LIETUVOS KŪNO KULTŪROS AKADEMIJA
LITHUANIAN ACADEMY OF PHYSICAL EDUCATION

KŪNO KULTŪROS IR SPORTO DEPARTAMENTAS
PRIE LIETUVOS RESPUBLIKOS VYRIAUSYBĖS
DEPARTMENT OF PHYSICAL EDUCATION AND SPORT
UNDER THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA

LIETUVOS TAUTINIS OLIMPINIS KOMITETAS
LITHUANIAN NATIONAL OLYMPIC COMMITTEE

SPORTO MOKSLO DABARTIS IR NAUJOSIOS IDĖJOS

CURRENT ISSUES AND NEW IDEAS IN SPORT SCIENCE

II tarptautinė mokslinė konferencija

2-nd International Scientific Conference

PRANEŠIMŲ TEZĖS

ABSTRACTS

2008 m. spalio 16—17 d.
Kaunas, Lietuva

16—17 October, 2008
Kaunas, Lithuania

KONFERENCIJĄ REMIA

CONFERENCE SPONSORS

LIETUVOS VALSTYBINIS MOKSLO IR STUDIJŲ FONDAS

LITHUANIAN STATE SCIENCE AND STUDIES FOUNDATION

UAB „BEMER MEDICINTECHNIKA“

© Lietuvos kūno kultūros akademija, 2008

ISBN 978–9955–622–68–0

MOKSLINIS KOMITETAS
SCIENTIFIC COMMITTEE

Albertas SKURVYDAS, prof. habil. dr.
Pirmininkas, Lietuvos kūno kultūros akademija (Lietuva) Chairman, Lithuanian Academy of Physical Education (Lithuania)

Anthony HACKNEY, prof. dr.
Šiaurės Karolinos universitetas (JAV) North Carolina University (USA)

Ken HARDMAN, prof. dr.
Vorčesterio universitetas (Jungtinė Karalystė) Worcester University (United Kingdom)

Žermena VAZNE, doc. dr.
Latvijos sporto pedagogikos akademija (Latvija) Latvian Academy of Sport Pedagogics (Latvia)

Arūnas LUKOŠEVIČIUS, prof. habil. dr.
Kauno technologijos universitetas (Lietuva) Kaunas University of Technology (Lithuania)

Povilas KAROBLIS, prof. habil. dr.
Vilniaus pedagoginis universitetas (Lietuva) Vilnius Pedagogical University (Lithuania)

Vytautas GUDONIS, prof. habil. dr.
Šiaulių universitetas (Lietuva) Šiauliai University (Lithuania)

Povilas TAMOŠAUSKAS, prof. habil. dr.
Vilniaus Gedimino technikos universitetas (Lithuania) Vilnius Gediminas Technical University (Lithuania)

Valentinas NAVICKAS, doc. dr.
Kauno technologijos universitetas (Lietuva) Kaunas University of Technology (Lithuania)

Alina GAILIŪNIENĖ, prof. habil. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Algirdas ČEPULĖNAS, prof. habil. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Kęstutis KARDELIS, prof. habil. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Jonas PODERYS, prof. habil. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Antanas SKARBALIUS, prof. habil. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Romualdas MALINAUSKAS, prof. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Arvydas STASIULIS, prof. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Rūta ADOMAITIENĖ, doc. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Skaistė LASKIENĖ, doc. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

Vida VOLBEKIENĖ, doc. dr.
Lietuvos kūno kultūros akademija (Lietuva) Lithuanian Academy of Physical Education (Lithuania)

TURINYS
CONTENTS

Adaškevičienė E.
LINKS BETWEEN PHYSICAL ACTIVENESS AND HEALTH AMONG PRESCHOOL AGE CHILDREN 13

Adomaitienė R., Samsonienė L., Požėrienė J., Ostasevičienė V., Šalugienė S.
NATIONAL DISABILITY POLICY COMPARING TO INCLUSIVE EMPLOYMENT CATEGORY OF UN CONVENTION ON THE RIGHTS OF DISABLED 14

Ahmed Mohammed Abd El Salaam
THE EFFECT OF HEALTH SCHOOL PROGRAM ON SCHOOL INJURIES OF STUDENTS AGED (9—12) 16

Ahmed Mohammed Abd El Salaam
THE RELATIONSHIP BETWEEN BODY MASS INDEX, FAT, AND INJURIES OF YOUNG MEN AGED 12—15 17

Aleksandravičienė R., Grigorjeva M., Stasiulevičienė L., Zaičenkovienė K., Škikas L., Liaugminienė R.
THE EFFECT OF GYMNASTICS AND ACROBATICS EXERCISES ON BALANCE ABILITIES OF THE POLE-VAULTERS 18

Balogh L., Szabo A., Gaspar Z., Bösze J., Vazci M., Kelemen E.
AN ANALYSIS OF THE COMPONENTS OF THE "PSYCHOLOGICAL CONTRACT" IN INTERACTIVE HUNGARIAN TEAM SPORTS 19

Bartkevičienė A., Vainoras A., Bakšienė D., Raškauskienė N., Kibildienė S.
ASSESSMENT OF STRUCTURAL CARDIAC ADAPTATION AND PARAMETERS OF CARDIOVASCULAR SYSTEM IN CHILDREN AND ADOLESCENT BASKETBALL PLAYERS 20

Batutis O., Malinauskas R.
PECULIARITIES OF MORAL VALUES OF SPORT SCHOOL STUDENTS 22

Birontienė Z.
TRAINING INFLUENCE TO 5—7 YEAR OLD CHILDREN UPPER-LIMBS COORDINATION RESULTS CHANGES 23

Bösze J., Koppany G., Szabo A., Bologh L., Gaspar Z., Vaczi M.
SPORTS KNOWLEDGE AND PRACTICES OF RUNNERS IN URBAN STREET RACES 24

Brazaitis M., Skurvydas A., Vadopalas K., Daniusevičiūtė L., Ramanauskienė I.
MUSCLE TEMPERATURE AFFECTS VOLUNTARY ACTIVATION AND FORCE VARIATION DURING CONTINUOUS MAXIMAL VOLUNTARY CONTRACTION 25

Bula-Biteniece I., Grants J.
STUDENTS PROFESSIONAL PREPAREDNESS IN FAMILY SPORT 26

Buliuolis A., Ežerskis M.
INFLUENCE OF HEAVY TRAINING LOADS ON PECULIARITIES OF RECOVERY OF CARDIOVASCULAR INDICES 27

Cięzczyk P., Krupecki K., Maciejewska A., Sawczuk M.
THE ANGIOTENSIN CONVERTING ENZYME GENE I/D POLYMORPHISM IN POLISH ROWERS 28

Coppenole H., Djobova S., Dobreva I., Niemiro A.
EUROPEAN BEST PRACTICES AND POLICIES FOR PROMOTION AND IMPLEMENTATION OF APA FOR ELDERLY — THENAPA II 29

Cruz A., Li C., Kam K.
LEARNING TO IMPLEMENT TEACHING GAMES FOR UNDERSTANDING 30

Čepelionienė J., Ivaškienė V., Kšanauskienė L.
STRESS OBJECTS AND LEVELS IN MEMBERS OF SPORTS AND FITNESS CLUBS 31

Čepulėnas A.
PECULIARITIES OF THE SYSTEM OF ELITE SKI RACERS' PARTICIPATION IN COMPETITIONS IN THE MACRO CYCLE OF 2007—2008 32

Čepulėnas A., Maželis G.
CHANGES IN ATHLETIC AND SPECIAL PHYSICAL FITNESS OF YOUNG WEIGHTLIFTERS IN THE PERIOD OF SPECIALIZED TRAINING 33

Česnaitienė V. J., Andrejeva J., Pukėnas K., Skurvydas A.
INFLUENCE OF DISSEMINATED SCLEROSIS ON BALANCE SYSTEM 34

Daniusevičiūtė L., Ramanauskienė I., Sipavičienė S., Skurvydas A., Brazaitis M., Linonis V.
MUSCLE PERFORMANCE DURING 100 JUMPS AND RECOVERY IN WOMEN DURING MAXIMAL ISOMETRIC AND DYNAMIC CONTRACTIONS 35

Drazdauskas A., Ivaškienė V., Lukoševičius G.
SOME ASPECTS OF TENTH GRADE PUPILS ATTITUDE TOWARDS PHYSICAL EDUCATION AND SPORT 36

Dumčienė A.
THE VALUES OF PROFESSIONAL ORIENTATION OF STUDENTS UPPER CLASSES 37

Emeljanovas A., Poderys J.
LONG-TERM EFFECTS OF TRAINING IN SPORTS GAMES AND CYCLIC EXERCISES AT THE BOYS 11—14 YEAR OLD 38

Gailiūnienė A.
CONCEPT OF RENAL CLEARANCE OF NITROGEN COMPOUNDS (PROTEIN, CREATININE, UREA AND URIC ACID) AT ATHLETES 39

Gaižauskienė A., Volbekienė V., Griciūtė A.
THE FACTORS WHICH INFLUENCE CHILDREN'S PHYSICAL ACTIVITY IN FAMILIES FROM LITHUANIAN CITIES 40

Gaspar Z., Szabo A., Bologh L., Vaczi M., Bösze J., Kelemen E.
PARTICIPATION MOTIVES IN SPORTS AND PHYSICAL ACTIVITY AMONG YOUNG ADULTS IN HUNGARY: A PRLIMINARY REPORT 41

Gorianovas G., Streckis V., Andrejeva J., Skurvydas A.
DOES MUSCLE DAMAGE DEPENDANT OF SEX? 42

Grajauskas L., Čepulėnas A.
PECULIARITIES OF MOTIVATION FOR SPORT OF PUPILS ATTENDING ORIENTEERING SPORT AND SPORTS TOURISM GROUPS 43

Grinienė E.
PECULIARITIES OF SCHOOLCHILDREN'S HEALTH SELF-EVALUATION AND THEIR ATTITUDES TOWARDS PHYSICAL EDUCATION 44

Grūnovas A., Poderys J., Grūnovienė D.
THE EFFECT OF SOME MEANS OF RECOVERY ON FUNCTIONAL CONDITION OF CALF MUSCLES AND BLOOD CIRULATION AFTER STATIC PHYSICAL EXERCISE 45

Gruodytė R., Jürimäe J., Saar M., Jürimäe T.
BONE MINERAL DENSITY AND JUMPING ABILITY IN PUBERTAL GIRLS WITH DIFFERENT PHYSICAL ACTIVITY PATTERNS 46

Gulbinskienė V., Skarbalius A.
PECULIARITIES OF TRAINING AND SPORT PERFORMANCE SELECTED CHARACTERISTICS OF LITHUANIAN PISTOL AND RIFLE SHOOTERS 47

Hackney A. C.
THE NEUROENDOCRINE SYSTEM AND STRESS: THE PARADOXICAL ROLE OF EXERCISE 48

Hardman K.
PHYSICAL EDUCATION IN EUROPE: ISSUES AND CHALLENGES 49

Hussein H.
ENZYMATIC RESPONSES TO ANAEROBIC TRAINING IN SPRINTER SWIMMERS 50

Ivaškienė V., Liaugminas A., Liaugminas S., Raškevičius K.
THE CHANGE OF PHYSICAL FITNESS IN 15—16 AGED FEMALE JUDO ATHLETES 51

Ivaškienė V., Vaidelys M.
PHYSICAL FITNESS OF CADET AND JUVENILE JUDO ATHLETES 52

Jančiauskas R.
THE IMPACT OF THE DEVELOPMENT OF HUMANISTIC VALUES ON THE RELATIONSHIP OF JUNIOR SCHOOLCHILDREN AND TEACHERS IN PHYSICAL EDUCATION LESSONS 53

Jankauskienė R.
UNHEALTHY WEIGHT REDUCTION BEHAVIOUR AMONG MEMBERS (WOMEN) OF FITNESS CENTRES AND THE ANALYSIS OF ASSOCIATED FACTORS 54

Jaruševičienė L.
CHANGE OF THE JUMP HEIGHT DURING VARIOUS PHYSICAL LOADS AND RECOVERY 55

Kam K., Li C., Cruz A.
ANALYSIS ON ONE-TO-ONE ATTACK-DEFENSE ABILITY OF AN INTER-COLLEGIATE CHAMPION WOMEN SOCCER TEAM IN HONG KONG 56

Karanauskienė D.
STUDENT — ATHLETES AND THEIR ATHLETIC SUBCULTURE 57

Karčiauskas E.
SOFTWARE DESIGN METHODS FOR OBSERVATION OF SPORT GAMES 58

Kardelienė L.
THE ATTITUDES TOWARDS COMMUNICATION IN SOCIAL SITUATION: DIFFERENCES BY TEACHERS OF PHYSICAL EDUCATION AND OTHER SPECIALISTS 59

Karpavičienė A.
ANALYSIS OF GENERAL PHYSICAL WORK CAPACITY OF STUDENTS WHO ARE NOT INVOLVED IN ACTIVE SPORTS 60

Kavaliauskas S., Klimavičienė D., Laskienė S., Gylienė J.
ATTITUDE OF PERSONS ACTIVE AND INACTIVE IN SPORTS TOWARDS SEXUAL STEREOTYPES IN LIFE AND SPORTS: LITHUANIAN CASE 61

Kavaliauskas S., Vaičiulis V.
RELATION OF PHYSICAL ACTIVITY AND HEALTHY LIVING OF IMPRISONED PEOPLE 62

Kavaliauskienė E., Skurvydas A., Stanislovaitienė J.
THE INFLUENCE OF VISUAL FEEDBACK FOR HANDS SPEED-ACCURACY ISOMETRIC CONTRACTIONS LEARNING 63

Kavaliauskienė E., Skurvydas A., Stanislovaitienė J., Stanislovaitis A.
THE INFLUENCE OF LEARNING FOR SPEED-ACCURACY HAND'S ISOMETRIC CONTRACTIONS ACCURACY AND VARIABILITY 64

Kisielienė A., Vaidelys M., Dudėnienė L.
CORRELATION BETWEEN THE INDICES OF THE JUDO ATHLETES' PHYSICAL CAPACITY AND THEIR SPORT SKILLS 65

Komskienė D.
DEVELOPMENT OF SPORTS CLUBS 66

Kragnienė I., Skučas K., Rėklaitienė D., Požėrienė J.
PHYSICAL DISABLED SWIMMER'S ATTITUDE TO CLASSIFICATION SYSTEM AND POSSIBILITIES TO REACH RESULT 67

Kuzmienė A., Čikotienė I.
THE PECULIARITIES OF LEARNING MOTIVATION OF SPORTINING AND NON-SPORTING STUDENTS AT LITHUANIAN ACADEMY OF PHYSICAL EDUCATION 68

Lagūnavičienė N., Šalčius R., Čižauskas G.
LITHUANIAN OLYMPIAN SWIMMER R. Š. TRAINING PROCESS PECULIARITIES AND ALTERNATION OF THE RESULT IN 2004—2008 70

Laskienė S., Čingienė V., Matusienė R.
THE PARTICULARITIES OF SOCIAL INTERACTION OBSTACLES (CONFLICT, STRESS, EXPRESSION OF EGO STATES) WHEN WORKING AS A SPORT MANAGER 71

Laskienė S., Zuozienė I. J., Zuoza A. K.
LIFESTYLES AND HEALTH BEHAVIOUR BY YOUNG SCHOOL-AGE CHILDREN 72

Li C., Cruz A., Kam K.
SERVING PE TEACHERS' PROFESSIONAL LEARNING EXPERIENCES IN SOCIAL CIRCUIT PERFORMANACE 73

Lukoševičius A.
EMERGING BIOMEDICAL ENGINEERING TECHNOLOGIES FOR SPORTS 74

Lukošiūtė-Stanikūnienė I., Skurvydas A., Brazaitis M., Ivanovė S., Vadopalas K.
IMPACT OF HYPERTHERMIA ON WOMEN MUSCLE FATIGUE AND RECOVERY 75

Maciulevičienė E., Kardelis K.
INTERFACE BETWEEN KAUNAS MIDDLE-AGED PEOPLE'S SUBJECTIVE HEALTH SELF-ASSESSMENT, PHYSICAL ACTIVITY AND SOCIO-DEMOGRAPHIC FACTORS 76

Majauskienė D.
PUPILS' ATTITUDE TOWARDS THE OLYMPIC GAMES 77

Malinauskas R.
THE PECULIARITIES OF MOTIVATION FOR SPORTS ACTIVITY AMONG BASKETBALL-PLAYING STUDENTS 78

Medišauskaitė V., Laskienė S., Kopřivová J., Sebera M.
GLOBAL SELF-ESTEEM AND BODY FAT IN ADOLESCENTS ENGAGED IN BASKETBALL 79

Medonis A., Blauzdys V.
THE NECESSITY AND EFFECT OF KNOWLEDGE TO SELF-EDUCATION 80

Mickevičienė D., Motiejūnaitė K., Skurvydas A., Karanauskienė D.
COMPARATIVE ANALYSIS OF STANDARD MOTOR LEARNING OF ADULTS AND CHILDREN 81

Milašius K., Dadelienė R., Pečiukonienė M., Skernevičius J.
EFFECTS OF MACA BOSSTER FOOD SUPPLEMENT ON SPORTSMEN'S BODILY ADAPTATION TO PHYSICAL LOADS 82

Mojtaba I., Maryam C., Ghodrat B., Jamaat K.
THE EFFECT OF L-CARNITINE SUPLEMENTATION ON PLASMA GLUCOSE, LACTATE CONCENTRATION AND AEROBIC CAPACITY 83

Mojtaba I., Maryam C., Ghodrat B., Somayeh N.
THE EFFECT OF HEPARIN INFUSION OF AVAILABILITY FREE FATTY ACID, GLUCOSE CONCENTRATION AND AEROBIC CAPASITY 85

Mockienė A., Stasiulis A., Vizbaraitė D., Mockus P.
TIME COURSE OF BODY COMPOSITION, BLOOD LIPIDS AND LIPOPROTEIN CHANGES DURING AEROBIC CYCLING TRAINING IN YOUNG WOMEN 87

Muntianaitė Dulkinienė I., Zaveckas V., Poderys J., Vainoras A., Berškienė K.
ASSESSMENT OF TAPPING TEST RESULTS OF PEOPLE WITH LOW BACK PAIN 88

Navickienė R., Gečytė J.
ISO STANDARDS AND LITHUANIAN ACCOMMODATION COMPANIES 90

Novikovas V.
CONTRIBUTION OF LITHUANIAN ACADEMY OF PHYSICAL EDUCATION BY DEVELOPING FOOTBALL IN LITHUANIA 91

Onusaitytė G., Skarbalius A.
ALTERATION OF HEART RATE DURING FRIENDLY AND OFFICIAL MATCHES OF HIGH-PEAK PERFORMANCE PLAYMAKER IN WOMEN HANDBALL 92

Onusaitytė G., Skarbalius A.
HEART RATE ALTERATION MODELLED BY FRIENDLY MATCHES OF HIGH-PEAK PERFORMANCE PLAYERS OF DIFFERENT POSITIONS IN HANDBALL 93

Pacenka R.
CHALLENGING LITHUANIAN PETE 94

Packevičiūtė A., Adomaitienė R., Samsonienė L.
PECULIARITIES OF CARDIOVASCULAR REGULATION OF SPINAL CORD INJURED HUMANS IN RESPONSE TO ORTHO-CLINOSTATIC STRESS 95

Pajaujienė S., Jankauskienė R.
EFFECT OF FITNESS CENTRES ENVIRONMENT FOR THE BEHAVIOUR OF WOMEN ENGAGED IN SPORT AND THEIR ATTITUDE TO THEIR BODIES 96

Paulauskienė J., Laskienė S., Jamantienė L.
THE EXPRESSION OF PERCEIVED SELF- COMPETENCE IN DIFFERENT AREAS AND ITS RELATION WITH GLOBAL SELF- WORTH AMONG PHYSICALLY ACTIVE AND NON ACTIVE ADOLESCENTS....97

Poderys J.
ADAPTATION AND PECULIARITIES OF PREPARATION FOR THE COMPETITIONS AT THE OLYMPIC GAMES IN BEIJING....98

Poderytė K., Grūnovas A., Poderys J., Trinkūnas E., Miseckaitė B.
KINETICS OF PERIPHERAL BLOOD FLOW AND OXYGEN SATURATION IN MUSCULAR TISSUE ASSOCIATION WITH PECULIARITIES OF ADAPTATION TO ENDURANCE OR SPEED POWER EXERCISES WHILE PERFORMING THE BREATHING EXERCISE....99

