of peak power, which maximum is produced around similar % of 1RM.

Conclusion. Since the peak power during hip sled vary throughout repetitions, the mean power in entire concentric and/or acceleration phase of lifting should be used to quantify the muscular performance.

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ACT ON AGEING: A PILOT STUDY. THE EFFECTS OF PHYSICAL ACTIVITY IN ELDERLY PEOPLE LIVING IN RESIDENTIAL CARE FACILITIES IN TERM OF HAND GRIP AND FINGER PINCH STRENGHT

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Key words: elderly, physical activity, basic activity of daily living, hand grip and finger pinch strength strength

Introduction. The number of guests in residential care facilities potentially translates into more problems for the health services and requires the designing of effective intervention programs. Physical activity seems to be important in increasing motor skills so that the individuals can be independent for as long as possible (Rydwik et al., 2004; Lukkinen et al., 2006).

Aims. This study aims at assessing the efficacy of a physical activity intervention (two sessions per week for 16 weeks), on a group of oldest old living in residential care facilities, in terms of functionality of the upper limbs, hands, and fingers.

Methods. The project involved 44 self-sufficient institutionalized old people. Their mean age was 84.3 (SD= 7.4) for the experimental group and 85.0 (DS=6.6) for the control group. The participants were pre- and post-tested for hand grip and finger pinch strength with dynamometers (Imrhan & Loo, 1989; Guerra e Amaral, 2009). In order to verify our research hypothesis, we carried out non-parametric tests.

Results. The data show that at the end of the physical activity program the experimental group displayed an increase of right hand strength ($Z=-2.082$ $p=.037$, effect size =.21) and left hand strength ($Z=-2.055$ $p=.040$, effect size =.21) in comparison to the control group. For what concerns thumb-index pinch, statistically significant differences emerged between the experimental and the control group in relation to index-thumb strength in the right hand ($Z=-2.410$ $p=.016$, effect size =.24).

Conclusions. These results underline that even in critical conditions, the introduction of relatively simple training may have positive effects on the individual's physical functioning and may promote positive adjustment in old age.

43. pos
POL **Vladimir Lyakh***

ANALYSIS OF MOTOR LEARNING MODELS THEORY BASED ON SIX EVALUATION CRITERIA

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Key words: learning and teaching of motor activities

Introduction. How to assess the relative advantages of each theory of learning and teaching motor activities considering a large amount of their alternatives? Can we, on the basis of two functions that should meet the theory -explanatory and predictive, decide which one theory is better than the other? What criteria should (can) be used to assess motor learning theory?

Aim the work. Analysis of selected theories of learning and teaching motor actions from the perspective of:

- six evaluation criteria of theory
- two functions that should meet the theory (explanatory and predictive).

Methods. Analysis of the literature of selected theories of learning and teaching motor activities, a review: Adams 1987; Belej 1994; Bogen 1985; Czabański 1998; Frömel 199; Gordeejwa 1995; Hossner, Künzell 2003; Pertyński 2008; Pöhlmann 1986; Raczek 2010; Schmidt 1988.

Results. Structured assessment of theories of learning and teaching motor activities will be conducted on the basis of six criteria: 1) verification, 2) internal compliance, 3) the heuristic value, 4) economics, 5) wide meaning of the phenomenon, 6) the functional significance. According to these criteria will be analyzed selected theories of learning and teaching of physical activities based on: the theory of conditioned reflexes, activity theory, association theory, behaviorism, gestalt psychology, the Bernstein (and his successors) theory of motor structure, prescriptive emergent and others theories.

Conclusions. Compare the advantages and disadvantages in view of six precise criteria used:

- 1) choose one of the many (few) theories to explain and predict the problems of learning various classes of movements,
- 2) compare old and new (grounded) theories with one another,
- 3) determine how accurately they treat the recognized problems and issues belonging to this matter and also to what extent are the prospects for understanding yet unknown possibilities.

44. pos
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EFFECT OF JOGGING ON THE LEVEL OF PHYSICAL DEVELOPMENT IN WOMEN AND MEN IN TERMS OF H-RF

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Key words: running training, training to improve health, women, men, age group of 30–70 years, mesoand kataphase in biological development, health indicators, physical activity in the terms of H-RF

Aim of the study. Evaluation from normative and holistic perspectives the effect which systematic sports training has on some health indicators in the group of Krakow Running Paths Programme participants. Measuring how the extensive increase in the training load affects the subjects' improvement.

Material. The study was carried out at the University School of Physical Education in Krakow sports facilities in June 2010. The research group consisted of 63 subjects (22 women and 41 men) involved in the training classes programme. The average age of men was 45.6 years with a relatively large range of variability (30–70 years), and 40.1 years of women, with a smaller range of variation (30–55 years). All the subjects trained regularly 2–3 times a week carrying a volume of training of 120 km per month and above this range.

Methods. To analyse the research material with the help of *Eurofit for Adults. Assessment of health-related fitness test*, the method of level development observation in terms of H-RF was used. The data was checked against the nationwide and Cracovian standards for youth at the age range of 19–21-years with the use of basic statistical characteristics and indicators of standardized differences. The significance of differences was tested with Student's t° -test or the Cochran-Cox C° test, depending on differences in variance.