Poderytė K., Venskaitytė E.
THE ANGIOTENSIN CONVERTING ENZYME GENE POLYMORPHISM‘S ASSOCIATION WITH PECULIARITIES OF CARDIOVASCULAR FUNCTION DURING EXERCISE TESTS OF LITHUANIAN ELITE ATHLETES....100

Puišienė E., Visagurskienė K.
THE EVALUATION OF LITERACY DEVELOPMENT OF SPECIALISTS IN PUBLIC HEALTH....101

Rakauskienė V., Kardelienė L.
DEVELOPMENT OF PEDAGOGICAL COMMUNICATION IN PHYSICAL EDUCATION CLASSES AT SECONDARY SCHOOL....102

Ramanauskienė I., Skurvydas A., Brazaitis M., Sipavičienė S., Klizas Š., Karpavičienė A.
EFFECT OF WARMING ON THE SKELETAL MUSCLE POWER AND FATIGUE FOR MEN PERFORMING CONCENTRIC EXERCISE....103

Rėklaitienė D., Požėrienė J.
REACTION TIME AND MOVEMENT FREQUENCY OF INDIVIDUALS WITH INTELLECTUAL DISABILITIES....105

Rilienė K., Kelpšienė I., Ostasevičienė V.
ASPECTS OF ADAPTABLE BEHAVIOR OF ADOLESCENTS WITH INTELLECTUAL DISABILITIES....106

Rubana I. M., Abele A.
HEALTH BEHAVIOUR THEORIES AND STUDENTS’ ATTITUDE TO PHYSICAL EDUCATION....107

Rutkauskaitė R., Skarbalius A.
INDICATORS OF TRAINING AND PERFORMANCE OF ATHLETES 12—13 YEAR AGED IN RHYTHMIC GYMNASTICS....109

Sabaitė B. S.
WOMEN AND SPORT IN SOVEREIGN LITHUANIA (1920—1940) THE OUTSET OF WOMEN SPORT IN SOVEREIGN LITHUNIA....110

Sadzevičienė R., Poderytė K.
CARDIOVASCULAR FUNCTION DURING THE CONSTANT-LOAD AND ALL-OUT EXERCISE TESTS....111

Sakalauskaitė R., Satkunskienė D.
KINEMATIC ANALYSIS OF MULTIPLE TRIALS OF ELITE DISCUS THROWERS....112

Samsonienė L., Baubinas A., Jankauskienė K., Zavadckis G.
SELF-EVALUATION OF HEALTH OF ATHLETES WITH DISABILITIES AND ITS INFLUENCING FACTORS 113

Satkunskienė D., Skyrienė V.
COMPARATIVE ANALYSIS OF INTRA-CYCLIC VELOCITY FLUCTUATION AND ARM-LEG COORDINATION OF THE WORLD AND LITHUANIAN INTERNATIONAL LEVEL BREASTSTROKE SWIMMERS WITH FLAT STYLE 114

Shpakov A., Klimatskaya L., Sergeeva E., Laskienė S.
COMPARATIVE CHARACTERISTICS OF PHYSICAL DEVELOPMENT AND PHYSICAL ACTIVITY OF 10- YEAR-OLD SCHOOLCHILDREN OF GRODNO, KRASNOYARSK AND KAUNAS 115

Skarbalius A.
COMPLEX MONITORING SPORT PERFORMANCE IN HANDBALL 116

Skučas K., Skučas V.
VALUES OF SPECIAL PHYSICAL ABILITIES, AEROBIC PERFORMANCE AND PLAYING SKILLS OF WHEELCHAIR BASKETBALL PLAYERS ACCORDING TO DISABILITY, AGE, PLAYING EXPERIENCE 117

Skurvydas A., Kamandulis S., Masiulis N., Jansonienė A.
THE EFFECT OF TWO STRETCH-SHORTENING EXERCISE BOUTS PERFORMED WITHIN 60 MIN ON MUSCLE FATIGUE AND DAMAGE 118

Slavikas R., Slavikas E.
PECULIARITIES OF STRENGTH DEVELOPMENT OF WEIGHTLIFTERS DURING MESOCYCLES 119

Solovjova J., Upitis I., Grants J.
YOUNG SPORTSMEN MUSCULAR FUNCTIONAL ADAPTATION TO PHYSICAL LOADS 120

Soraka A., Skurvydas A., Sapežinskienė L.
PHYSICAL EDUCATION DISABLED PEOPLE AFTER STROKE INJURY ENROLLED IN DANCE MOVEMENT EDUCATION ACTIVITY 121

Stanislovaitienė J., Skurvydas A., Bartkutė R., Kavaliauskienė E., Stanislovaitis A.
THE INFLUENCE OF VISUAL FEEDBACK AND DIFFERENT PERCENTAGE MVC FORCE ON THE ACCURACY AND VARIABILITY OF CONTINUOUS ISOMETRIC CONTRACTIONS 122

Stanislovaitienė J., Stanislovaitis A., Reimaris R., Kavaliauskienė E., Skurvydas A.
THE CHARACTERISTICS OF REACTION TIMES AND MOVEMENT FREQUENCY IN SPRINTERS DURING THE TRAINING PROCESS 123

Stanislovaitis A., Stanislovaitienė J., Verbickas V., Kavaliauskienė E., Skurvydas A.
THE EFFECT OF MODERATE-INTENSITY AEROBIC PHYSICAL LOAD ON THE BODY TEMPERATURE AND RUNNING RESULTS IN PHYSICALLY INACTIVE PERSONS 124

Stasiulis A., Pravdinskienė I.
SPECIFICITY OF GAS EEXCHANGE RESPONSES DURING INCREASING CYCLE AND ARM ERGOMETRY TESTS IN CYCLISTS AND KAYAKERS 125

Stasiulis A., Jonaitytė K., Dubininkaitė L.
EFFECT OF PRIOR ECCENTRIC EXERCISE ON THE VO_2 KINETICS DURING HEAVY CYCLING EXERCISE IN MALE BASKETBALL PLAYERS 126

Statkevičienė B.
ANTHROPOMETRICS INDICATORS ANALYSIS OF MEN AND WOMEN SWIMMERS AT THE BEIJING OLYMPIC GAMES 127

Statkevičienė B.
COMPARATIVE ANALYSIS OF START REACTION TIMES BY TOP SWIMMERS IN WORLD CLASS COMPETITION 128

Statkevičienė B., Grišina O.
WHAT MAKES THE WORLD'S BEST SWIMMERS OF THE PAST 50 YEARS? 129

Szabo A., Balogh L., Gaspar Z., Bösze J., Váczi M.
HIGH RATE OF EXERCISE ADDICTION AMONG HUNGARIAN UNIVERSITY STUDENTS: SYMPTOMS OF DYSFUNCTION OR ALTERED CULTURAL INTERPRETATION? 130

Szabo A., Gaspar Z., Balogh L., Vaczi M., Bösze J., Kelemen E.
TRAINING TO MUSIC IN HUNGARIAN RECREATIONAL BASKETBALL TEAMS 131

Šakalienė R., Juodžbalienė V., Lukošiūtė L.
THE INFLUENCE OF PHYSIOTHERAPY ON HEALTH-RELATED QUALITY OF LIFE IN WOMEN WITH DEPRESSION 132

Šarkauskienė A.
ANALYSIS OF THE YOUNG TEENAGERS NON-FORMAL PHYSICAL EDUCATION IN SCHOOL 133

Šertvytienė D., Laskienė S.
PECULIARITIES OF SPORTING JUVENILES' SOCIAL COMPETENCE: VALUE ORIENTATIONS AS A FACTOR INFLUENCING SOCIAL ABILITY 134

Šilinskas V., Grigelionytė E., Poderys J., Ruseckas R.
MONITORING OF CARDIOVASCULAR AND PHYSICAL ACTIVITY CHANGES DURING WALLKING AND RUNNING TASKS 135

Šilinskas V., Grūnovas A., Baltrušaitis A.
INFLUENCE OF ELECTRICAL STIMULATION ON MUSCULAR STRENGTH AND THE SPEED OF THE RUNNING 136

Škimelienė V., Mockevičienė D., Vaitkevičius J. V.
THE EFFECT OF SOCIAL ENVIRONMENT AND PHYSICAL FITNESS ON MOTIVATION ENGAGING PUPILS WITH INTELLECTUAL DISABILITIES IN SPORT ACTIVITIES 137

Šližauskienė L., Šulnienė R., Bulotienė D., Papievienė V.
RESEARCH ON HEALTHY LIFESTYLE OF BADMINTON PLAYERS 138

Šukys S.
COACHES' ATTITUDES TOWARDS DECEPTION IN SPORTS ACTIVITIES 139

Tamošauskas P.
PHENOMENON OF PHYSICAL EDUCATION IN THE CULTURAL CONTEXT 140

Tilindienė I., Kavaliauskas S., Galvelienė S.
COMPARISON OF SOCIAL SKILLS OF VI—X CLASSES PUPILS WITH SLIGHT MENTAL DISORDERS IN THE ASPECT OF EDUCATIONAL INSTITUTION 142

Trinkūnas E., Poderytė K., Miseckaitė B.
CENTRAL AND PERIPHERAL CARDIOVASCULAR CHANGES WHILE PERFORMING A REPEATED AEROBIC WORKOUTS 143

Trinkūnienė L., Maciulevičienė E.
EXTRA-CURRICULAR PHYSICAL ACTIVITY INFLUENCE ON ADOLESCENT'S PHYSICAL DEVELOPMENT AND PHYSICAL FITNESS....144

Tsang E. C. K., Ng H. Y.
EVALUATION ON THE IMPACT OF A SOCCER TRAINING PROGRAM ON THE BEHAVIORAL DEVELOPMENT OF TEENAGE PARTICIPANTS....145

Vainienė E.
PSYCHOSOCIAL HEALTH'S AND LEARNING MOTIVATION'S INDICATORS CONNECTION WITH PHYSICAL ACTIVITY AND THEY COMPARATIVE ANALYSIS....146

Vainienė E., Kardelis K.
LINKS OF YOUTH SCHOOL PUPILS' PHYSICAL ACTIVITY WITH THEIR LEARNING MOTIVATION, SELF-ESTEEM AND SOCIAL INTEGRATION....147

Vainoras A., Navickas Z., Poderys J., Berškienė K., Bikulčienė L.
ECG SIGNAL FOR ASSESSMENT OF INTERPERSONAL OR INTER PARAMETER INFLUENCES 148

Vazne Z.
STRUCTURE OF THE FACTORS OF PSYCHOLOGICAL AND PHYSICAL CONDITION IN YOUTH BASKETBALL....149

Visagurskienė K., Čapkauskienė S.
THE PECULARITIES OF NUTRITION AND PHYSICAL ACTIVITY OF 1—4 GRADE SCHOOLCHILDREN....151

Vizbaraitė D., Jankauskas A.
EXPRESION OF HEALTHINESS OF PEOPLE ATTENDING FITNESS CLUBS IN THEIR FREETIME....152

Volbekienė V., Emeljanovas A., Rutkauskaitė R., Gruodytė R., Trinkūnienė L.
RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY AND PHYSICAL FITNESS IN SCHOOLBOYS....153

Volbekienė V., Griciūtė A.
SECULAR TRENDS IN HEALTH-RELATED PHYSICAL FITNESS AMONG SCHOOLCHILDREN IN LITHUANIA....154

Volungevičius G., Stasiulis A., Mockus P.
AEROBIC CAPACITY IN LITHUANIAN YOUNG CYCLISTS OF DIFFERENT AGE AND PERFORMANCE LEVEL....155

Zaičenkovienė K., Stasiulis A., Aleksandravičienė R.
THE EFFECT OF PRECEDING STEP EXERCISE ON EMG OF LEG MUSCLES DURING INCREASING RUNNING TEST....156

Zuozienė I. J., Skyrienė V.
THE INTERACTION BETWEEN START PHASE PERFORMANCE, ANTHROPOMETRIC AND PHYSICAL FITNESS INDICATORS IN SWIMMING....157

Visagurskienė K., Sakalauskienė N., Margevičius S.
THE ATTITUDE TOWARDS PHYSICAL EDUCATION AS A SUBJECT — IS THERE A PROBLEM?....158

LINKS BETWEEN PHYSICAL ACTIVENESS AND HEALTH AMONG PRESCHOOL AGE CHILDREN

Eugenija Adaškevičienė
Klaipėda University, Lithuania

The aim of the research — to make analysis of physical activeness among children of preschool age (5—6 year old) and its links with health state.

Methods of the research: identification size and intensity of physical activeness, health state, pedagogical experiment, questionnaire of children, their parents and tutors, mathematical statistics.

Organization of the research: 127 4—5 year old children participated in the research. Experimental (E_1 E2) groups was working according to our program of physical activeness and health improvement. Control group was working according to "Vėrinėlis" (Chaplet) program. Three diagnostic researches had been performed: in the medium group at the beginning of school year and senior group at the beginning and at the end of school year. We analyzed following parameters of physical activeness: amount, intensity and content. We recorded childhood diseases and their time, identified neurotic troubles, estimated impact of physical activeness upon state and sleep.

Results of the research. It was found that physical activeness of children made only 24.3% of daily wakeful time. Average number of motions performed each day by 5 year old children from group E_1, was 16 049: girls — 13 639, boys — 18459. Children from E_2 group performed daily about 14 992 motions: girls — 12 502, boys — 17 483. On the average children from control group were performing 11 618 motions: girls — 9598, boys — 13 639. Physical activeness of children in their sixth year increased in all groups, though greater positive changes were discovered in experimental groups, compared to those in control group. Received data about physical activeness show that physical activeness of boys from E_1 group increased on the average by 12.1%. Increase of physical activeness of children from control group was smaller and made 5.7% among boys and 5.1% among girls.

Children's morbidity. Research data show that diseases among children from control group in their sixth year of life were more frequent than among those from experimental groups ($p<0.05$). After comparison of children's morbidity with data about physical activeness we noticed that the more frequently they were ill, the lower was their physical activeness. In the period of research individual number of children's cases in E_1 group varied from 1 to 3 times, in E_2 group — from 1 to 4 times, in C group — from 1 to 8 times. Number of girls among those cases is larger, though sexual differences are statistically unreliable ($p<0.05$).

Cases among children with lower level of physical activeness were more frequent ($p<0.005$). 1—3 cases or more were recorded among children of low physical activeness (54.3%), whereas in groups of medium and high physical activeness it made 26.2% and 18.3% accordingly.

Analysis of data showed that some 6 year old children experienced different neurotic troubles. They were more frequent among children from control group (31.2%), compared to those from experimental groups (15.3%) ($p<0.05$). Least complaining about neurotic problems were physically active children (2.3%). Half of questioned children from control group stated they were feeling badly at kindergarten and 31% of them experienced insomnia in the evening. In experimental groups only 12% of children were complaining about these troubles.

We found that children's mood was changing positively after physical activity. It was typical among 84% of children (40% of boys and 44% of girls ($p<0.005$). Our research revealed that 94% of children were sleeping sound throughout entire time of afternoon sleep after active move in the first half of day. 83% of them were sleeping restfully.

Conclusions. Children's physical activeness and health are closely interrelated. Education system makes impact on physical activeness and health of those trained.

References. Dilienė, R. (1999). *5—6 metų amžiaus vaikų fizinio aktyvumo ugdymo sistema. Daktaro disertacija.* Socialiniai mokslai, edukologija (07S). Klaipėda.

NATIONAL DISABILITY POLICY COMPARING TO INCLUSIVE EMPLOYMENT CATEGORY OF UN CONVENTION ON THE RIGHTS OF DISABLED

Rūta Adomaitienė[1], Laima Samsonienė[2], Jūratė Požėrienė[1], Vida Ostasevičienė[1], Sonata Šalugienė[1]

Lithuanian Academy of Physical Education[1], Vilnius University[2], Lithuania

Introduction: UN Convention on the rights of persons with disabilities (Convention), being already in force, recognizes the inclusive employment as freely chosen, full and effective participation of disabled in open labor market, with equal career opportunities and remuneration, appreciating them equally valued and contributing members into labor market and society by appropriate legislative, administrative and other measures in States Parties of UN (UN, 2007). The Convention ant protocol was signed by Lithuanian government 30 March 2007 but not ratified yet.

There are some different theoretical understandings of social inclusion: 1) negative — when inclusive society is recognized as not achievable ideal in the context of globalization and social exclusion of disabled is the natural consequence of deregulated global markets (Gray, 2000); 2) conformist/traditional — social inclusion is conceived as integration, when the disabled have to be accepted by mainstream society, economically supported by government for being together with able-bodied with no significant attempt to appropriate changes of social and economic structures and, sometimes, increasing social discrimination of disabled, 3) directly related to social inclusion — social "integration" and social "inclusion" terms are recognized as being different internecine, when the last, in opposite the conformist one, requires the long-term, multi-dimensional and arising problematic changes in legal, social, economic and cultural areas of society that promote the realization of active citizenship with warranting the basic political and civil rights as well as wellbeing of disabled, and could be realized through widening and deepening of democratic normative legitimacy practices, with involving in decision-making of those affected (HSMO, 1990; Doyal & Gough, 1991; Oliver, 1996; Young, 2000; Cook, 2003). That is in line with the Conventional requirements of mainstreaming in labor market, inclusive vocational training, paid employment and professional rehabilitation of the disabled. So, the presentation is turned to explore social inclusion in relation specifically to disabled people, focusing on paid employment.

Objective — Assessment of Lithuanian legally based possibilities of disabled to be included, not integrated only, into real labor market according to the Conventional socio-cultural and political statements and economical effectiveness of actual disability policy for economical and social development.

Methods: 1. Qualitative content and comparative analysis (Mayring, 2000) of Conventional statements and 23 Lithuanian legal acts concerned with the employment of disabled. 2. Analysis of official statistics for assessment of Efficiency of active labor market policy measures (EALMPM, 2007) in Lithuania for disabled.

Results: The term of "*inclusion*" is not even mentioned in any Lithuanian legal acts (LLA). 21 of 23 LLA, concerned with employment of disabled (ED) are inapplicable to Convention because vocational training (VT) of disabled is legally separated from mainstreaming VT system and forcibly relegated to already created 'professional rehabilitation' (PR) one and institutions acting under the responsibility of Social security and labor ministry, resulting segregated, informal, obligatory and not useful for open labor market VT as well as promoted the employment of disabled in social enterprises (SE) not belonging to labor market ones. For creation of PR social system and performing of PR programs for disabled was used about 57 millions Lt (Lithuanian currency) during 2005—2007 years. The EALMPM was absolutely low (approx. 0.1%) suggesting that the employment of disabled in SE is implemented almost under the full financing by from European structural funds and national budget and could be named as "*national charity*".

Conclusions:

1. Actual Lithuanian disability policy is working against the inclusive employment ideas of the Convention in the field.

2. The main obstacles for implementation of inclusive employment are:

2.1 legal exclusion of disabled from mainstreaming vocational training;

2.2 already created, legally based, separated, useless for real labor market Professional rehabilitation system of disabled;

2.3 legal promotion of socially inexpedient and almost absolutely charitable employment of disabled in Social enterprises.

References

1. Cook, T, (2003) Policy: is inclusion better than integration. In: Controversial issues in a disabling society. Open University Press, Buckingham-Philadelphia, pp. 112—121.
2. EALMPM (2007) Efficiency of active labor market policy measures (in Lithuanian). Vilnius.
3. Gray, J. (2000) Inclusion: a radical critique. In: P. Askonas and A. Stewart (eds.), Social inclusion: Possibilities and Tensions. New York: St Martin's Press.
4. Mayring, P. (2000) Qualitative content analysis. Forum Qualitative social research, 2000. http://qualitative-research.net/fqs/fqse/2-00inhalt-e.htm
5. Young, I. M. (2000) Inclusion and Democracy. Oxford: Oxford University Press.

THE EFFECT OF HEALTH SCHOOL PROGRAM ON SCHOOL INJURIES OF STUDENTS AGED (9—12)

Ahmed Mohammed abd el salaam
King Saud University, Arryidah Kingdom, Saudi Arabia

Introduction

School is a place where a number of students gather and practice activities that require running, close contact, and this may increase their vulnerability to traumas unless school takes adequate health precautions to protect them from these injuries.

Objectives

The aim is to know if health school program can effect in school injuries, the most common areas in the body that liable for those injuries and the causes of those injuries.

Keywords: injury, health, health program.

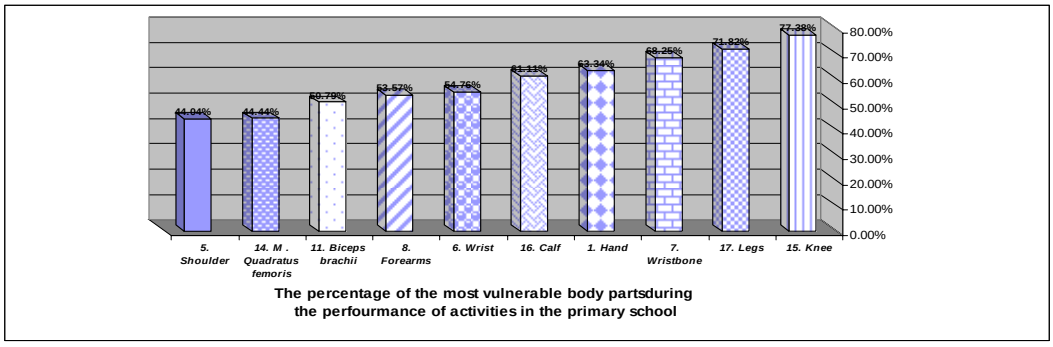
Methods

The researcher used the description technique, the sample containing (6480) students (9—12) as injured are from different types of injury during school physical active. He also used questioning paper to determine number type degree and site of injuries. This study was applied on oct 2007.

Results

The highest percentage for places of injuries is the knee (77.38%) followed by the legs (71.82%), then the wristbone (68.25%).

The most vulnerable body parts in football are the legs (79.76%), in basketball the knee (69.04%), in volleyball the shoulder joint (76.19%), in handball the wrist (51.58%).



Conclusion

The most important causes of those injuries were Age, physical fitness, body build.

The incidence of injuries in the schools which implement the school health program is lower than that in the schools which do not implement it.

Recommended

Standardizing primary school students' practice of physical activities to avoid the excessive practice of them and getting exhausted.

Generalizing the implementation of the school health program in all schools because it reduces the incidence of injuries among them.

Reference

Chester S Cairn Christensen: weight Training Injury Trends, Sports Medicine Journal, Vol. 28-no.7 July, 2000.

THE RELATIONSHIP BETWEEN BODY MASS INDEX, FAT, AND INJURIES OF YOUNG MEN AGED 12—15

Ahmed Mohammed abd el salaam
King Saud University, Arryidah Kingdom, Saudi Arabia

Introduction

The proportion of fats and the rate of body mass (as indicators of growth) if the indicators over the natural rate may cause a hindrance to the practice of physical activity and cause injuries.

Objectives

Research aims to Know the relationship between Body Mass Index, Fat, and injuries of Young Men aged 12—15.

Keywords: injury, Body Mass Index, Fat.

Methods

The researcher used the description technique, (interrelationships) for relevance and the nature of the study Sample has been selected as intentional middle school children from the city of Riyadh (1750), he also used questioning paper to determine number type degree and site of injuries, body mass index, Equation to determine the percentage of fats, Some physical measurements of the children, Measure of sports injuries. This study was applied on Nov 2007 in Kingdom Saudi Arabia.

Results

Indicator, body mass index, fat, rate measurement higher rate.

The highest rate of infection spoke basement party.

There is a positive relationship between body mass index, the proportion of fats and injuries.

Conclusion

There is a positive correlation between body mass index, the proportion of fats and injury during physical activities.

More types of injuries are Buckling joints ,followed by torn ligaments, followed by muscle and advice.

Recommended

There should be a measuring body mass index, rate measurement fats in middle school in Riyadh.

There should be measurements of various injuries school academic levels of parking.

References

Williams JM, Wright P, Currie CE, et al. Sports related injuries in Scottish adolescents aged 11—15. Br J Sports Med 1998; 32:291—6.

THE EFFECT OF GYMNASTICS AND ACROBATICS EXERCISES ON BALANCE ABILITIES OF THE POLE-VAULTERS

Roma Aleksandravičienė[1, 2], Marina Grigorjeva[3], Loreta Stasiulevičienė[2], Kristina Zaičenkovienė[2], Laimutis Škikas[2], Ramunė Liaugminienė[1]

Lithuanian University of Agriculture[1], Lithuanian Academy of Physical Education[2], Kaunas University of Technology[3], Lithuana

All movements are involved in changes of speed, which are stimulus of all parts of human organism. Certainly human coordination and feeling of space depend on vestibular, visual, motional analysers and their development. It is very important in sports activity. It has been established that technical skills are directly related to resistance of vestibular function. The aspects of resistance of vestibular function in various kind of sport are different, because vestibular analyser is irregularly impacted by specificity of various branches of sport (Авижонене, 1993; Катуков и Шорин, 1990). Many events in track-and-field athletics require good coordination of motions. Particularly this is important for pole vault event, wherefore we attempted to know is the efficiency of gymnastics and acrobatics training for vestibular somatic reactions of young pole vault athletes.

The aim of the research was to establish the effect of gymnastics and acrobatics classes on balance abilities of pole vault athletes. A group of young (12—15 years) pole vault athletes (n=16) were engaged as the subjects in this experiment. The mean training experience in pole vault event was two years. All subjects were divided in two groups: first group athletes were attended gymnastics and acrobatics classes once a week, second group was trained under usual conditions. The obtained results of pole vault jumpers were compared with the indexes of same aged young sprinters which were trained under usual conditions. The amount of vestibular somatic reactions and assessment of vestibular function was established by using the sample of active otolithic reactions and test of 10 rotations with maximum speed to bouth sides (five times to the right, five times to the left side) (Rušas, Bagočiūnas, 1999).

The results of this study showed that all indexes were better in first group subjects which was attended gymnastics and acrobatics classes. We concluded that gymnastics and acrobatics training is very effective for pole vault athletes and has positive consequence for vestibular function and balance.

Keywords: pole vault, gymnastics, acrobatics, balance, vestibular function.

AN ANALYSIS OF THE COMPONENTS OF THE "PSYCHOLOGICAL CONTRACT" IN INTERACTIVE HUNGARIAN TEAM SPORTS

Laszlo Balogh, Attila Szabo, Zoltan Gaspar, Julia Bösze, Mark Vazci, Endre Kelemen
Eötvös Loránd University of Science, Budapest, Hungary

A *psychological contract* in team sports represents the common beliefs, perceptions, and *informal* obligations between the sporting organization and the athlete. It sets the dynamics for a relationship based on trust and satisfaction and defines in detail the feasibility and practicality of the work to be done. It is distinguishable from the *formal* written contract which, for the most part, only identifies mutual duties and responsibilities in a generalized form.

The scope of the current research was the examination of the concept of *psychological contract* within 20 interactive adult (age >18 year) sport teams (including: handball, basketball, waterpolo, soccer, and volleyball) resulting in a sample size of 274 individuals. Specifically, we have examined the extent to which trust and satisfaction are shaping the athletes' commitment towards their team. The participants have completed three questionnaires: 1) the Organizational Commitment Questionnaire (Mowday et al., 1982), 2) The Job Satisfaction Questionnaire (Spector, 1997), and 3) A "Trust" questionnaire, developed and validated by the first author.

After rating the questionnaires, data were analyzed with exploratory factor analysis, regresion analysis and path analysis. The former yielded three categories: 1) trust in the organization (or the team's leadership), 2) satisfaction with the team (organization), and 3) emotion driven commitment towards the team (organization). Further, the path analysis revealed that commitment (emotion driven) is primarily determined by competence-based task orientation and the caring attitude of the teammates. The nature of the task, communication, and appraisal of the teammates were also significant determinants of commitment.

The results of the current study indicate that trust and satisfaction are important components of team stability, the values of the team, and the shared goals of the team. Task orientation (.80) and the caring attitude of the teammates (.52) are positively the most closely related to emotion driven commitment to stick with the team. The findings also suggest that assignment of the appropriate task at appropriate level (.46), good communication (.52), and feelings towards teammates (.41) are stronger determinants of internal or emotion-driven commitment than other factors such as salary.

The take home message of this study is that in team sports (at least in Hungary) the key component of the psychological contract is based on an internally or emotionally driven commitment to adhere to the team that is primarily determined by competence-based task orientation, sportsmanship and care demonstrated towards each other by the members of the team.

References

1. Mowday, R. T., Porter, L. W., & Steers, R. M. (1982). *Employee-organization linkages: The psychology of commitment, absenteeism, and turnover*. New York: Academic Press.
2. Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Thousand Oaks, CA.: Sage.

ASSESSMENT OF STRUCTURAL CARDIAC ADAPTATION AND PARAMETERS OF CARDIOVASCULAR SYSTEM IN CHILDREN AND ADOLESCENT BASKETBALL PLAYERS

Aldona Bartkevičienė[1], Alfonsas Vainoras[2], Dalia Bakšienė[2], Nijolė Raškauskienė[1], Sigita Kibildienė[3]

Institute of Psychophysiology and Rehabilitation of Kaunas University of Medicine[1], Kaunas University of Medicine[2], Klaipėda Center of Sport Medicine[3], Lithuania

A specific features of the children and adolescent basketball player's adaptive changes of cardiovascular system are still rather poorly investigated.

The aim of the study was to evaluate the development of echocardiographic indices of the left ventricle and describe alternations in the speed of changes in the parameters of cardiovascular system during exercise test in 12—17 years old basketball players.

Methods. The material consisted of 62 male basketball players between 12 and 17 years and healthy 168 non-athletes controls of similar age and gender.

All the subjects were examined by M-mode and 2-dimensional and Doppler echocardiography. Left ventricular end- diastolic internal diameter (LVIDd), posterior wall thickness (LVPW), as well interventricular wall thickness were (IVS) measured from M-mode echocardiography. Left ventricular mass (LVM), sh left ventricular mass index (LVMI) shortening fraction (SF), relative wall thickness (RWT) were calculated. Diastolic parameters including peak E wave, peak A wave, E/A ratio were measured from Doppler echocardiography.

All participants of the study performed a graded exercise test on cycle ergometer. 12 ECG standard derivations were synchronically recorded every second minute. The following functional parameters and its speed of changes were estimated: heart rate (HR), JT interval, RR interval, systolic blood pressure(S), diastolic blood pressure (D), pulse blood pressure amplitude (S-D), JT/RR ratio.

Results. The results showed that there were no significant differences of body surface between the two groups. Compared with controls basketball players showed a significantly greater LVID, a thicker IVS and LVPW greater and LVM ($p<0.005$). SF and E/A ratio didn'd differ between basketball players and controls ($p<0.05$). All analysed echocardiographic data are presented in Table 1.

Table 1. **Echocardiographic indices of the basketlball players**

	Basketball players N=62		Controls N=168		
Parameters	Mean (SD)	95% CI	Mean (SD)	95% CI	p
LVDd, mm	50.24 (4.67)	49.05–51.42	47.59 (2.89)	47.15–48.03	0,000
IVS, mm	9.60 (1.61)	9.19–10.00	8.41 (1.11)	8.25–8.58	0,000
LVPW, mm	9.03 (1.55)	8.64–9.43	8.06 (1.06)	7.90–8.23	0,000
RWT	0.37 (0.047)	0.36–0.38	0.35 (0.037)	0.34–0.35	0,000
LVM, g	201.02 (66.95)	184.02–218.02	149.98 (35.92)	144.51–155.45	0,000
LVMI, g/m^2	108.65 (26.07)	102.02–115.30	85.59 (14.8)	83.33–87.85	0,000
SF, %	38.54 (4.06)	37.50–39.58	37.6(2.39)	37.82–38.41	0,054
E, m/s	0.96 (0.15)	0.92–1.00	0.91 (0.087)	0.89–0.97	0,001
A, m/s	0.52 (0.09)	0.50–0.56	0.49 (0.07)	0.48–0.50	0,005
E/A	1.88 (0.38)	1.79–1.98	1.89 (0.28)	1.84–1.93	0,888

LVDd — left ventricular diastolic diameter; IVS — end-diastolic interventricular septum thickness;LVPW — end-diastolic left ventricular posterior wall thickness;E — early diastolic peak filling velocity;A — late diastolic peak filling velocity; RWT — relative wall thickness; LVM — left ventricular mass; LVMI — left ventricular mass index; SF — shortening fraction.

Differences in the speed of changes in HR, JT, JT/RR, S and (S-D) between basketball players and controls have been reported. The speed of changes in HR in controls was higher than that in basketball players during all phases of exercise test with the exception of 4-th min ($p<0.05$). We found statistically significantly higher speed of changes in JT in controls than that of athletes in the 6-th min, in JT/RR- in the 4-th min, in (S-D)- in the 2-th min of the exercise ($p< 0.05$).The speed of changes in HR correlated significantly in basketball players to LVID, LVPW, IVS, LVM and LVMI in all phases of the load (r=–0,4—0,5), the speed of changes in JT — in the 4-th and 6-th min of the load (r=0.3). The correlation between the speed of changes in parametes and FS, E/A ratio wasn't found.

Our study reveals that children, who are trained regularly for basketball, have significantly greater left ventricular cavity, thicker interventricular wall and left ventricular posterior wall, greater left ventricular mass compared to non trained controls. The speed of changes in HR in controls is higher compared to basketball players, that suggest a better adaptation of cardiovascular system of basketball players to physical exercise.

Conclusion. Athletes who reached a greater speed of changes in HR during exercise test have a tendency to develop greater LVID, LVPW, IVS, LVM and LVMI.

Keywords: cardiovascular system, speed of changes in functional parameters, echocardiography.

References

1. Domenico Corrado, Cristina Basso, Maurizio Schiavon., and Gaetano Thiene, Screening for Hypertrophic Cardiomyopathy in Young Athletes The New England Journal of Medicine, 339:364-369(6), 1998.
2. Cohen CR, Allen HD, Spain J, Marx GR, Wolfe RW, Harvey JS. Cardiac structure and function of elite high school wrestlers. Am J Dis Child 1987;141:576-81.
3. Cubero, G.I., Batalla, A., Reguero, J.J.R., Barriales, R., Gonzales, V., De la Iglesia, J.L. and Terrados, N. (2000) Left ventricular mass index and sports: the influence of different sports activities and arterial blood pressure. *International Journal of Cardiology,* 75, 261-5.
4. Davy KP, DeSouza CA, Jones PP et al. Elevated heart rate variability in physically active young and older adult women. *Clin. Sci. (Colcch)* 1998; 94:579—584.
5. Fagard RH. Impact of different sports and training on cardiac structure and function. Cardiol Clin 1997; 15(3):397—412.

PECULIARITIES OF MORAL VALUES OF SPORT SCHOOL STUDENTS

Olegas Batutis, Romualdas Malinauskas
Lithuanian Academy of Physical Education, Lithuania

Every society or culture has a certain common value system connecting and mustering a human society and revealing special values of a separate individual of that society. The values are developed in community layers of human history and culture, into which anchor fundamental human truths stating moral good, beauty, love to work, family and nation. Traditional value systems build internal foundation of every ethnical culture and the more universal they are, the more evident is their purpose of integration of lifelike human layers and groups (Kuzmickas, Astra, 1996).

It is supposed (Aramavičiūtė, Martišauskienė, 2002) that evolution and harmony of personality mainly depends on to what degree and what values he or she imbibes. Accumulating the experience, separate values that were taken over are integrated into hierarchical-organised system where each value according to its importance takes a certain place in respect to other values. Physical education and sport is characterised as different, specific activity which differ from all other phenomena existing in the society. This activity can influence not only physical perfection and health of an individual but also value orientations, cognitive, moral and social evolution. It can by maintained that the aim of a educator (trainer) is to develop a young athlete not only physically but also spiritually, thus it is very important to implant the students the following values of moral maturity: honesty, responsibility, respect to parents and adults, attention to others.

The aim of the investigation is to determine the peculiarities of moral values of sport school students.

With the investigation we seek to test the presumption that value orientation differ among girls and boys attending sport schools, they have diverse values of personal importance.

In order to determine and evaluate personal values, V. Ivanauskienė (2001) methodology of value analysis and a modified assessment methodology of M. Rokeach of principal values and value orientation were applied (Смирнов, 1995).

The investigation was performed in December 2006 — January 2007. Investigation volume was made up from133 (70 boys and 63 girls) students of A. Sabonis and Kaunas basketball schools. With hypothesis of mathematical statistics the criteria of χ^2 and Student (t) were applied.

It was determined that the attitude of students going in for sports towards values is quite broad, most of values are appreciated. Among those values are the following: health, family wellbeing, “fundamental” moral, values of hedonism and activity, freedom, independence and confidence. As personally important values, the students consider health (good physical and psychosocial state), family wellbeing (care about the relatives) and true friendship (close relations). Such values as pleasure, usefulness and public acknowledgement is not so important.

The hypothesis which was confirmed and the difference between value orientation of boys and girls going in for sports was detected: credibly differ ($p<0.05$) assessment of “external moral attributions”, “fundamental” moral and devotion values. Girls consider the following values as the most significant: respect to parents and honesty, while boys believes the most noteworthy ones are responsibility and respect to parents ($p<0.05$). Though both boys and girls give family health equal importance, however, when comparing personally important values, it was determined that boys give preference to health first ($p<0.001$) and girls to material wealth ($p<0.01$).

References

1. Aramavičiūtė, V., Martišauskienė, E. (2002). Dvasinio ugdymo Lietuvoje prasmė ir kryptis. *Pedagogika*. 60, 5— 9.
2. Ivanauskienė, V. (2001). *Paauglių vertybinių orientacijų raiška šeimoje: daktaro disertacija*. Kaunas: VDU.
3. Kuzmickas, B., Astra, L. (1996). *Šiuolaikinė lietuvių tautinė savimonė*. Vilnius, Rasma.
4. Смирнов, А. М. (1995). *Базовые ценности формы существование и емпирическое изучение, генетические коды цивилизации*. Москва: ФиС.

TRAINING INFLUENCE TO 5—7 YEAR OLD CHILDREN UPPER-LIMBS COORDINATION RESULTS CHANGES

Zina Birontienė
Klaipėda University, Lithuania

The aim of the study — to examine changes of 5—7 year old children's upper-limbs coordination results stimulating their physical maturing for school.

Methods and organization. The following research methods were applied: educational experiment, testing, statistical analysis. The educational experiment lasted for 20 months. 120 children from Klaipėda kindergartens participated in the experiment. The children from the experimental (E) group were educated according our created physical preparing for school program. The basis of upper-limbs coordination training consisted of finger, hand, and arm exercises and ball games. The control (C) group used the program "Vėrinėlis", certified by Lithuanian Republic Ministry of Education. Three control researches were conducted. The children had to perform five tasks with a tennis ball and three finger touching exercises which assess coordination of visual tracking with movements of the arms and hands, as well as precise movements of the arm, hands and fingers.

Results. During the first research obtained upper-limbs coordination results from groups E and C 5 year old girls and boys were very similar. During the seven months of purposeful training of upper-limbs coordination it was estimated that group E girls significantly statistically improved ($p<0.01$—0.001) in seven tasks, and group E boys — in eight tasks ($p<0.01$—0.001), while group C girls — in one task ($p<0.01$), and group C boys — in two tasks ($p<0.05$). Group E girls' mean results of the second research were statistically significantly better in all tasks ($p<0.01$—0.001) than group C girls', and group E boys' — in seven tasks ($p<0.01$—0.001) comparing with group C boys'. During the rest eleven months upper-limbs coordination of the children from all groups improved, but group E girls' mean results statistically significantly improved in five tasks ($p<0.01$—0.001), and group E boys' — in four tasks ($p<0.05$—0.001). Group C girls improved in four task ($p<0.05$), and group C boys — in five tasks ($p<0.05$—0.001). E group children were better at catching a ball, coordinating finger tip touching tasks with open or closed eyes, and were more precise at throwing something into the target. In the third research group E girls were statistically significantly better in seven tasks ($p<0.01$—0.001), and group E boys — in six tasks ($p<0.01$—0.001) comparing with C group. All researches show big individual upper-limbs coordination differentiation.

Discussion. Our research results are similar to those of scientists' (DuRandt, 1985; Михайлова, 1990; Лагутин, Амарян, 2002; Dankert, Davies, Gavin, 2003; Sugden, Chambers, 2003), who researched healthy young children and children with coordination disorders and confirm that in training programs purposeful to use complicated coordination tasks, which demand conscious integration of senses and perception control.

Conclusion. Purposefully organised physical activities and games improve qualitative and quantitative features of 5—7 year old children upper-limbs coordination. At the end of the experiment E group's children's upper-limbs coordination results were better than C group's.