Results. Comparative analysis revealed that training of people in their meso- and kataphase stadium of biological development can meet the health functions. This was confirmed by the comparison of health indicators, in terms of normative and holistic classification, according to the H-RF convention. In addition, recreational training can make a stronger impact on health indicators, causing much more positive changes in women than in men, in whose it may produce on the smaller scale the expected effects on the morphological components of physical fitness according to the H-RF convention.

Conclusions. In terms of H-RF it is possible for physically active men and women in their meso- and kataphase to achieve the level of motor components typical for subjects at the age range of 19–21 years. Regular running of women at comparable to men level of training load may give better results in female than in male runners, which reflects more in the morphological components of motor fitness measured according to the H-RF convention.

KEY ORAL PRESENTATIONS – ABSTRACTS

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*„Movement can replace all medicines
but no medicine is able to replace movement”*
[Wincenty Oczko, XVI c.]

HUMAN MOVEMENT SCIENCE – PAST, PRESENT AND FUTURE

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This science variously called – 29 of its variants were established [Starosta, 2001] – has accompanied human life from its very inception. A name for it was long searched for, although a long time ago its definition appeared – science about movements [Branting, 1828] and kinesiology [Dally, 1857]. Recently, out of this extensive mosaic, a name appropriate to its core content has emerged of **human movement science** [Starosta, 2001, 2001a] or **anthropokinesiology** [Starosta, 2006]. **Its foundations, across centuries, were created by the most famous scholars** of various disciplines and specialties: **including Aristotle, Plato, Socrates, Leonardo da Vinci, I. Sieczenow, I. Pavlov, N. Bernstein.** This demonstrates both the validity, as well as the complexity of the science. **The science is both universal and interdisciplinary.** Universal, because it concerns every human being from his birth to old age, regardless of gender, profession, experience, movement luggage etc. The interdisciplinary science, because of the great diversity of human movements, aimed at both activities of daily living and professional life must be examined taking into account its various backgrounds. And there are many: starting from the genetic and environmental, through biomechanical, biological, medical, physiological, psychological, environmental, and ending with the pedagogical, philosophical, moral and aesthetic. They are not all but the dozen of those listed show **how complex human movements are.** If we complement it by a huge variety of human movements and their multilateral orientation: starting with the activities of daily living, through recreation, rehabilitation, tourism, physical education, sport, and ending with the performance of various professions, including sports, circus arts and dance, playing musical instruments – we shall understand how extensive the coverage may be of this scientific discipline.

Why the scientific discipline revives so late? First, the development of modern civilization to a large extent, freed man from physical labor. Lack of significant effort has led to a significant change in the lifestyle, and with it to the increasing “*lazy movement*” and to the sedentary lifestyle combined with watching television, computer games and internet. **Physical activity of man in the century between 1864-1964 was reduced by 93%** [Berg et al. 1994]. Man “*forgot about his genetic program*” and continued his eating habits as before, inappropriate to the needs, began to put on weight. Man began to work against his body needs by living a lifestyle conducive to the emergence of diseases of civilization: obesity, hypertension, blood, spinal deformity, flattened feet and more. For example, **in the**

U.S.A. more than 70% of the population is overweight or morbidly obese. This negative pattern is followed by the societies of more and more countries around the world. These dangerous tendencies were already noticed several years ago by the World Health Organization experts, who indicated the bare minimum of human daily physical activity as 10 to 15 thousand steps. **In 2010, more than one and half a billion inhabitants of the globe were overweight. Therefore, the beginning of the XXI century was called the plague of morbid obesity.** World Health Organization forecasts for the coming years are even more disturbing, i.e. an increase in the number of obese people up to 40%. In this context, the science about movement appears as a *“lifeline of humanity.”*

Napoleon Wolański and Anna Siniarska

BIOCULTURAL HERITAGE. PRESENT AND FUTURE PHYSICAL ACTIVITY

During 99% of existence, Homo was a hunter and gatherer and belonged to a foraging society where most or all food was obtained from wild plants and animals. Also, the concern of pastoral, nomadic societies was the care, tending and use of livestock. These peoples were mobile in order to utilize different sources of water and pasture. Almost 50% of their diets came from their own herds. Only agriculture was closely related to more permanently occupied land because sedentism was a source of a more reliable food supply. For all these reasons, all changes in human behavior during these times should be seen as bio-cultural phenomena.

All improvements and inventions (for example a spear and a bow) meant that a distance between men and animals during an attack or defense could be greater, therefore safer for the person. Also production of metals changed the character and effectiveness of tools. Wheels and cart inventions, using animal for power and horseback riding changed the nature of efforts necessary from certain muscles and simultaneously influenced human body shapes and improved body functions.

Just as the mind is a form of human existence (as similarly life is a form of protein existence), culture is a non-material (spiritual) as well as a material (artifactual) product. The human mind is understood as having cognitive and creative abilities. Culture includes nonorganic behavior favoring survival and therefore longer species existence. Culture, a product of singular brains, comes into existence as social products, as a need for contacts between people. Culture serves this need. Physical culture is a bio-cultural phenomenon, taking care of the body and allowing for intellectual development through the central nervous system.

Industrial production and connected work organization, especially work on an assembly line, eliminates many normal, day to day, body movements. A sedentary lifestyle also affects the whole body movements negatively.