References

1. DuRandt, R. (1985). Ball catching proficiency among 4, 6 and 8-year-old girls. Clark. J., Humphrey, J. (editors). *Motor Development: Current Selected Research*. Princeton Book Co., Princeton, NJ, pp. 35—44.
2. Sugden. D., Chambers, M. (2003). Intervention in children with developmental coordination disorder: the role of parents and teachers. *Br J Educ Psychol*. 73, pp. 545—561.
3. Dankert, H., Davies, P., Gavin, W. (2003). Occupational therapy effects on visual-motor skills in preschool children. *Am J Occup Ther*. 57, pp. 542—549.
4. Лагутин, А. Б., Амарян, Р. И. (2002). О переемственности физического воспитания детей дошкольного и младшего школьного возраста. *Физическая культура в школе*, 4, с. 12—15.
5. Михайлова, С. (1990). *Развитие координационных движений у детей 6—7 лет, как основа повышения их физической подготовленности. Дис. канд. пед. наук*. Ленинград.

SPORTS KNOWLEDGE AND PRACTICES OF RUNNERS IN URBAN STREET RACES

Julia Bösze, Gabriella Koppany, Attila Szabo, Laszlo Bologh, Zoltan Gaspar, Mark Vaczi
Eötvös Lorand University of Science, Budapest (Hungary)

In most urban areas of the European Union street running races, like 5—10 km runs, half marathons and marathons, become a regular mass sporting programme of local authorities in their effort to promote healthy living. The spirit of running at these races attracts many runners with various backgrounds and experiences. Sport scientists have devoted little attention to the examination of technical knowledge and running practices of the runners participating at these street races. However, such information would be important for several reasons, for example race-planning, injury-prevention, and the mass education of the participating runners.

The current study sought answers to five questions pertaining the heart rate monitoring, warm-up and cool-down and selection of the running shoes. Participants were volunteers of whom 75 were women and 31 were men. Runners were recruited from three different street races in Budapest, Hungary. The questions and the answers are presented in Table 1 below. Although the study was exploratory, we hypothesized that most (e.g. over 80%) of the runners would monitor their heart rate and would warm-up and cool-down during the races. The results showed that, at least with heart rate monitoring, we were too optimistic in generating such hypotheses.

Table 1. **Distribution of the answers to five questions examined in the current inquiry**

Question 1: "*Do you warm up before the race?*" 37% yes, alone; 34% yes, with my friends, 17% no, I warm up during the run; 12% yes, in the joint warm up with all participants
Question 2: "*Do you perform cool-down exercises after the race?*" 50% sometimes; 32% all the time; 18% never
Question 3: "*Do you check your heart rate before the race?*" 78% never; 22% sometimes
Question 4: "*Do you check your heart rate after the race?*" 69% never; 31% sometimes
Question 5: "What *is the most important determinant in selecting your running shoes?*" From several options the most common were: comfort (80%), function (53%), and price (27%)

Some important information was gathered from the current survey. First, it is apparent that the majority of the runners prefer to warm up alone before the races. The explanation behind this finding could be related to individual routines and assumptions that warm-up should be person-specific. In future research it would be interesting to study the performance (race results) and warm-up relationship. It is possible that more advanced runners believe in their own/personal warm-up schedule whereas less experienced runners may follow their friends or the group warm-up schedule.

The survey also revealed that in contrast to our presumption, most runners failed to monitor their heart rate before and after the run. Consequently, at least in Hungary, the importance of heart rate monitoring should be explained and taught to runners for health, training, and motivational reasons. In addition, encouraging the wearing of the widely available and relatively affordable portable heart rate monitors could make running safer. Further, observance of progressively lower heart rates at a constant pace or workload, could be motivational in the maintenance of running behavior.

MUSCLE TEMPERATURE AFFECTS VOLUNTARY ACTIVATION AND FORCE VARIATION DURING CONTINUOUS MAXIMAL VOLUNTARY CONTRACTION

Marius Brazaitis[1], Albertas Skurvydas[1], Kazys Vadopalas[1], Laura Daniusevičiūtė[1, 2], Irina Ramanauskienė[1, 2]

Lithuanian Academy of Physical Education[1], Kaunas University of Technology[2], Lithuania

The aim was to investigate effects of muscle temperature on voluntary activation (VA) and force variation in quadriceps femoris muscle. Ten volunteers performed a 2-min maximal voluntary contraction (MVC) after spending (45) min in water bath at ~44 C and 30 min at ~15 C (HOT (HT) and COOL (CL) experiments) as well as without temperature manipulations (CON experiment). After each 15 seconds of exercise superimposed electrical stimuliation (100 Hz per 250 ms) there applyed to quadriceps femoris muscle. The central activation ratio (CAR) and voluntary activation (VA) there calculated to determine the level of central and peripheral fatigue. The coefficient of variation there calculated to determine the level of force variation.

Within ~3-s of the exercise, subjects reached 88.7±7.8**,** 82.6±3.6 and 85.0±2.8% of the best MVC recorded at the beginning of CON, HT and CL experiments, respectively. These values were not different between the experiments. However, after 30-s MVC, the torque decreased significantly (P<0.001) and to a lower level in HT compared to CON and CL experiments (52.6±2.3% versus 69.0±2.3% and 65.6±1.9% MVC, respectively, P<0.01). During the remaining 1.5 min of the exercise, the torque decreased further at a similar rate in all the experiments and remained lower in HT compared to CON and CL experiments (P<0.05). After 75-s MVC, there was also a significant difference in the torque (P<0.05) between CON and CL experiments, as body cooling tended to reduced fatigue rate during the exercise (P<0.05). Force variation increased (P<0.001) during exercise and differed significantly (P<0.001) between the experiments. VA index decreased (P<0.001) and depended on the experimental conditions (P<0.001) during the exercise. Already at 15-s of exercise, CAR was lower in HT experiment compared to CON and CL experiments (P<0.05). This difference between the experiments tended to increase until 75-s MVC, when CAR was the highest (P<0.05) in CL experiment and the lowest in HT experiment (P<0.01).

In summary, muscle heating impairs voluntary activation and exercise performance while muscle cooling tends to have an opposite effect. It is also clear that force variation increases at high muscle temperature and decreases at low temperatures. Thus results of the study confirm our hypothesis that muscle temperature affects voluntary activation during a continuous MVC.

References

1. Nybo L, Nielsen B (2001) Hyperthermia and central fatigue during prolonged exercise in humans. Journal Applied Physiology. 91:1055—1060.
2. Ratkevicius A, Skurvydas A, Quistorff B, Povilonis E, Lexell J (1998) Effects of contraction duration on low-frequency fatigue in repetitive voluntary and exercise-induced exercise of human quadriceps muscle. European Journal of Applied Physiology. 77:462—468.
3. Sargeant AJ (1987) Effect of muscle temperature on leg extension force and short-term power output in humans. European Journal of Applied Physiology and Occupational Physiology 56:693—698.
4. Thomas MM, Cheung SS, Elder GC, Sleivert GG (2006) Voluntary muscle activation is impaired by core temperature rather than local muscle temperature. Journal Applied Physiology 100(4):1361—1369.
5. Todd G, Butler JE, Taylor JL, Gandevia SC (2005) Hyperthermia: a failure of the motor cortex and the muscle. Journal of Physiology. 563:621—31.

STUDENTS PROFESSIONAL PREPAREDNESS IN FAMILY SPORT

Inta Bula-Biteniece, Juris Grants
Latvian Academy of Sport Education, Latvia

Contemporary society needs healthy, physically and mentally developed people. Physical activity helps people to perfect themselves and develop; therefore it should be paid great attention to starting already from early childhood in order to form full-fledged, harmonious and all-snidely developed personality.

People health and wholesale physical development are among the greatest values in the world. To be healthy means to be happy, but people usually do not notice it until lose it. Therefore every one of us should guard this happiness, which could be done with the help of full-fledged physical development and healthy lifestyle.

Nowadays families are loaded performing their occupational duties, striving for material wealth that too often forget about their greatest values — children. We lack qualified sport specialists, who could involve and motivate families to engage in physical activities.

The aim of the work: work out the set of opinions about the improvement of students' professional preparedness in leading and organizing of family sport.

The tasks of the work: Determine students' opinion from the professional viewpoint about physical activities in their families and other Latvian families in comparative aspect.

Compare students' professional knowledge and skills in the study course — pre-school sports didactics with students' opinions.

The research methods: The analysis of literature sources. Questioning. Mathematical statistical processing and analysis of the results.

Key words: sports, family, students' professional preparedness

Conclusions:

1. Having questioned the students, we can conclude that 66 p.c. of the respondents before entering the Latvian Academy of Sport Education have decided themselves to pursue physical activities, but 18 p.c. have been motivated by their parents.

Seeking mutual correlations, we concluded that when the student goes in for physical activities, his skills, and experience give him the possibility to organize his/her physical activities. If the students have satisfactory high motivation, they themselves comparatively often organize their physical activities, involving in them also their family, which was observed at the mutual correlation with the coefficient 0.313 and significance (Sig-0.01). Regularly involving also their family in physical activities, the family also further plans its physical activities. Have been formed mutual interest about sport as valuable, concurrent part of life, which promotes the quality of life and strengthen health.

2. Having analyzed the data about students' professional preparedness in the study course per-school sports didactics; we concluded that the result of the improvement is reflected also in students' assessment. 4lh year full-time students' average assessment in the study course pre-school sports didactics is 7.3 points, For the 3,li year full-time students': 7.4 points, for the 2"'1 year full-time students': N.3 points.

Thus we conclude: if the student in the study course pre-school sports didactics has obtained higher assessment, acquired adequate skills, his/her wish and motivation to conduct sport at pre-school is much higher. Only we must take into consideration that there can be also other factors, influencing student's choice.

References

1. Bebris R. Ģimenes vienība. No: *Bērns paliek bērns svešs vai savējs*: rakstu krāj. II Rīga : Pagalms, 1939. Lpp.39.-41.
2. Dzintere D. *Bērns kā vērtība*. Rīga : Izglītības soļi, 2000. Lpp.8., 10., 14., 87.
3. Ošeniece G. Atbalsts skolotājiem. *Izglītība un Kultūra*. Nr.14, 2008. Lpp.18.
4. Pagraba E. Klases audzinātājam darbā ar vecākiem, bērniem un sevi pašu. Rīga: Pētergailis, 2006. Lpp.5.-17.

INFLUENCE OF HEAVY TRAINING LOADS ON PECULIARITIES OF RECOVERY OF CARDIOVASCULAR INDICES

Alfonsas Buliuolis, Mindaugas Ežerskis
Lithuanian Academy of Physical Education, Lithuania

The task of the study was to estimate the influence of training mezocycle by applying of concentrated heavy anaerobic loads to the recovery characteristics of cardiovascular system

Seventeen well-trained athletes (*all participant were members of various national teams*), i.e. endurance group; — sprint group and combative-sport group (*box, judo and wrestling*).The subject underwent: 1) Roufier test (*30 squats per 45 seconds*); 2) 30-second duration maximal vertical jump test. The second investigation was performed after tree weeks of heavy training loads. A computerized ECG analysis system "Kaunas-load", developed by the Institute of Cardiology of Kaunas Medical University, was applied for 12 lead ECG recording and analysis. The changes in RR interval or heart rate (HR), JT interval, ST-segment depression (*sum of negative values in 12 leads*) and in the ratio of intervals JT/RR were analyzed.

The peculiarities of recovery after workloads was assessed first, by evaluating the time of half period of recovery ($_{1/2}$T) of registered indices and second, by calculating the recovery value in per cent starting from the change moment which has happened during the load as it was suggested by Lewis and Kingsley (2002): $$\mathbf{V_{recovery}} = \frac{(\max - recovry)100}{(\max - initial)}$$

were: ***max*** *— value of indices registered during the load****;*** ***recovery*** *— value of indices registered at the end of first (second) minute of recovery;* ***initial*** *— value of indices registered before exercise.*

A third indices in analysis of features in recovery was a Lyapunov exponent (LE_x) that was accepted as indicator of stability in the whole process of recovery (Suetani et all, 2004), i.e.

LEx = 1/N Σ ln $\left|\ \Delta Xi / Xi\right|$, where Xi — a registered value; ΔXi — a change of the registered value.

The results obtained during the study showed that the both ways, i.e. the calculations of $_{1/2}$T or assessment of the recovery value in per cent starting from the change moment could be used and gives the same information. Both ways of analysis indicates that after exercise tests the sequence in recovery of registered indices remained the same as we observed during the first assessment of functional state. The faster recovery was the ratio JT/RR, after then recovery of heart rate (RR interval), then — JT interval. The same sequence in recovery of indices of arterial blood pressure was observed, i.e. the recovery begins from some ratio between the regulatory and supplying systems of the body, then the recovery in regulatory systems follows and the recovery ends by going down the indices of supplying systems. The results obtained during the assessment peculiarities of recovery after heavy training loads have shown some changes only. There was no statistically significant difference between obtained averages. The sequence in recovery of registered cardiovascular indices remained the same. But, if to take into account the individual variations the sequence in recovery was destroyed in some cases, which coincident with the changes in the stability of recovery process about which the Lyapunov exponent (LEx) has indicated. Individual data analysis showed that the cases when the sequence in recovery of cardiovascular indices was destroyed one or a few of LEx indices have changed to a positive mark. The cases when the LEx was positive indicates that the 3 weeks of heavy training loads has made a negative influence on the stability of the recovery processes of cardiovascular indices.

References

1. Lewis, M., Kingsley, M. (2002). Recovery of cardiovascular regulatory balance as a function of rest period between intermittent constant intensity exercises. *12th Commonwealth international sport conference*. p 122.
2. Suetani, H., Horita, T., Mizutani, S. (2004). Noise-induced enhancement of fluctuation and spurious synchronization in uncoupled type-I intermittent chaotic systems. *Phys Rev E Stat Nonlin Soft Matter Phys.* 69(1 Pt 2):016219.

THE ANGIOTENSIN CONVERTING ENZYME GENE I/D POLYMORPHISM IN POLISH ROWERS

Paweł Cięszczyk, Krzysztof Krupecki, Agnieszka Maciejewska, Marek Sawczuk
Szczecin University, Poland

ACE is the most often investigated gene in the context of genetic conditioning of sports-predispositions, because the product of this gene (an enzyme converting angiotensin I into II) is acknowledged to be a key-element in the renin-angiotensin system (RAS renin-angiotensin system), a system responsible for the regulation of blood pressure — one of the main factors deciding the efficiency of the whole body. In this study DNA polymorphism derived from the *ACE* gene was studied in Polish national rowers in order to examine the hypothesis that *ACE* genotype is associated with athletes performance.

55 male Polish rowers of national competitive standard included Olympic and World champions were recruited for this study. For controls samples were prepared from 115 unrelated volunteers (male students of University of Szczecin, aged 19—23). The procedures followed in the study were approved by the Ethics Committee.

DNA was extracted from the buccal cells donated by the subjects, and the PCR amplification of the polymorphic region of *ACE* gene contained either the insertion (I) or deletion (D) fragment was performed. Genotype distribution and allele frequencies between groups of athletes and controls were determined by genotype and gene counting. Significance was assessed by χ^2 analysis for the biallelic polymorphism in *ACE* gene.

ACE genotype distributions amongst subjects and controls were in Hardy-Weinberg equilibrium. Compared with sedentary controls, the frequency of I allele differ significantly from that found in rower's group: 56.3% vs. 44.3% (P=0.038) and *ACE* genotype frequency amongst the whole athletes group (30.9% II, 50.9% ID, 18.2% DD) was also different from expected values (control group 19.1% II, 50.4% ID, 30.4% DD; P=0.039).

This data confirm a positive association of the I allele of *ACE* gene with endurance performance as it was shown in recent studies concerning long distance runners, rowers and mountaineers.

References

1. Gayagay G., Yu B., Hambly B. et al. (1998). Elite endurance athletes and the ACE I allele — the role of genes in athletic performance. *Human Genetics*, 103: 48-50.
2. Woods D., Hickman M., Jamshidi Y. et al. (2001). Elite swimmers and the D allele of the ACE I/D polymorphism. *Human Genetics*, 108: 230-232.
3. Nazarov I.B., Woods D., Montgomery H.E. et al. (2001). The angiotensin converting enzyme I/D polymorphism in Russian athletes. *European Journal of Human Genetics*, 9, 797-801.

EUROPEAN BEST PRACTICES AND POLICIES FOR PROMOTION AND IMPLEMENTATION OF APA FOR ELDERLY — THENAPA II

Herman Van Coppenolle, Stefka Djobova, Iana Dobreva, Aldona Niemiro
Catholic University Leuven, Belgium

Introduction

Although there is some awareness about the benefits of physical activity and many of the issues regarding elderly persons (with and without a disability) are being discussed nowadays, there is still a long way to go to achieve full awareness and inclusion of older and especially older disabled people. The challenge is to expand the concept of an active lifestyle for all elderly persons.

Methods

During three years experts in the domain of ageing and disability from 27 European countries worked together to face this challenge. As a network THENAPA II developed a wide spectrum of products that facilitate the process of awareness rising in the domain of APA for the Elderly.

Results

The project has reviewed the information and statistics, gathered by all the partners on good practices and policies extending throughout Europe. This research made the identification and the fulfillment of relevant educational programmes in the students' curricula possible. In turn these programmes have to motivate students from different academic domains to work with and for the elderly population and at the same time — to help expand the concept of active lifestyle for the elderly.

In order to achieve the objectives of the project THENAPA II developed Recommendations to be proposed to the European Commission and its member states. The recommendations give the necessary information to all policy makers about the current situation of APA for elderly. The THENAPA II working group recommends that the European Commission and EU member states implement its findings under 3 different headings: (1) the policy, (2) research and/or education programmes and (3) the individual (elderly person with/without a disability).

To better serve the ultimate goal which is to motivate all older adults regardless their abilities to participate in different physical activities other products were developed — the motivational movies and resource cards. The DVD 'Never too old to be active, The joy of movement' contains three motivational movies that are meant to convince elderly themselves to participate in Adapted Physical Activities. "Active Ageing Activity Cards" are an excellent tool for everyone who wants to organize an exercise session for older adults with or without disabilities. Those products complement each other; their specification gives a possibility to reach not only one type of end user, but a whole spectrum of other potential users.

LEARNING TO IMPLEMENT TEACHING GAMES FOR UNDERSTANDING

Alberto Cruz, Chung Li, Kevin Kam
The Hong Kong Education Institute, China

Teaching games for understanding (TGfU) has been developed and accepted as an innovative curriculum model in teaching games by PE teachers. It places emphasis of pupils' learning in games education on the tactical understanding in terms of games appreciation, tactical awareness, decision-making and skill execution in games. It stresses the adoption of indirect, pupil centered, inquiry- and context-based approaches for promoting pupils' learning through games as suggested by Griffin, Mitchell, and Oslin (1997). TGfU is included as the content of curricular and pedagogical modules within the PETE curriculum of the Hong Kong Institute of Education in recent years. Student teachers are encouraged to practice this new teaching approach during the teaching practice. Recently, physical education researchers reported a number of potential barriers and contextual constraints that teachers need to encounter in learning to teach Teaching Game for Understanding approaches (McNeill, et al., 2004). Li and Cruz (2006) also found that the student teachers were not well equipped to apply the TGfU approach during the teaching practice when they carried out a qualitative study of how 4 physical education student teachers perceived their learning to teach TGfU in the practicum. It seems that the student teachers had problems within the process of learning to teaching TGfU during their teaching practice. After introducing TGFU in the Hong Kong Institute of Education for several years, it is time to learn more about how student teachers learn to implement as well as their experiences in implementing the TGfU. Therefore, the purpose of the study was to investigate the implementation of TGfU teaching approach by secondary physical education student teachers during their teaching practice. The process of learning to teach this approach and the factors that influence their implementation of the approach were examined.

9 Year 4 secondary physical education student teachers in the Hong Kong Institute of Education who intended to try the TGfU approach in their teaching practice 2007—2008 were purposely invited to take part in the study. Qualitative data were collected by a combination of techniques: passive participant observation, formal and informal interviews, document analysis, and journal writing. Constant comparison and analytic induction were used to organize and categorize the data. Data generated helped to understand how the student teachers learned and implemented the approach as well as the factors that influenced their implementation of the approach during the teaching practice.

Findings indicated that the student teachers held positive views on the approach as it helped to develop students' critical thinking ability. They all made use of the related TGfU references and materials in the TGfU module in preparing their TGfU lessons. With post-lesson reflection they modified and improved their practice in TGfU teaching. However, they pointed out that facilities, equipments, lesson time and student discipline were important factors influencing their implementation of TGfU. They also raised that they had difficulties in designing games and appropriate guiding questions in TGfU lessons. This information is valuable to physical education teacher educators as they have responsibility in helping their students to adopt innovative teaching approach in school practice. Findings of the study hold implications for the preparation of physical education teachers with respect to the learning to teach TGfU process.

References

1. Griffin, L. L., Mitchell, S. A., & Oslin, J. L. (1997). *Teaching sport concepts and skills. A tactical games approach*. Champaign, IL: Human Kinetics.
2. Li, C., & Cruz, A. (2006). Learning to teaching games for understanding: Experiences from four pre-service PE teachers in the Hong Kong Institute of Education. In R. Liu, C. Li., & A. Cruz (Eds). *Teaching games for understanding in the Asia-Pacific region* (pp. 25-36). Hong Kong: The Hong Kong Institute of Education.
3. McNeill, M. C., Fry, J. M., Wright, S. C., Tan, W. K. C., Tan, K. S. S., & Schempp, P. G. (2004).In the local context: Singaporean challenges to teaching games on practicum. *Sport, Education and Society, 9*(1), 3-32.

STRESS OBJECTS AND LEVELS IN MEMBERS OF SPORTS AND FITNESS CLUBS

Jurgita Čepelionienė[1, 2], Vida Ivaškienė[1], Liudmila Kšanauskienė[1]
Lithuanian Academy of Physical Education[1], Mykolas Romeris University[2], Lithuania

The aim of the research is to analyze stress objects and levels in members of sports and fitness clubs.

Objectives:

1. Establish and compare sports and fitness clubs male and female members' stress pecularities.

2. Establish and compare sports and fitness club members' stress pecularities depending on their fitness experience.

The research methods: primary sources, survey, mathematical statistic analysis.

Anonymous questionnaire was distributed to the respondents after their fitness classes in x, y, z sports and fitness clubs situated in Kaunas city, in November, 2007. The time for filling in the questionnaires was 10—12 minutes. The 125 people (66 men and 59 women). Took part in the study who were selected randomly. Respondents' mean age was 27.6±7.5 years. Respondents answers were analysed according to two categories: fitness level and gender.

Statistical research data analysis was performed by using SPSS 13.0 package. The results of written questionnaires are in percent module. In order to establish the reliability of different groups results χ^2 was used (chi squared criterion).

Conclusions:

1. Sports and fitness clubs male members' stress in more focused on learning and less focused on the body and social environment, as female members' stress is more focused on mind, learning, social environment, body and is less focused on the job. Stress focused on learning is more common for male than female respondents ($p<0.05$).

2. Men having longer fitness practice experience less stress than those who just started sports activities. Socially oriented stress is lower ($p<0.05$) in those men and women who have longer exercise experience than those men and women who just started exercising. Learning oriented stress is lower in men who just started exercising and in women who have been exercising for a long time ($p<0.05$).

References

1. Barvydienė, V., Kasiulis, J. (2003). *Vadovavimo psichologija.* Kaunas: Technologija.
2. Grakauskas, Ž. (2004*).* Stresas ir elgesio savireguliacija: teorinės sąveikos problemos. *Psichologija*, 29, 74—87.
3. Grakauskas, Ž., Valickas, G. (2006). Streso įveikos klausimynas: keturių faktorių modelio taikymas. *Psichologija*, 33, 64—75.
4. Kazlauskas, E., Šimėnaitė, I., Gailienė, D. (2007). Subjektyvaus trauminio patyrimo ir potrauminio augimo bei potrauminio streso sutrikimo sąsajos. Psichologija, 35, 7—18.
5. Lazarus, R. S. (2000). Evolution of a model of stress, coping, and discrete emotions In: *Handbook of Stress, Coping and Health* / Ed. by V. H. Rice. Thousand Oaks, CA: Sage Publications,19, 5—22.

PECULIARITIES OF THE SYSTEM OF ELITE SKI RACERS' PARTICIPATION IN COMPETITIONS IN THE MACRO CYCLE OF 2007—2008

Algirdas Čepulėnas
Lithuanian Academy of Physical Education, Lithuania

Modeling skiers' participation in competitions in each macro cycle is an important structural factor of athletic training and its management, which influences the achievement of the skiers' athletic form and the specificity of their competitive activities (Баталов, 2000). In the last decades the programs of international ski racing competitions, skiing World Cup competitions, world skiing championships have changed remarkably. During the skiing season of 2006-2007, the multiday skiing competition "Tour de Ski" took place for the first time. The program of this competition included ski racing in classical ways and free styles, as well as competitions in long (traditional) and sprint distances. Different skiing events raise specific requirements to the adaptation of the skiers' organisms to the loads of competitive activities. However, the indices of the adaptation of the skiers' organisms to physical loads skiing in different ways are different (Hoffman, Clifford, 1992; Stögll et al., 2007). Nowadays there is little evidence in research literature about a very important component of athletes' training — the system of competitions, which as important achieving high results as the training system.

The aim of the present research was to analyze the competitive activities of the world elite skiers (males and females) in the macro cycle of 2007—2008 and to establish the amount of the competitive load, its structural components, resultativeness and specificity.

Research object was the competitive activities of skiers having taken the 1^{st}—10^{th} places in the World Cup competitions final score in the macro cycle of 2007—2008.

Research methods: literature review, analysis of documents.

The data have been received from the official documents of International Skiing Federation (FIS) (internet link: http://www.fis-ski.com/cross-country).

Rezults. In the final score of the World Cup skiing competition the male and female skiers, who took the 1^{st}—10^{th} places (according to their results in long distance and sprint competitions), have demonstrated their versatility, all of them participated in the multiday skiing competition "Tour de Ski", they had the credit points for their results in long distances and sprint. All the skiers, who took the 1^{st}—30^{th} places in the World Cup skiing competitions, had credit points for their results in sprint. Out of ten fittest skiers in sprint only three had credit points for their results in long distances.

Female elite skiers were more versatile than male. The female skiers, having the 1^{st}, 2^{nd}, 3^{rd}, 4^{th} and the 5^{th} places in long distances, achieved high places in sprint as well — respectively the 3^{rd}, 38^{th}, 8^{th}, 2^{nd} and the 13^{th}.

In the macro cycle of 2007—2008 the ski racing competitive activities included participation in the phases of the World Cup competitions and the "Tour de Ski" races.

The distinguished phases of the competition period were as follows:

I — October 27- December 16, 2007; II — December 28, 2007 — January 26, 2008; III — January 27 — February 27, 2008; IV — March 1—16 — September 3.

Conclusions. According to the specificity of competitive activities the world elite skiers can be divided into the following groups: universal stayers skiers; universal sprint skiers; long distance skiers; skiers sprinters.

The type of a skier determines the amount and the specificity of their competitive activities.

References

1. Hoffman, M., Clifford, P.S. (1992). Physiological aspects of competitive cross-country skiing. J.Sports sci, 10, 3-27.
2. Stöggl, T., Lindinger, S., Müller, E. (2007).Testing concepts for the cross-country skiing sprint. Science and Nordic Skiing. Ed. By V.Linnamo, P.V.Komi, E. Müller (pp. 159-170). Meyer&Meyer Sport.
3. Баталов,А.Г. (2000). Модельно целевой способ построения спортивной подготовки высококвалифицированных спортсменов в зимних циклических видах спорта. Теория и практика физической культуры и спорта, 11, 46-51.

CHANGES IN ATHLETIC AND SPECIAL PHYSICAL FITNESS OF YOUNG WEIGHTLIFTERS IN THE PERIOD OF SPECIALIZED TRAINING

Algirdas Čepulėnas, Gytis Maželis
Lithuanian Academy of Physical Education, Lithuania

In weightlifting the period of athletic specialization of young weightlifters is divided into two phases: the phase of initial specialization (13—14 year old athletes) and the phase of enhanced specialization (15—16 year old athletes) [Teorija i metodika sporta, 1997]. In the phases of initial and enhanced specialization it is very important to match the means and methods of athletic training and special physical training properly, and to investigate the changes in athletes' physical fitness under the impact of training loads.

The aim of the study was the investigate the changes in athletic and special physical fitness of young weightlifters in the age periods of 12—14 years and 15—17 years during specialized training.

Research methods and organization. The research was carried out in Lithuania, Rokiškis sports school, in 2005—2007. There were two groups of the research participants: the first group included 12—14 year old weightlifters (n=8), and the second group — 15—17 year old weightlifters (n=8). At the beginning of the experiment the research participants in the first group were 12 years old, and in the second — 15 years old. The research methods included literature review, experiment, and testing. One alternative experiment lasted two yearly training cycles. In the training program of the first group weightlifters 142 hours were meant for athletic training and 64 hours — for special physical training in the yearly training cycle, and in the second group 134 hours were for athletic training, and 196 — for special physical training. The research program included:

1. Establishing the body composition indices (height, body weight, body mass index, amount of body fat in per cent).
2. Testing athletic fitness: running 20 m form a standing position; long jump from a stationary position, pull-ups; bending forward while sitting to establish the flexibility of the trunk, agility — flexibility test — shuttle racing 10×5m, test to establish dynamic strength endurance of abdominal muscles — 30 s sit and lie down with hands behind the head, Flaming test for balance.
3. Special physical fitness was evaluated performing squats with barbell on the shoulders, and pulling the barbell.

We presented the yearly arithmetic means ($\bar{x}$) of indices and standard errors (SE) of arithmetic means.

Research results and discussion. During the period of the experiment the 12—14 year old weightlifters markedly improved ($p>0.05$) their leg muscle explosive strength, abdominal muscle dynamic strength endurance, agility and velocity. Maximal strength of leg muscles (squats with a barbell) increased from 65.0±8.3 kg to 85.4±6.54 kg, and the indices of pulling the barbell improved from 55.8±7.09 kg to 74.6±6.87 kg. During the period of the experiment the 15—17 year old weightlifters improved ($p<0.05$) their leg muscle explosive strength, abdominal muscle dynamic strength endurance, results of 20 m run, agility — velocity, and the flexibility of the trunk. The maximal strength of leg muscles (squats with a barbell) increased from 82.5±6.62 kg to 107.2±6.86 kg ($p<0.05$). Indices of puling the barbell increased from 71.9±5.17 kg to 89.7±5.86 kg ($p<0.05$). The height of 12—14 year old weightlifters increased from 165.0±0.08 cm to 172.3±0.06 cm, and their body weight — from 63.8±10.18 kg to 70.2±8.92 kg. The height of 15—17 year old weightlifters increased from 163.0±0.03 cm to 175.0±0.04 cm, and their body weight — from 58.3±7.6 kg to 69.0±2.89 kg.

Conclusion

The content of the training program and the training loads were effective: athletic and special physical fitness of weightlifters improved, and the changes in the body composition indices were optimal.

INFLUENCE OF DISSEMINATED SCLEROSIS ON BALANCE SYSTEM

Vida Janina Česnaitienė, Julija Andrejeva, Kazimieras Pukėnas, Albertas Skurvydas
Lithuanian Academy of Physical Education, Lithuania

The interaction of complexity of physiological dynamical systems provides an organism with potential of fast reaction to internal and external changes (L. Lipsitz, 1997). This complexity decreases in case of various disorders; therefore interaction of the systems becomes less complex in many physiological processes. Disseminated sclerosis is CNS disorder when myelinated nervous tracts are affected and the transmission of nervous impulses from CNS is disturbed (G. Deuschl, et al, 1998). Many suchlike focuses of demyelinisation appear during exacerbation of illness. It is known that due to various neurological disorders regularity and periodicity of person behavior and others physiological actions increase and therefore complexity of these systems decreases (L. A. Lipsitz & A. L. Goldberger, 1992). While nervous impulse transfer speed decreases in patients with disseminated sclerosis, balance complex dynamic system interrelation of internal elements is slacken. The balance system alterations appear and one of the parameters — complexity of alteration we analyzed in this article.

The aim of the study — investigate the influence of disseminated sclerosis on balance system.

Subjects: 1 group — 12 patients with disseminated sclerosis — mean age 43±6.5 years;
2 group — 15 women — mean age 44.5±3.5 years.

Investigation organization. During estimation of participants' balance were assessed:
SCdx — SC coordinates alteration on lateral direction (mm/s),
SCdy — SC coordinates alteration on forwards — backwards direction (mm/s).

Evaluation of balance. Balance of subjects was evaluated by using static posturography method. For this purpose were used KISTLER (Switzerland, "Slimline System 9286") company power platform which was designed for human biomechanics investigations and is used in educational institutions.

Evaluation of balance complexity. Balance alteration complexity was assessed according to J. S. Richmann, J. R. Moorman methodic (J. S. Richmann, J. R. Moorman, 2000). There were estimated two characteristics considering evaluation of alteration of pressure centre coordinates on lateral and forwards — backwards direction — sample entropy (SampEn) and Spectral slope.

Conclusions. The results of investigation revealed that estimated speed of body mass centre sways in women with disseminated sclerosis do not differ from healthy women never less the sways are more regular. Estimation of subjects pressure centre alteration of sway frequency by applying analysis of variance method was established that complexity, considering the disorder influence, decreases statistically significant ($p<0.01$). Women with disseminated sclerosis body pressure centre sways in order to keep balance have lower complexity than same age healthy subjects.

References

1. Deuschl G, Bain P, Brin M, and the scientific committee of the tremor symposium in Kiel (1997) Consensus statement of the movement disorder society on tremor. *Mov Disord* 1998;13(suppl 3):2-23.
2. Lipsitz L,A, and Goldberger A,L. (1992) Loss of "complexity" and aging: potential applications of fractals and chaos theory to senescence. *JAMA* 267: 1806—1809.
3. Lipsitz L., A. (1997) Physiological Complexity, aging and the path to frailty. *Sci. Aging Knowl. Environ.*, Vol. 97:454-455.
4. Richmann, J., S., Moorman, J., R. (2000). Physiological time series analysis using approximate entropy and sample entropy. *American journal of physiology. Heart and circulatory physiology* . 278, H2039—H2049.

MUSCLE PERFORMANCE DURING 100 JUMPS AND RECOVERY IN WOMEN DURING MAXIMAL ISOMETRIC AND DYNAMIC CONTRACTIONS

Laura Daniuseviciute[1, 2], Irina Ramanauskienė[2], Saulė Sipavičienė[1], Albertas Skurvydas[1], Marius Brazaitis[1], Vitas Linonis[2]

Lithuanian Academy of Physical Education[1], Kaunas University of Technology[2], Lithuania

The aim of our study — to establish jump kinematics properties and variability in the rate of electromiography (EMG) during 100 jump and recovery in women.

Subjects — healthy and physical active women (n=10), whom age is 19—23 years. Body weight 58.2±6.1 kg, height — 168.4±5.6cm. To asses vertical jump force plate (60×60 cm) with the jump height and time of take-off phase measurer „New Test" (Finland) was used. Surface EMG Biometrics Ltd was used during the jump, where surface EMG and goniometry data were collected. The electrodes were attached to middle line of vastus lateralis and biceps femoris. Values of maximal knee joint variations were registrated when the biosensors were attached in parallel with knee joint: one side of biosensors were attached to vastus lateralis fascia, another to external side of shin. When the electrodes and biosensers were attached, the participants stand on 75 cm stage with the straight legs through knee joints. Then were set scoreless biosensers values and the jumping started. During one jump by surface EMG Biometrics Ltd we calculated contractions of vastus lateralis, biceps femoris, duration of time. These values were started to calculate when participant made a step from 75 cm of stage, get to amortization phase and stretch legs through the knee joint. In amortization phase we estimated values of maximal knee joint variations. One jump we divided in some phases and calculated contractions of vastus lateralis, biceps femoris from jump beginning till maximal knee joint variations (T1 phase) and from maximal knee joint variations till the end of jump (T2 phase). Before the registration of contractions of vastus lateralis, biceps femoris and values of maximal knee joint variations, we set 3V channel sensivity, we chose 1 kHz of sampling rate for muscle contractions and 2 kHz of sampling rate for maximal knee joint variations, we set 4600 mV of excitation output. Root mean square (RMS) was calculated for muscle activation, where the delay was chosen 4.

The subsequent recovery of joint stiffness was slow and in some cases incomplete still at 4 days. Generally, all EMG parameters were fully recovered by 3 days, whereas the force recovery was still incomplete at this time.

These data indicate that muscle output in high force isometric and dynamic muscle actions is positively related to the stiffness of the muscle contractions, possibly by means of a more effective force transmission from the contractile elements.

References

1. Albert, W.J., Wrigley, A.T., McLean, R.B., and Sleivert, G.G. (2006). Sex differences in the rate of fatigue development and recovery. *Dynamic Medicine,* 5: 2.
2. Beltman, J.G.M., Sargeant, A.J., Ball, D., Maganaris, C.N., de Haan, A. (2003). Effect of antagonist muscle fatigue on knee extension torque. *Eur J Physiol,* 446: 735-741.
3. Bojsen-Møller, J., Magnusson, S.P., Rasmussen, L.R., Kjaer, M., Aagaard, P. (2005). Muscle performance during maximal isometric and dynamic contractions is influenced by the stiffness of the tendinous structures. *J Appl Physiol,* 99: 986-994.
4. Horita, T., Komi, P.V., Hämäläinen, I., Avela, J. (2003). Exhausting stretch-shortening cycle (SSC) exercise causes greater impairment in SSC performance than in pure concentric performance. *Eur J Appl Physiol*, 88, 527—534.
5. Kuitunen, S., Avela, J., Kyröläinen, H., Komi, P.V. (2002). Acute and prolonged reduction in joint stiffness in humans after exhausting stretch-shortening cycle exercise. *Eur J Appl Physiol*, 88: 107—116.

SOME ASPECTS OF TENTH GRADE PUPILS ATTITUDE TOWARDS PHYSICAL EDUCATION AND SPORT

Adomas Drazdauskas, Vida Ivaškienė, Giedrūnas Lukoševičius
Lithuanian Academy of Physical Education, Lithuania

The goal of the research — to study some aspects of tenth grade pupils attitude towards physical education and sport.

Tasks of the research:

1. To ascertain the interest of tenth grade pupils in sport.
2. To ascertain the interest in sport in families of the respondents.
3. To ascertain the attitude of the respondents towards lessons of physical education.
4. To ascertain the attitude of the respondents towards physical education, as a means of developing moral characteristics and social skills.

Research methods: the analysis of literature sources, questionnaire, mathematical statistics. 22 questions were included in the questionnaire.

Respondents: pupils of tenth grade from Jurbarkas (A school) (n=105), and Kėdainiai (B school) (n=109) Secondary Schools (n=214), 108 boys and 106 girls among them.

Results of the research. Boys from A school like basketball the most from all types of sport, and in addition to basketball, boys from B school like body-building. Girls from A school like sport dance, aerobics and horse riding the most from all types of sport, and girls from B school like basketball, track and field athletics and swimming the most. The most popular television broadcast on sport‘s theme for the respondents is basketball. In the second place for the boys from A school is wrestling, and for boys from B school — sport news. Boys from A school more than boys from B school would like to go in for sports more actively ($p<0.05$). Sport broadcasts are watched more by boys from A school and by girls from B school. Big sport events and/or matches are attended by boys from A school and girls from B school together with their families more frequently. Pupils from B school and boys from A school are interested in sport most of all.

Lessons of physical education are enjoyed by boys from A school and girls from B school more ($p<0.05$). Most of the pupils, except girls from B school, are satisfied with their sport gym and stadium. Mostly boys from B school and girls from A school tend to skip lessons of physical education. Girls from A school tend to have more conflicts with teachers of physical education than girls from B school.

Though the opinion about the influence of physical education and sport to development of moral peculiarities of girls and boys from different schools was different ($p<0.05$), but the majority of the respondents indicated that physical education and sport developed willpower. Most of the pupils from A school think that sport does not help achieving better results during lessons of other subjects ($p<0.05$).

References

1. Baubinas, A., Vainauskas, S. (1998). Lietuvos moksleivių požiūris į kūno kultūrą ir savo sveikatą. *Sporto mokslas,* 2 (11), 65—69.
2. Blauzdys, V. Jasiūnas, M. (2000). 11—12 klasių miesto ir kaimo moksleivių požiūris į kūno kultūros pamokas. *Sporto mokslas,* 4 (22), 57—62.
3. Ryan, S., Fleming, D., Maina, M. (2003). Attitudes of middle school students toward their physical education teachers and classes. *Physical Educator,* 60 (2), 28—42.
4. Stepaitienė, A. (1999). *Sveika gyvensena*. Vilnius: LSIC.

THE VALUES OF PROFESSIONAL ORIENTATION OF STUDENTS UPPER CLASSES

Audronė Dumčienė
Lithuanian Academy of Physical Education, Lithuania

The aim of the research was to define values of professional orientation of students upper classes.

The level of the expression of the professional of orientation is very important not only with the selection of profession but with the perception of training curses especially in the e-learning (Dumciene, Daukilas, Sipaviciene, 2008).

The knowledge of the professional value of the orientation of students is important for control of contemporary training process in the higher school (Думчене, Даукилас, 2007).

The investigated sample was 180 students' upper classes of the secondary schools and gymnasiums. In the research the adapted questionnaire was applied, in which there were groups of values, reflecting such values of professional orientation: self-actualization, professional self-expression, professional aspiration, sociability and comfort.

It was determined, that the opinions of the students different classes about the most important professional values they are diverge between themselves and it is statistically reliability (χ^2; $p<0.05$). There was difference both series of values and values location in series. In the priorities of all students it is repeated only two professional values: moral satisfaction; power and authority. The moral satisfaction was set in the first place in three groups of respondents of four. Only students of the tenth classes among the most important professional values named the possibility of career.

The difference of opinion of the students different classes about the least important professional values were significantly ($p<0.05$).

Among the least important professional values there were, by way of the decrease of level class, thus: the variety of activity, control, environment of the workplace, work of rapid rate and status of intelligence. Status of intelligence was the least important for the student's secondary schools of the ninth classes.

It is interesting that even students of the twelfth classes of humanitarian profile the professional value „to be creative" named only to tenth place and "aesthetics" to 24th place among 30 in the series.

The opinion of students secondary schools about the importance of professional values they differed from the opinions of the freshmen LAPE ($p<0.05$) (Dumčienė, Medišauskaitė, 2005).
In the pupils it is most explicit professional orientation to comfort and sociability and lesser — to self-actualization, professional self-expression.

By this study it is established the change of the orientations of professional values among the young people. This should be considered by the selection of candidates on the students which want to be the sport pedagogues.

References

1. Dumciene A., Daukilas S., Sipaviciene S. Axiological Logic in the Means of E-Teaching Product Interactivity. Proc. of the ITI 2008 30th International Conference on Information Technology Interfaces. June 23-26, 2008, Cavtat/Dubrovnik, Croatia. University of Zagreb, 2008. p. 495- 500.
2. Думчене А., Даукилас С. О сочетании прагматических и гуманистических ценностей студентов // Социологические исследования. 2007, № 5, с. 132-136.
3. Dumčienė A., Medišauskaitė V. LKKA studentų profesinės vertybinės orientacijos rengiantis sporto pedagogo karjerai // Ugdymas. Kūno kultūra. Sportas. 2005, 1(55), p. 17-22.

LONG-TERM EFFECTS OF TRAINING IN SPORTS GAMES AND CYCLIC EXERCISES AT THE BOYS 11—14 YEAR OLD

Arūnas Emeljanovas, Jonas Poderys
Lithuanian Academy of Physical Education, Lithuania

The aim of this study — to compare the effects of regular exercising in sports games and cyclic sports events on development of cardiovascular system, motor and sensomotor abilities for the boys of 11—14 years old.

Research organization and methodology. The participants of this study was 70 boys of 11—14 years of age: cyclic (C) sports events (track and field athletes) and sports games (SG) athletes (basketball, volleyball, football players) were tested for four years (every year on September — October): C_{11} (n=35), C_{12} (n=21), C_{13} (n=18), C_{14} (n=15), SG_{11} (n=35), SG_{12} (n=19), SG_{13} (n=17), SG_{14} (n=16).The subjects had no any hard training session two days before the investigation. All tests were performed at the same time of the day. The next methods were used: Finger Tapping test, Roufier test, Vertical jump test, 30 s maximal jumping test, Measurements of ABP, Electrocardiography, Dynamometry, Measurements of body mass components.

Results and discussion. Considering the results of CNS functional state and efficiency, it was determined that sports games, i.e. partially regulated physical load, had greater impact on these indices. Sports games athletes were superior to cyclic sports events athletes taking into account CNS mobility, anaerobic efficiency and anaerobic work capacity. Evaluating boys' motor abilities (performing vertical jump and 30 s maximal jumping test), it was observed that these indices were improving with age in both sports games athletes and cyclic sports events athletes groups, but did not vary statistically significantly among each other. Evaluating the indices of muscles power by dynamometry measurements, it was determined that cyclic sports events had greater influence. These results show that 11—14 years of age boys are still developing and are not mature (Kozlowski et al., 2001; Munchmeier, 2001). Assessments of body components revealed similar results as intersectional evaluation of the fourth investigation. In this case the body fat decreased with age and active body mass and total body water mass increased with age, but in case of sports games athletes and cyclic sports events athletes, they did not vary. Cardiovascular assessments showed that ABP did not differ among sports games athletes and cyclic sports events athletes. Sports games athletes were characterized as having lower HR values than cyclic sports events athletes, though during all investigation statistically significant differences were observed in 13 years of age group. Statistically significant differences were found evaluating JT interval of ECG. These results can be pointed out by other authors (Olson, 1996; Платонов, 1997) conclusions that different type physical loads determine different adaptation peculiarities by generating distinct relations between external and internal stimulus.

Conclusions

The faster development of muscular abilities, cardiovascular system and CNS indices increases under the influence of variable intensity of physical load which is dominating in training of sports games and is an essential external factor at the age of 11—13. Decisive influence of endogenous factors on child' growth and development significantly increases at the age of 13—14 due to the changes of important cardiovascular system and CNS indices accelerate.

References

1. Kozlowski, S.W., Gully, S.M., Brown, K.G., Salas, E., Smith, E.M., Nason, E.R. Effects of Training Goals and Goal Orientation Traits on Multidimensional Training Outcomes and Performance Adaptability. *Organ Behav Hum Decis Process*, 2001. 85(1), 1—31.
2. Munchmeier, R. Growing up in changing conditions on the structural change of childhood and adolescence. *Prax Kinderpsychol Kinderpsychiatr*, 2001. 50 (2), 119—134.
3. Olson, D. What is training? *Current Biology,* 1996. 6(12), 1539.
4. Платонов, В.Н. Общая теория подготовки спортсменов в олимпийском спорте. *Учебник для студентов вузов физического воспитания и спорта*, 1997. 554—566.

CONCEPT OF RENAL CLEARANCE OF NITROGEN COMPOUNDS (PROTEIN, CREATININE, UREA AND URIC ACID) AT ATHLETES

Alina Gailiūnienė
Lithuanian Academy of Physical Education, Lithuania

Haemodynamic changes in the kidney take place during the physical effort — the blood pressure rises and its flow through the kidney falls (Poortmans, Vander-Straeten, 1994). Theese changes lead to changes in the glomerular filtration and in mechanism of the reabsorbtion which as a consequence influence the after effort blood content. The growth or the fall of the nitrogen compounds (protein, creatinine, urea and uric acid) concentrations in the blood might be the reflection of changes haemodynamic in the kidney and clearance from the blood in urine of the nitrogen compounds (Zambraski, 1990). Gailiūnienė, Stasiulis and Michailovienė (2007) shows the significant ($P<0.05$) differences between exercise-induced increase in blood concentration of creatinine, urea, total protein and uric acid when they compared the results before the exercise with the values of these parameters after the exercise at trained and non-trained athletes.

The aim of this study was to investigate the renal clearance of nitrogen compounds (creatinine, urea, total protein) and uric acid (purine metabolite) at athletes and non-athletes.

Materials and methods. The study was performed with 20 trained and 10 non-trained men athletes. The age range was 20.5—21.5 years. Twenty trained and ten non-trained normotensive, healthy subjects were students.

The principle of renal clearance (C_x) emphasizes the excretory function of the kidney; it considers only the rate ($U_x \cdot V$)[1] at which the substance is excreted into the urine and the concentration (P_x) of this substance in the plasma: $C_x = \frac{U_x \cdot V}{P_x}$.

Concentration of nitrogen compounds in the blood serum and urine were determined by using Technicon Auto Analyzer ADVIA 1650 system. Concentration of nitrogen compounds of the blood and urine were determined before and after anaerobic testing procedure.

Results. As the results presented in Table 1 suggest the preexercise blood concentrations of nitrogen compounds were higher in trained subjects compared with parameters of non-trained subjects. The postexercise blood nitrogen compounds levels (Table 2) of trained participants were also higher than the non-trained subjects. However, before and after the exercise the increase of results in trained and non-trained participants was not statistically significant. But results, presented in Table 3, show a significant differences exercise induced decrease parameters of clearans of nitrogen compounds levels when we compared results of trained and non-trained participants.

Conclusions: 1. The testing exercise-induced increase of blood nitrogen compounds and its levels were higher at trained participants.

2. These changes of blood nitrogen compounds levels could be due to the common phenomen of the physical stress, catecholamine effects and catecholamine effects on haemodinamic in the kidney.

3. The testing exercise-induced hemodynamic changes in the kidney, changed the glomerular filtration and mechanism reabsorbtion of nitrogen compounds in the blood.

3. These heamodynamic and reabsorbtion changes lead to changes clearance of nitrogen compounds of the blood and could be due differences in work volume and intensity at trained and non-trained athletes.

References

1. Poortmans, J. R., Vanderstraeten, J. (1994). Kidney function during exercise in healthy and diseased human. *Sports Medicine*, 18, 419—437.
2. Gailiūnienė, A., Stasiulis, A., Michailovienė, J. (2007). The effect of submaximal exercise on blood creatinine, urea, total protein and uric acid levels of trained and untrained subjects. *Ugdymas. Kūno kultūra. Sportas*, 3 (66), 5—10.

[1] U_x is the concentration of "X" in the urine; and V is the urine flow rate per minute.

THE FACTORS WHICH INFLUENCE CHILDREN'S PHYSICAL ACTIVITY IN FAMILIES FROM LITHUANIAN CITIES

Aida Gaižauskienė, Vida Volbekienė, Aušra Griciūtė
Lithuanian Academy of Physical Education, Lithuania

The aim — to determine the main factors which influence children's physical activity in families.

The research was carried out in five Lithuanian cities (Vilnius, Kaunas, Klaipėda, Šiauliai and Panevėžys). The sample size in the gender and age groups of 11—18 year old children's was calculated according to the data of Lithuanian population census of 2001. The schools were selected at random. The children according to the grades at schools were selected applying the convenience sampling. Totally the sample for the analysis consisted of 2243 students.

Research methodology. Questionnaire consisted of 14 questions, divided into four groups. First group — parental opinion about children's physical activity; second — parental physical activity during leisure time; third — the instruments used by parents to motivate children to be physically active; four — the interferences for families determinate physical activity. Respondents had to answer each question and choice one of five answers (each answer was evaluated): totally disagree (1), disagree (2), partly agree (3), agree (4), totally agree (5). All respondents were new the aim of research, the content of the questionnaire and how to fill it. The interview was carried out by five groups of qualificated researches.

Methods of statistical analysis: frequency and percentage of variables, chi square criterion, Spearmen's correlation coefficient of ranks. Statistical analysis was performed using SPSS programs.

Conclusions

1. Boys think that their parent's opinion about physical is positive and they motivate them to take an interest in this activity more often than girls ($p<0.001$). Usually girls can decide about their physical activity themselves. According to 8.4% of the girls and 6.3% of the boys, parents are totally indifferent about physical activity.

2. According to respondents answers they are usually not physically active during their leisure time. Only 27.6% girls and 24% boys replayed that their father during is physically active on leisure time. 21.7% girls and 16.8% boys replayed that their mother is physically active on leisure time ($p>0.05$).

3. 64.2% students replayed that their Parents usually motivated them to be physically active, paying for their training and buying sport inventory (50%). 33.1% of parents induce physical activity they need by their own individual behavior pattern.

4. The reasons which negatively influence the physical activity are: the lack of time (55.8%), there is willingness (22.4%) and money deficient (10.4%).

References

1. Zaborskis A, Zemaitiene N, Borup I, Kuntsche E & Moreno C (2007) Family joint activities in a cross-national perspective. BMC Public Health, 7:94. doi:10.1186/1471-2458-7-94
2. Ronald J. Iannotti, James F. Sallis, Rusan Chen, Shelia L. Broyles, John P. Elder, Philip R. Nader (2005). Prospective Analyses of relationships between Mothers' and Children's Physical Activity. Journal of Physical Activity and Health (JPAH), 2 (1). January.

PARTICIPATION MOTIVES IN SPORTS AND PHYSICAL ACTIVITY AMONG YOUNG ADULTS IN HUNGARY: A PRLIMINARY REPORT

Zoltan Gaspar, Attila Szabo, Laszlo Bologh, Mark Vaczi, Julia Bösze, Endre Kelemen
Eötvös Lorand University of Science, Budapest, Hungary

Information about personal reasons for participating in sports and physical activity is paramount in the design and development of sporting facilities, programmes, and opportunities, as well as for the national sport and physical activity strategy. The currently available information in a national context in Hungary is scarce and it is not systematic. Efficient sport policies could not be formulated in lack of such knowledge and governmental incentives to increase participation maybe unsuccessful.

In the current study we have attempted to gather systematic information about motives for which people participate in sports and physical activity. The framework of the survey was a previous research effort by Trembath, Szabo and Baxter (2002). The difference between the current study and Trembath et al.'s work was that in the present study we not only looked to participants in leisure centers but also to participants in individual and in team sports separately.

Two identical studies were performed. Both studies were also part of the psychometric validation of the Hungarian version of the Participation Motives Inventory (PMI — Gill, Gross, & Huddleston, 1983), therefore, the findings are preliminary. Sixty-six participants completed the questionnaire in a first study and 58 in a second study. The results were analysed for the whole group and then separately for individual and team sport participants. The results are summarised in Table 1.

Table 1. **Most important principation motives in sports and physical activity in a Hungarian sample**

ALL DATA	INDIVIDUAL SPORTS	TEAM SPORTS
To get exercise (27%)	To get exercise (25%)	To get exercise (29%)
Develop skills (9%)	Recognition (13%)	Develop skills (12%)
Recognition (8%)	Develop skills (8%)	The joy of exercise (12%)
	Excitement (8%)	
	To be important(8%)	
	To improve myself (8%)	
	Enjoyment (8%)	

These preliminary findings indicate that — as expected — the key motives in participation may differ in individual and team sports. Further, it appears that the need for exercise is the main and common reason for participation in sports in Hungary. These results, however, are preliminary because they are based on a relatively small sample. Therefore, generalization to the Hungarian population cannot be made solely on the basis of the current work. Learning from these preliminary results, future work should examine motives for participation separately for individual and team sports, and possibly also for competitive an recreational sports, as well as for self-structured (like running, going to gym, etc.) and organized sports (aerobics. Yoga, tai-chi classes, or club running).

References

1. Gill, D., Gross, J., & Huddleston, S. (1983). Participation motivation in youth sports. International Journal of Sports Psychology, 14 (1), 11-14.
2. Trembath, E.M., Szabo, A., & Baxter, M.J. (2002). Participation motives in leisure centre physical activities. *Athletic Insight; The Online Journal of Sport Psychology,* 4(3), article available online at: http://www.athleticinsight.com/Vol4Iss3/LeisureCenterParticipationMotives.htm

DOES MUSCLE DAMAGE DEPENDANT OF SEX?

Giedrius Gorianovas, Vytautas Streckis, Julija Andrejeva, Albertas Skurvydas
Lithuanian Academy of Physical Education, Lithuania

Introduction. Why muscle nerve fatigue and recovery should be dependant of sex? The theoretical base of our performed research is — that there's a difference in men and women metabolic process exists, which essential part is in women hormone estradiolis thus it has antioxidant specifications which at least for animal muscles has an impact to membrane permeability. It effect appears when it possible to decrease creatine kinase activity and also it has an impact to an inflammation answering (Kendal & Eston, 2002), which gains acceleration 24 hours past after workload appliance and binds with a secondary power decrease (Clarkson & Hubal, 2002, Byrne et al., 2004).

The aim of the research. To determine**,** are muscle and nerve fatigue thus recovery dependant of sex after maximal intensity eccentic-concetric workload appliance.

Methods. Research subjects were healthy, physically active, participants. Men (n=9), there age 21±2 years**,** height 182±6 cm, weight 82.6±10 kg and women (n=8), which age was 22±40 years, height 167±5 cm, weight 62.6±5 kg. During this research an indirect muscle damage indexes were registered: before workload, 10,60 min after workload appliance, 24 and 48 hours after workload, maximal voluntary contractions (MVC) and involuntary (20 and 100 Hz electrical stimulation evoked) quadriceps femoris muscle contraction power during long (LL=90^0) and short (SL=120^0) muscle lenght, jump height (h) form a fixed position, also creatine kinase activity before workload and 24 and 48 hours after workload aplliance, subjective muscle soreness 12,24,48 h. after workload. During workload knee joint flexion angle was registered (KJFA). Workload applied — 100 jumps every 20 sec, from 40 cm height platform.

Results. After workload men an women fatigue indexes almoast had no differences: comparing with onset indexes: of men (LL) MVC was 62.93±14.09%, and (SL) riched 64.45±14.09%, women — 71.74±8.35% and 65.68±9.28%. Differences were not statisticaly sagnificant($p>0.05$); jump height — for men was 83.63±7.17%, women 80.31±6.49%; LFF — men 59.28±20.95% as LL and 33.76±14.78% as SL, for women accordingly 68.69±17.54% and 43.39±16.45%. Subjective muscle soreness indexes between men and women in shown periods of time also had no differences, and had no statistical sagnificance ($p>0.05$). Voluntary and involuntary muscle contractions power changes during recovery period was not dependant of sex (2 factors Anova p=145—676). It was determined, that 48 hours after workload, women kreatincinase aktivity level compared to men was lower ($p<0.05$), statistically significant.

Conclusions. Men and women muscle and nerve fatigue and recovery dinamics after maximal intensity repeated eccentric-concentric workload hasn't significant difference, but women creatine kinase activity in a later recovery fases is lower.

References

1. Byrne, Ch., Twist, C., Eston, R. (2004) Neuromuscular function after exercise-induced muscle damage. *Sports Med*., 34(1), 49-69.
2. Clarkson, P.M., Hubal, M.J. (2002) Exercise-induced muscle damage in humans. *Am J Phys Med Rehabil*, 81(suppl), s52-s69.
3. Kendal, B., Eston, R. (2002) Exercise-induced muscle damage and potential protective role of estrogen. *Sports Med.*; 32(2), 103-123.

PECULIARITIES OF MOTIVATION FOR SPORT OF PUPILS ATTENDING ORIENTEERING SPORT AND SPORTS TOURISM GROUPS

Lauras Grajauskas[1], Algirdas Čepulėnas[2]
Šiauliai University[1], Lithuanian Academy of Physical Education[2], Lithuania

Children's motivation for sport is being exhaustively investigated in the context of two theories — self-determination theory (Vallerand et al., 1987) and achievement goal theory (Duda, Nicholls, 1992; Fox et al., 1994; Duda, Hall, 2001). The less investigated theme is of how diversity of sport training means and methods influence motivation of pupils going in for sports. Motivation of young orienteerers for sports is almost not investigated in scientific studies.

The aim of the study — to investigate relationships between curriculum and children's sports motivation.

Methods. Annual activity plans of two close sport branches — orienteering sport and sports tourism groups — were analysed. According to the topics, formulation of topic contents, activity theme groups were singled out. Later, quantitative and qualitative differences of the two groups were investigated.

Pupils' survey. Motivation of pupils going in for sports was measured by *the sport motivation scale* (SMS) (Pelletier et al. 1995). While answering every statement, the surveyed had to choose answer variants in the five-point Likert scale from "strongly disagree" to "strongly agree".

Rezults and discussion. After exploring annual plans of heads of orienteering sport and sports tourism groups, nine thematic groups can be singled out. It is notable that orienteering sport group programmes are more concentrated than those of sports tourism. The sports tourism group programme is broader, integrating more different topics, encompassing a greater variety of topics. For example, in the plan of sports tourism groups, training of orienteering technique and topography is allocated for 10.6±6.4 per cent of the overall time; whereas in plans of orienteering sport groups, development of tourism skills is not projected. Programmes of orienteering sport are focused on three main thematic groups which are allocated 87.6 per cent of the overall time. Programmes of sports tourism groups are focused on five themes which are allocated 92.5 per cent of the overall annual time.

While analysing data of the statements of the sport motivation scale by pupils who have chosen orienteering sport and sports tourism groups, it is estimated that, in six subscales, difference between the groups is insignificant. There can be several reasons to the fact that pupils of the orienteering sport group agreed with the statements of the subscale "Amotivation". First, different understanding of a good activities' result. Second, complexity of activities and instability of beginners orienteerers' sport results. Third, relatively narrower training content which requires greater physical endeavours.

Results allow us formulate several important preconditions. Greater application of diversity of training means and methods is related with intrinsic motivation of pupils. It is estimated that pleasure to improve oneself is mostly encouraged by diversity of means and methods. A narrow programme of training means and methods encourages amotivation of pupils.

References

1. Duda, J. L., Hall, H. K. (2001). Achievement goal theory in sport: Recent extensions and future directions. In R. Singer, H. Hausenblas, C. Janelle (Eds.), *Handbook of research in sport psychology* (2nd ed.) (pp. 417—434). New York: John Wiley & Sons.
2. Duda, J. L., Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology, 84, 290—299*.
3. Fox, K. R., Goudas, M., Biddle, S. J. H., Duda, J. L., Armstrong, N. (1994). Task and ego goal profiles in sport. *British Journal of Educational Psychology, 64, 253—261*.
4. Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Brière, N. M., Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport and Exercise Psychology, 17, 35—53*.
5. Vallerand, R. J., Deci, E. L., Ryan, R. M. (1987). Intrinsic motivation in sport. In K. Pandolf (Ed.), *Exercise and sport sciences reviews: volume 16* (pp. 389—425). New York: Macmillan.

PECULIARITIES OF SCHOOLCHILDREN'S HEALTH SELF-EVALUATION AND THEIR ATTITUDES TOWARDS PHYSICAL EDUCATION

Elvyra Grinienė
Lithuanian Academy of Physical Education, Lithuania

Statistical data of health (*Lietuvos gyventojų sveikata 2006 m.*, 2007) has shown that prophylactic examinations indicate declining health of pupils. Compared to other European countries, quite many Lithuanian schoolchildren consider their health as poor (Žekas et al., 2005). However, the tendencies of physical activity of Lithuanian pupils, which is connected with their health, are negative, and 85% of schoolchildren can have health problems due to insufficient physical activity (Volbekienė et al., 2007).

The aim of the study. Schoolchildren of the fifth and the tenth forms participated in the study aimed to investigate the peculiarities of their self-evaluation of their health and their attitudes towards physical education and sports activities after classes.

Research methods. The survey including randomly selected pupils of the fifth and the tenth forms of Kaunas schools took place in November, 2007. The sample consisted of 347 schoolchildren: 155 schoolchildren from the fifth forms, and 192 — from the tenth forms, 173 boys and 174 girls. We used a closed anonymous questionnaire consisting of 33 questions, made up according to the items of HBSCH standardized international questionnaire. Statistical data analysis was performed using EXCEL 2003 and STATISTICA. Chi square test ($\chi 2$) was applied to evaluate the independence of variables. Reliability was significant when $p<0.05$.

Results. 79.6% of the research participants thought they were healthy or fairly healthy. The number of such answers of the boys (86.7%) and the girls (75.7%) was similar. 20.4% of the research participants thought they were not healthy or even ill: more fifth formers (24.5%) than tenth formers (17.1%), p=0.000. The sufficient level of their resistance towards diseases can be proved by the fact that during the last 12 months only 7.8% of schoolchildren were ill with severe acute diseases four or more times. Despite this, another important indicator of schoolchildren's heath is feeling psychosomatic ailments, which was indicated by 7.2% of pupils. This fact suggests that pupils' health self-evaluation should be based on several criteria. Our data received are similar to the data in health statistics and other studies, and they show the dependence of pupils' attitude towards their health on their age and gender.

Half of the research participants (56.6%) thought that they were leading a healthy way of life, more of them were fifth formers (72.3%) compared to tenth formers (34.2%), p=0.000. Children needed proper educational environment to develop their healthy life style. Only 22.7% of the respondents indicated that they received the necessary information about healthy life style from their teachers, 30.7% — from their parents, and the tenth formers — form mass media (27.5%). Movement as healthy behavior was indicated by 74.8% of the research participants, more of them were fifth formers (81.9%) than tenth formers (68.9%), p=0.000. However, only 67.5% of pupils like physical education lessons. They missed them due to their health (48.5%) and other (48.3%) reasons. More often physical education lessons were for boys and girls together (69.9%), not always in the gymnasium (74.4% of times in other rooms, and 45.6% — out of doors), sometimes without proper clothing for physical activities (11.6%). Morning exercising was not popular among schoolchildren, as well as sports activities after classes. Sometimes 19.5% of schoolchildren of both genders and different age did morning exercises. Only 18.5% of pupils participated in sports more than 4 hours a week and 28.3% did not go in for sports at all. More boys (25.8%) than girls (13.9%) and more tenth formers (24.4%) than fifth formers (11%) participated in after school sports activities, p=0.000. More physically active fifth formers attended sports schools (44.5%, compared to tenth formers — 35.3%), sports clubs (16.8 and 10.0% respectively), and more tenth formers attended school sports clubs (8.4 and 23.2% respectively) and exercised on their own (11.6 and 25.8%).

Conclusion. Schools should increase their orientation to health enhancing schoolchildren's behavior, encouraging schoolchildren to move, exercise and go in for sports, pay more attention how they conduct physical education lessons.

THE EFFECT OF SOME MEANS OF RECOVERY ON FUNCTIONAL CONDITION OF CALF MUSCLES AND BLOOD CIRULATION AFTER STATIC PHYSICAL EXERCISE

Albinas Grūnovas[1], Jonas Poderys[1], Danguolė Grūnovienė[2]
Lithuanian Academy of Physical Education[1], Kaunas College[2], Lithuania

Physical working capacity and recovery of the athlete's body after exhaustive exercise is continued by a number of factors among which a special place is taken by peculiarities of systemic and muscular blood circulation Additional mechanical pressure on blood-vessels is one of self-regulation phenomena that causes a vasodilating response The problem of mutual relation between blood circulation in the muscles and working capacity remains a topical one and it has not been studied sufficiently yet.

The research was aimed at analysing the effect of electrostimulation of the skeletal muscle (ESSM), passive foot flexion (PFF) and passive rest (PR) on functional condition of muscles and blood circulation after static physical exercise.

Methods of research. The research comprised 22 endurance athletes who were acquainted with the procedure of the research. After establishing the arterial blood circulation in conditions of rest, having used the method of venous occlusive plethysmography by means of the method of dynamometry the force of foot flexors was measured and the first local static physical exercise (resistance up 75% of maximum voluntary force) till complete exhaustion was undertaken. After the first and second static physical load changes in calf muscles were registered for 305 s. After the first static physical load having registered blood circulation three types of recovery means, i.e. ESSM, PFF and PR were applied.

Results and discussion. In the PR group prior to static physical load the arterial blood circulation comprised 2.7±0.2 mL/min/100 mL and then it increased to (52.4±3.3 mL/min/100 mL accordingly ($p<0.001$). After 305 s the arterial blood circulation amounted to 8.1±0.7 mL/min/100 mL ($p<0.001$) and after PR it was 3.8±0.3 mL/min/100 mL ($p<0.05$) respectively. In the ESSM group prior to static physical load the arterial blood circulation comprised 2.6±0.2 mL/min/100 mL and then it increased (55.8±3.4 mL/min/100 mL, $p<0.001$). After 305 s the arterial blood circulation was 7.8±0.9 mL/min/100 mL ($p<0.001$) and after applying ESSM it comprised 3.1±0.2 mL/min/100 mL accordingly ($p>0.05$). In the PFF group prior to static physical load the arterial blood circulation comprised 2.8±0.2 mL/min/100 mL and them it increased to 51.3±2.7 mL/min/100 mL ($p<0.001$). After 305 s the arterial blood circulation comprised 7.1±0.5 mL/min/100 mL ($p<0.001$) and after applying PFF it was 3.0±0.2 mL/min/100 mL respectively ($p>0.05$). After applying ESSM the working capacity of foot flexors had increased by 0.2 %, after PFF applied — by 8.2% and after applying PR the working capacity of foot flexors had decreased by 8.2% accordingly. After the second static load changes in the arterial blood circulation were analogous to those registered after the first static load.

The intensity of oxygen consumption in the muscles depends on changes in their blood circulation both at the onset of physical load and during the load as well as during the period of recovery after the load (Crisafulli et al., 2006). The intensity of oxidative metabolic processes is directly affected by changes in blood circulation in the muscles (Friedmann et al., 2007). It is believed, therefore that intensification of blood circulation in the muscles can contribute to increasing the rate of respiration in the tissues, decreasing fatigue and improving working capacity of muscles.

Conclusions. After passive foot flexion and electrical stimulation of the muscles the working capacity of foot flexors increased and the greatest increase had been brought about by passive movements of foot flexion and foot stretching. Applying the means of electrical stimulation of the muscles and passive foot flexion stimulates the processes of recovery and the arterial blood circulation faster returns to its basic level.

References

1. Crisafulli, A., Tocco, F., Pittau, G., Lorrai, L., Porru, C., Salis, E., Pagliaro, P., Melis, F., Concu, A. (2006). Effect of differences in post-exercise lactate accumulation in athletes' haemodynamics. *Appl Physiol Nutr Metab*, 31(4), 423—431.
2. Friedmann, B., Frese F., Menold, E., Bartsh, P. (2007). Effects of acute moderate hypoxia on anaerobic capacity in endurance-trained runners. *Eur J Appl Physiol*, 101(1), 67—73.

BONE MINERAL DENSITY AND JUMPING ABILITY IN PUBERTAL GIRLS WITH DIFFERENT PHYSICAL ACTIVITY PATTERNS

Rita Gruodytė[1, 2], Jaak Jürimäe[1], Meeli Saar[1], Toivo Jürimäe[1]
University of Tartu, Estonia[1], Lithuanian Academy of Physical Education[2], Lithuania

Osteoporosis in females may be prevented or delayed by maximizing peak bone mass through modifications of lifestyle, such as in diet and physical activity, during childhood (Iuliano-Burns *et al*., 2005). High impact loading (such as jogging, jumping, aerobics) is the most effective type of bone-building activity (MacKelvie *et al*., 2002). In girls, with regard to physical activity pattern, greater attention must be paid to pre- and perimenarcheal period, when half of lumbar adult peak bone mass is acquired (Sabatier *et al*., 1999).

The aim of this study was to investigate whether different vertical jumping tests in pubertal girls with different physical activity pattern were related to femoral neck and lumbar spine bone mineral density (BMD) values.

Methods. The participants were 202 adolescent girls aged 13—15 years comprising six groups: controls (n=43); sport games (n=56); track sprint (n=25); rhythmic gymnastics (n=29); swimming (n=32); and cross-country skiing (n=17). Body height and body mass were measured, and body mass index (BMI) was calculated. Pubertal status of the participants was estimated by Tanner (1962). Femoral neck and lumbar spine (L2-L4) BMD was measured by DXA. The height of vertical jumps, i.e. countermovement jump (CMJ), and rebound jumps for 15 (RJ15s) and 30 (RJ30s) seconds was obtained using contact mat (Newtest OY, Finland).

Results. RJ15s test characterized best BMD at lumbar spine and RJ30s test characterized best BMD at femoral neck in high-impact (i.e., gymnasts and sport games) groups. Vertical jump tests had no correlation with measured areal BMD values in physically inactive controls, low-impact (i.e., swimmers and cross-country skiers) and moderate-impact (i.e., sprinters) groups.

Conclusions. The present study demonstrated that continuous high-impact physical activity has beneficial effects on the development of areal BMD in pubertal girls. BMD at femoral neck appears to be more sensitive to the mechanical loading compared to the BMD at lumbar spine. Repeated jumps tests (RJ15s and RJ30s) characterize bone development better than single maximal jump (CMJ) test in pubertal girls.

References

1. Iuliano-Burns S, Stone J, Hopper JL, Seeman E. Diet and exercise during growth have site-specific skeletal effects: a co-twin control study. Osteoporos Int 2005; 16:1225-32.
2. MacKelvie KJ, Khan KM, McKay HA. Is there a critical period for bone response to weight-bearing exercise in children and adolescents? A systematic review. Br J Sports Med 2002; 36:250-7.
3. Sabatier JP, Guaydier-Souquieres G, Benmalek A, Marcelli C. Evolution of lumbar bone mineral content during adolescence and adulthood: a longitudinal study in 395 healthy females 10-24 years of age and 206 premenopausal women. Osteoporos Int 1999; 9:476-82.
4. Tanner J. Growth at adolescence. 2nd edition. Oxford. United Kingdom: Blackwell Scientific Publications, 1962.

PECULIARITIES OF TRAINING AND SPORT PERFORMANCE SELECTED CHARACTERISTICS OF LITHUANIAN PISTOL AND RIFLE SHOOTERS

Vaida Gulbinskienė, Antanas Skarbalius
Lithuanian Academy of Physical Education, Lithuania

Introduction. Researches in pistol and rifle shooting is centred on the areas of body sway and aim point fluctuation (Ball et al., 2003). It appears that more interest has been directed toward examination of the relationship between postural balance and shooting accuracy among elite shooters (Viitasalo et al., 2001) and examination of the relationships between the body sway and different mastery pistol groups is limited. The shooters ability to achieve and maintain a good postural stability depends on the psychological factors as well (Mononen et al., 2003). However it is still a question does the lack of psychological skills cause the variation of shooting results independent of the mastery, the level of competition? The shooters' annual training model consists of general planning elements for athletes, however there are no researches on how (Каменски и др., 2001) shifts depending on the micro cycle number and micro cycle tasks — methodological publishing describe the practical sporting experience of shooting experts. The Scandinavian scientists have been mostly examined the shooting training problems (Viitasalo et al., 2001). However they analyzed only the feedback information influence on the sports performance and the information about training loads was absent.

The purpose was to identify the peculiarities of selected (1. training strategies, 2. the body sway and 3. psychical fitness) training and sport performance characteristics.

Methods. There were analysed: the sport performance and training characteristics, interviews of the elite and Lithuanian shooters. The body sway was studied by the method of static posturography. The subjects were standing in four postures. Psychical fitness of the shooters was evaluated 30 min before the start with *CSAI-2* methodology, and adapted *SCAT* methodology. Shooters were divided into two groups according to their sports performance: the moderate performance group and the high performance group. Statistical analyses made on the *SPSS 11.0* statistical package.

Results. 1. The Lithuanian women pistol shooters average of the age of the first three places corresponds to elite athletes however the sports results ($p<0.001$) were significant less. There were indicated reasons: train less than the elite shooters, inappropriate specific training ($p<0.001$), inappropriate psychical fitness and competition experience ($p<0.001$). 2. The trajectory of the BMC between high and moderate performance groups of shooters showed the significant ($p<0.05$) different since the posture with legs at shoulder length till the pistol shooters posture with the gun. The results suggested to develop shooters posture from the very beginning of training. 3. The Lithuanian shooters level of anxiety before the starts showed the importance of the duration of exercise, competition experience because the interaction with indices of elite shooters was significant less ($p<0.001$).

Conclusions. On the basis of sport performance as a multidimensional matter which requires from athlete to select the main factors of trainability we conclude that for Lithuanian pistol and rifle shooters would be highly emphasized training posture indices and implement feedback of sport fitness indices in order to manage further training programme, to monitoring psychological stress, and to give right decision making of specific training and competition programme. Social environment might be the main problem of the Lithuanian shooters drop-out to too early and not realize individual potential abilities.

References

1. Ball, K.A., Best, R.J., Wrigley, T.V. (2003). Inter- and Intra-Individual Analysis in Elite Sport: Pistol Shooting. *Journal of Applied Biomechanics*, 19 (1): 28—38.
2. Mononen, K., Viitasalo, J.T., Era, P., Konttinen, N. (2003 a). Optoelectronic measures in the analysis of running target shooting. *Scandinavian Journal of Medicine & Science in Sport,* 13: 200—207.
3. Viitasalo, J.T., Era, P., Konttinen, N. et al. (2001). Effect of 12 — week shooting training and mode of feedback on shooting scores among novice shooters. *Medicine and Science in Sports*, 11: 362—368.
4. Каменски, В.Н., Вавилов, Ю.Н., Афанасьев, В.Н. (2001). Объем и интенсивность тренировочной нагрузки при стрельбе. *Теория и практика физической культуры*, 11: 33—34.

THE NEUROENDOCRINE SYSTEM AND STRESS: THE PARADOXICAL ROLE OF EXERCISE

Anthony C. Hackney
University of North Carolina, Chapel Hill, North Carolina, USA

Physical exercise is an activity that is known to provoke large and diverse stress hormone responses within the neuroendocrine system. However, chronic exercise training is also known to cause abatement in the stress hormone responses of the neuroendocrine system to subsequent exercise, as well as in response to certain other forms of stress (e.g., psychological). Thus, exercise can be both a stressor and a stress modifier-mediator, which appears paradoxical. The purpose of this presentation will be to address this paradox and discuss the physiological impact of acute and chronic physical exercise (or physical activity) on select hormones within the neuroendocrine system; specific hormones to be focused upon are: adrenocorticotropic hormone (ACTH or corticotropin), cortisol, the catecholamines (norepinephrine and epinephrine), and prolactin. The precise intent of this talk is to present: (1) a systematic overview of stress endocrinology and the conceptual models associated with this area of study; (2) a discourse on the dual role of exercise as both a stressor and a modifier-mediator of stress within the neuroendocrine system; and, (3) a framework for viewing these influences of exercise on the neuroendocrine system as they impact upon key public health-related problems. These points will be addressed with respect to the current research literature dealing with exercise endocrinology in an adult population.

References

1. Christensen NJ, H Galbo. Sympathetic nervous activity during exercise. *Annual Review of Physiology*. 45:139-53, 1983.
2. Hackney AC. Stress and the neuroendocrine system: the role of exercise as a stressor and modifier of stress. *Expert Reviews in Endocrinology & Metabolism.* 1(6): 783-792, 2006.
3. Hackney AC, AViru. Research methodology: issues with endocrinological measurements in exercise science and sport medicine. *Journal of Athletic Training*. In press 2008.
4. McEwen, BS. Protection and damage from acute and chronic stress: allostasis and allostatic overload and relevance to the pathophysiology of psychiatric disorders. *Annuals of New York Academy of Science*. 1032:1-7, 2004.
5. Tsigos C, GP Chrousos. Hypothalamic-pituitary-adrenal axis, neuroendocrine factors and stress. *Journal of Psychosomatic Research.* 53(4):865-71, 2002.

PHYSICAL EDUCATION IN EUROPE: ISSUES AND CHALLENGES

Ken Hardman
University of Worcester, United Kingdom

The story of Physical Education in Europe comprises a rich tapestry of influences and developments, which have evolved distinctively from individual and/or 'local' institutional initiatives and have variously shaped national systems either through assimilation or adaptation. Taking evolutionary developments into account, it is unsurprising that different and various forms of structures and practices are evident. Characteristically diversity prevails but there are elements of congruence in concepts and practice. The perceived role of physical education has expanded over the years. Ostensibly as a school subject granted a 'broad brush' scope and potential, it is in a relatively unique position with some kind of ascribed responsibility in someway and somehow addressing many contemporary issues with its perceived distinctive features within the educational process with characteristics not offered by any other learning or school experience. The ascribed responsibility is summed up in the 2007 European Parliament's *Resolution on the Role of Sport in Education*, which bears testimony to physical education now being on the international political agenda with clear articulation of policy principles hitherto unprecedented. Ironically, however, physical education, at a time of increasing levels of obesity and inactivity and associated sedentary lifestyle illnesses, is facing a number of challenges and there are issues, which need to be addressed.

In the European context, this paper addresses issues related to the physical education curriculum, specifically aims, content, time allocation and resources, and then makes some suggestions to meet with the challenges arising from the issues. Additionally, in recognition that a number of claims, often unsubstantiated, have been made on the broad educational impact of physical education upon young people and that there is a prevailing belief that engagement in physical education is, somehow a 'good thing', the issue of robust research evidence is addressed. The intentions are to challenge some orthodoxies, in order to provoke thought, and to suggest some directions to sustain a secure future for physical education in schools as a lifestyle-enhancing enterprise. Increased attention to worsening obesity and its association with physical inactivity might appear to bode well for physical education but this association may prove to be a mixed blessing because arguably there is a risk of ignoring many of the most beneficial outcomes of quality physical education if the subject matter of physical education is simply reduced to being a means to countering worsening obesity.

It is tempting for physical educators to see their subject matter as the solution to children's obesity. Unfortunately, however, the physical education profession alone cannot solve the obesity crisis. It is worth remembering that it is not the activity but the reason for taking part that sustains participation. Intrinsic, joy-focused values should receive greater priority attention.

ENZYMATIC RESPONSES TO ANAEROBIC TRAINING IN SPRINTER SWIMMERS

Hazem Hussein
Helwan University, Cairo, Egypt

Aim. To study the effect of anaerobic training load, lactate production training, on the activities of enzymes in sprinter swimmers.

Methods. Eleven sprinter swimmers (18± 2 years) were tested in an anaerobic lactate production session (SP2), which consisted of 6×50 meter at maximum sprint effort off 5 minutes (Maglischo protocol). Blood samples had been taken before, immediately after, after 30 minutes, after 60 minutes and after 120 minutes for the determination of creatine phospho kinase (CPK), Aspartate amino transferase(AST), Muscle lactate dehydrogenase (M-LDH) activities and blood lactate concentration.

Results. Enzyme activity of creatine phospho kinase (CPK), Aspartate amino transferase(AST), Muscle lactate dehydrogenase (M-LDH) were significantly ($P<0.05$) higher after anaerobic training test session and did not return to the baseline after 120 minutes. This was associated with blood lactate concentration shown by higher enzyme activities of the enzymes selected.

Conclusions. The anaerobic training resulted in the transient elevation of a wide range of enzymes involved in different metabolic functions. This finding suggested that the selected enzymes could be used in standardizing anaerobic training load and could be also used in assessment of skeletal muscle metabolism with possible application in both anaerobic swimming coaching and sports medicine settings.

THE CHANGE OF PHYSICAL FITNESS IN 15—16 AGED FEMALE JUDO ATHLETES

Vida Ivaškienė[1], Adolfas Liaugminas[1], Saulius Liaugminas[1], Kęstutis Raškevičius[2]
Lithuanian Academy of Physical Education[1], Kaunas University of Technology[2], Lithuania

The aim of the study is to evaluate the change of physical fitness in 15—16 aged female judo athletes

Goals of the research:

1. To define the physical development and its change of the 15—16 years old female judoists.
2. To assess the participants' abilities of balance, quickness, dexterity and the change of these abilities.
3. To define the participants' flexibility and its change.
4. To assess the participants' strength and endurance together with the change of these characteristics.
5. To compare the physical capacity and its change of the representatives of the lightweight and medium weight categories.

The following **methods** were applied in this investigation:

1. Literature study and analysis. 2. Testing. 3. Mathematical statistics.

Testing was performed according to requirements of the EUROFIT testing program and the quidelines of the Lithuanian Judo Federation.

The study was carried out in two Judo clubs situated in Kaunas. 60 female judo athletes took part in the study. Their age varied from 15 to 16 years (Mean age was 15.7±0.6 years). 30 subjects represented light weight category (52—57 kg) and 30 subjects represented middle weight category (63—70 kg). The average sporting experience of the subjects was 5.4±0.6 years.

First testing was carried out in 2007, in the middle of September (at the beginning of the preparation phase), the second testing in the middle of March 2008 (at the end of the pre competition phase). The overall research continued for 6 months. Trainings sessions took place 5 times in a week and lasted for 2—2.5 hours.

The results. The balance of the participants is of good evaluation level, velocity and dexterity of good and very good evaluation level. During the investigation these indices increased to 3.92—6.35 percent.

The flexibility of the participants was defined as of good evaluation level. During the investigation period the indices of middle weight category girls very increased ($p<0.05$). The quick strength of the girls is of good level, the change of this index for the middle weight category girls can be determined as significant ($p<0.05$).

The indices of strength endurance of the participants are good, although they are evaluated very unevenly: the muscular endurance of arms' and shoulders' during the first testing was of enough level, whereas the endurance of abdominal muscles was of very good level. During the investigation period the results increased 6.54—25.33 percent, and the evaluation of the results increased at 1 point. The common and special endurance of the girls is great. During the investigation period endurance indexes increased in 7.9—10.53 percent.

The physical capacity is very similar of the lightweight and medium weight girls. Girls, who belong to middle weight category showed greater results in flexibility, strength and endurance testing, while comparing to those girls, who belong to light weight category.

References

1. Inogai, T., Habersetzer, R. (1997). *Judo pratique: Du débutant à la ceinture noire.* Paris: Amphora.
2. Naužemys, R., Sinkevičius, V. (2005). *Dziudo veiksmų technika, treniruočių metodika*. Vilnius: VU.
3. Sterkowicz, S. (2002). Płeć, wiek, kategoria wagowa a dobór działań w walce podczas mistrzostw świata w judo. *Wychowanie fizyczne I sport*, Vol., 46 (Suppl. 1), 126—127.

PHYSICAL FITNESS OF CADET AND JUVENILE JUDO ATHLETES

Vida Ivaškienė, Marius Vaidelys
Lithuanian Academy of Physical Education, Lithuania

The aim: to analyze the general and special physical fitness of cadet and juvenile judo athletes.

In the study the subjects were 83 judo athletes from five judo clubs in Kaunas participated in this study. The age of the participants was 12 to 17 years: 36 judoists of the cadet group (age till 14 years), 47 judoists of the juvenile group (age 15—17 years).

Methods of the research: primary sources, testing, mathematical statistic analysis.

To evaluate general physical fitness these tests were used: 1) hanging with bended arms; 2) sit-ups in 30 s; 3) press -ups test (max repetitions); 4) pull-ups (max repetitions); 5) rope climbing test (lenght 330 cm) s; 6) standing long jump (cm); 7) five satnding long jumps (m/s); 8) agility test „Triangle“; 9) 60 m running; 10) 1500 m running; 11) flexibilty test „sit and reach“.

To evaluate special physical fitness these tests were used: 1) 10 shoulder frows (ippon-seoi-nage) with two partners (s); 2 shoulder frows (ippon-seoi-nage) in 30 s with two partners; 3) shoulder frows (ippon-seoi-nage) in 5 min with two partners; 4) S. Sterkowizc special judo fitness test (SJFT); 5) J. M. Garcia force-speed-endurance test.

The study was carried out in 5 Judo clubs situated in Kaunas. Testing was carried out in 2004, in the September and October (at the beginning of the preparation phase).

Conclusions

1. Most of the general physical fitness rates in cadet group athletes of heavy weight category were higher than in light and middle weight category. Judo athletes of middle weight category in juvenile group have performed most of the general fitness tests better than athletes of light and heavy weight category.

2. Light weight athletes in cadet group performed 10 shoulder throws in 30 s, better than athletes of other weight categories. Athletes of middle weight category have performed S.Sterkowicz special judo fitness test better and have made more throws during the five minute throwing test, than athletes in light and heavy weight categories. The rates of special J.M.Garcia force-speed-endurance test were higher in heavy weight athletes of cadet group.

3. Most of the general and special physical fitness rates significantly correlated in both age groups. However this correlation was different, i. e. in every age group significant correlation was between different rates.

4. The sport experience and mastery level have influence on the most rates of general and special physical fitness in cadet group.

References

1. Garcia J.M. (1999). *Test J.M.G.* (žiūrėta 2008.01.06). Prieiga per internetą http://www.judoinfo.com/testjmg.htm
2. Jagiello, R., Kalina, M., Tkachuk, W. (2001). Age perculiarities of speed and endurance development in young judo athletes. *Biology of Sport*, 18 (4), 281—295.
3. Sterkowicz, S. Żuchowicz, A., Kubica R., (1998). *Levels of anaerobic and aerobic capacity indices and resuls for the special fitness test in judo competitors*. (žiūrėta 2006 10 19). Prieiga per internetą: http://www.judoinfo.com/research.doc

THE IMPACT OF THE DEVELOPMENT OF HUMANISTIC VALUES ON THE RELATIONSHIP OF JUNIOR SCHOOLCHILDREN AND TEACHERS IN PHYSICAL EDUCATION LESSONS

Rolandas Jančiauskas
Klaipėda University, Lithuania

The objective of the research is to analyze the change in the relationship of children and teachers during physical education lessons while developing the humanistic values of junior schoolchildren.

The methods and methodology of the research. The research was implemented using the questionnaire prepared by us, theoretical analysis of literature and statistical analysis of empirical data applying data processing software SPSS 10.0. On 1—31 May, 2006, the first research was carried out in two schools of Klaipeda City using anonymous questionnaires for junior schoolchildren, aged 7—11. The questionnaires for the children consisted of 21 questions, all with possible answers. 410 children filled in the questionnaires during the first research and 300 children filled in the questionnaires during the second one. 160 children, out of the total number of respondents, were divided into groups K and E (80 children in each group). At the beginning of the research, an experimental programme for developing the humanistic values of junior schoolchildren in physical education lessons was prepared. It was used during the educational experiment in physical education lessons for children in group E in parallel with common programmes and educational standards of general education in Lithuania (2003). During the implementation of the experimental programme designed for junior schoolchildren in physical education lessons, the conditions under which they could develop in a humanistic, safe and functional environment were established, emphasizing the value of each child as an individual, where sincere relationship based on tolerenace and humanity could flourish. The educational experiment was carried out in the period from 1st September, 2006 untill 31st May, 2007. The second part of the research was implemented on 1-31 May, 2007. Spearman's rank correlation coefficient was used to determine the relation between the results of the first and the second educational experiments.

The results of the research. After the experimental programme of developing humanistic values of junior schoolchildren in physical education lessons had been implemented, the relationship of children with their classmates and teachers got better.At the end of the educational experiment the children in group E attempted to hear, comfort, cheer and help their classmates, they shared their joy and sorrow, and praised for achievements in physical education lessons more often than the children in group K. The research showed that the classmates were more frank with the children in group E, sharing their successes and sorrows, since the children in group E were honest and sincere while communicating, and they didn't use to remind about previous failures in comparison with the children in group K. However, the analysis of the results indicated that relationship among children changed little; there is still a lack of understanding and humanity. Thus, it can be affirmed that relationship among junior schoolchildren lacks friendliness and kindness. At the end of the educational experiment it was determined that the teachers of the children in group E attempted to hear children's opinion, to notice their bad mood, talk to them, console and help them when the latter failed to accomplish an exercise or a task in physical education lessons; and praised the children for their achievements more often than the teachers of the children in group K.

Conclusions. 1. After the implementation of the experimental programme of developing humanistic values of junior schoolchildren in physical education lessons, their relationship with classmates as well as teachers got better.

2. At the end of the experimental research the children in group E attempted to hear opinion of others, console, cheer and help their friends, shared their joy and sorrows and praised for the achievements in physical education lessons more often than the children in group K.

3. The research showed that the teachers of the children in group E attempted to hear children's opinion, notice their bad mood, talk to them, console and help them when the latter failed to accomplish an exercise or a task and praised the children for their achievements in physical education lessons more often than the teachers of the children in group K.

UNHEALTHY WEIGHT REDUCTION BEHAVIOUR AMONG MEMBERS (WOMEN) OF FITNESS CENTRES AND THE ANALYSIS OF ASSOCIATED FACTORS

Rasa Jankauskienė
Lithuanian Academy of Physical Education, Lithuania

For many women body image concerns begin early and continue through-out the lifespan. Many women chose leisure physical activity for the weight reduction reasons. Weight might be reduced using healthy and unhealthy strategies. Understanding the factors which foster unhealthy weight reduction behaviours is important for health educators and public health professionals.

The aim of the present study is to examine the prevalence of the unhealthy weight reduction behaviour and analyze the related factors in fitness centres members (women).

Methods. Body mass index (BMI), weight reduction strategy, attitude towards own body weight, body mass dissatisfaction index, the source of the information about weight reduction and the other weight management- related information was assessed using anonymous questionnaire consisting of 40 questions. 310 women who were members of fitness centres not less than half a year filled the questionnaire. Incompletely and inaccurately filled questionnaires were excluded from the analysis, final sample consisted of 287 women.

Results. Mean age of the sample was 29.4±9 years (18—56 years). Mean BMI was 21.8±2.9 kg/m² (16.4—36.5 kg/m²). The majority of the women were normal weight (n=222; mean BMI — 20.9±1.6 kg/m²), 13 were underweight (mean BMI — 17.6±0.5 kg/m²), 49 were overweight (26.01±1.5 kg/m²), 3 were obese (34.5±2.4 kg/m²). 43 (15.5%) of the sample reported using unhealthy weight reduction behaviour (smoke, use laxatives, duretics, diet pills, vomit, etc.). BMI, own body weight evaluation, age, membership duration, and exercise frequency were not significantly related with unhealthy weight reduction strategy. Dieting prior the membership fitness club was related with health damaging behaviour: frequent dieters reported more unhealthy behaviour than those who did not: 16.3% versus 6.8%, χ^2=16.8; df=4; p=0.002. Dieting while being a member of a centre was related with unhealthy behaviour too. Unhealthy weight management strategy was related with the reported overeating (p=0.002). Unhealthy weight behaviour was related with body weight dissatisfaction: those who were weight dissatisfied more frequently reported health damaging behaviour, accordingly: 81.4% versus 18.6%, χ^2=6; df=1; p=0.01. Motivation to exercise because of body shape improvement was related with the unhealthy behaviour (p=0.23). The main weight management information sources were reported women' journals (41.5%) and information from fitness instructors (24.8%).

Conclusions. The results of our study contribute to the understanding that dieting for weight reduction reasons is one of the factors associated with the unhealthy lifestyle: use of unhealthy weight control methods, overeating, body mass dissatisfaction. There is growing scientific body to prove that the combination of these factors leads to overweight, obesity or even eating disorders (Boutelle et al., 2002; Haines, Neumark-Sztainer, 2006). Along with the reduced physical activity, this adds to the decreased quality of life. The health education efforts have to be enhanced to educate fitness instructors, fitness members and the society about safe behaviour changes for weight reduction to prevent chronic severe dieting which is promoted via the media.

References

1. Boutelle K, Neumark-Sztainer D, Story M, Resnick M. (2002). Weight control behaviors among obese, overweight, and nonoverweight adolescents. J Pediatr Psychol 2002; 27: 531-40.
2. Haines J., Neumark-Sztainer D. Prevention of obesity and eating disorders: a consideration of shared risk factors. Health Educ Res 2006; 21: 770-82.

CHANGE OF THE JUMP HEIGHT DURING VARIOUS PHYSICAL LOADS AND RECOVERY

Lina Jaruševičienė
Marijampolė College of Higher Education, Lithuania

The prevailing complex movement skills of different kinds of sport are jumping and quickness. It is proved that the jumping quality improves not only because of natural growth, but also with the help of special physical exercise. (Gemar, 1988; Bobbert, 1990; Viitasalo et al, 1988). According some sources, young organism is able to adapt easily to physical training. However, the ideal structure, intensity and range of the exercise are still not known. As some research has shown, long lasting physical training can cause the change of quick muscle fibers into slow. In this case the muscle contraction can moderate. Besides it is important to decrease the effect of tiredness of quality of jumping. This is topical of the training theory and practice.

The aim of my work was to study the chance of jumping height during various physical exercise and revival.

Material and methods

The thirty two basketball-players (age 19, 20 and 22 year-old), were observed. The measurements were registered. Vertical jumps made in ways hp 90, 90-dj 90, dj 135 assessed, especially the height. The muscle pain was estimated after 24, 48 and 72 hours.

Used methods: vertical jump test (testing of jumping quality, one at a time jump), analysis of special literature, estimation of leg pain and revival, mathematical statistics.

Results

The results showed that the quality of jumping is not the same. It is interesting that the height depends on the manner of jumping. Example: the height of jump 135 was less ($p<0.05$) hp 90. Athletes results of jumping has a tendency to decrease because of muscle and nerve tiredness. The height of jumps hp 90 has obviously come down ($p<0.05$). Moreover, the change of jumping measurements and taking of was noticed while 50 jumps. The tiredness of muscles was accompanied by discomfort which lasted a couple of days. The strongest pain was felt after 24 hours. It was definitely stronger then after 48 and 72 hours exercise.

Conclusions

1. The height of vertical jump depends on the training programme. However it can be modified as other reflexive and muscle mechanisms. Besides, it depends on the kind of jumps, ability to make it and the degree of concentration. The highest vertical jump is in hp 90 way, the lowest is in dj 135.
2. The alternation of basketball players 50 jumps in the maximum intensity is bigger, as compared to the taking off time. The distinct jump height decrease is obviously noticeable while exercising.
3. The tiredness appears jumping in maximum intensity. It is obviously seen because the decrease at jumping rate. The biggest change seen during jumping was in hp 90 way.
4. The jumping statistics after 1 hour after the training had a tendency to improve. The best way of regaining the height is jumping in 90-dj 90 way.
5. Jumping at maximum intensity the vertical basketball jump height decreases. Statistically important relationship ($p<0.05$) was noticed between the ways of jumping, the heights before the exercise, after the exercise and one hour after the revival.
6. Unusual exercising is accompanied by muscle discomfort that lasts even a couple of days.

ANALYSIS ON ONE-TO-ONE ATTACK-DEFENSE ABILITY OF AN INTER-COLLEGIATE CHAMPION WOMEN SOCCER TEAM IN HONG KONG.

Kevin Kam, Chung Li, Alberto Cruz
The Hong Kong Institute of Education, China

The Hong Kong Institute of Education (HKIEd) Women Soccer Team captured the inter-university competition championship consecutively in the season of 2006—2007 and 2007—2008. Since soccer is an invasion game which involves the one-to-one plays (Bishops and Gerards, 2001), in order to train up the university women novice soccer players to compete in the University Championship in Hong Kong within a year, emphasis was put much on fosterage of creative soccer players by one-to-one practice at the beginning of the training seasons. However, there is practical difficulties in actual training when a trainer's own feeling based on his own experience prevails scientifically approved coaching method. We found there was limited study in the field of soccer coaching and training in Hong Kong. The study presents an analysis on one-to-one play in collegiate level women soccer based on observation of HKIEd Women Soccer Team. It examines a scientific basis of its coaching concept of one-to-one play from the viewpoint of theoretical and experimental research in related fields, along with the writer's own practical experience. The result offers a reference for Chinese women soccer team on training and competition. The data were generated from audio-visual recordings of ten matches from HKIEd Women Soccer Team participated in inter-university competitions from 2006—2007 and 2007—2008 seasons. All one-to-one plays were recorded on a designated form in which offensive and defensive actions were assessed with reference to the three playing zones (defense, midfield, and attack). The game performance analysis was done by comparing the team's own match statistics according to Szwarc's method (2008) and notation regarding the one-to-one play's objectives (goal scoring, creating a goal scoring opportunity, and keeping possession of the ball in attack; interception, tackling, controlling the field of play in defense). The findings indicated that the one-to-one ability was improved from 2006—2007 (48.19%) to 2007—2008 (65.69%), especially for the defending effectiveness from 55.61% to 75.21% ($p<0.05$). The players were found strong in intercepting down the field and in other zones of the pitch (44.55%). They were also very active in breaking their opponents' offensive actions in midfield (83.00%). As a result of this study, the concept set by Szwarc (2008) was matched. The relatively easiness of playing ball in one's own defense zone, forcing the highest activity from the players in midfield and their reduced efficiency in the attack zone results from the way the opposing team building their defense from midfield. The study suggests that successful soccer players' efficiency in one-to-one play should be emphasized for the novice women players. The training could be stressed on the refinement of soccer techniques under competitive conditions and on an improvement in physical fitness as suggested by Bishops and Gerards (2003) for women players.

References

1. Bischops, K. & Gerards, H. (2003). *Soccer training for girls.* Oxford: Meyer and Meyer.
2. Bischops, K. & Gerards, H. (2001). *Soccer-one-on-one.* Oxford: Meyer and Meyer.
3. Szwarc, A. (2008). The efficiency model of soccer player's actions in cooperation with other team players at the FIFA World Cup. *Human Movement*, 9(1), 56-61.

STUDENT — ATHLETES AND THEIR ATHLETIC SUBCULTURE

Diana Karanauskienė
Lithuanian Academy of Physical Education, Lithuania

Today's university students are a diverse group of people. Many subpopulations can be identified within this larger group. The unique qualities of each subpopulation deserve attention as they all affect student success. There is a widespread opinion that student-athletes are overpriviledged, pampered, lazy and out-of-control (Greer, Robinson, 2006), and their primary motivation to attend a sports university is to participate in sports. Student-athletes play multiple roles during their university experience, and they face challenges when they try to balance their roles as both student and athlete. Thus, student athletes are a significant, controversial, and complex student subpopulation in higher education. The problem is that hard work and excellence in sport activities make it difficult to be a respectable student while trying to acquire higher education that requires much preparation and effort. So, the **aim** of the study was to determine characteristics of student-athletes, affecting their academic activities.

Methods. The participants of the study were 18 students of the Lithuanian Academy of Physical Education, actively engaged in sports. Unstructured interviews, concerned with the conflicting time demands, priorities, and roles were used to gather the data. The findings were compared to those received by other authors.

Results. In general, student-athletes share many characteristics of non-athlete students, but they also have unique concerns. Some of them face a large amount of pressure from coaches, peers or other people. A common problem, mentioned by all the research participants, was time management. Student-athletes appeared to be similar to the employed students because time constraints affected their academic accomplishments. Some students admitted that they were not adequately prepared for university studies and many of them did not receive enough encouragement from their families and coaches regarding their studies and future careers. Though they were praised for their athletic success, they were reproached with lower academic standards. Due to sports competitions or camps they missed classes and were penalized for that by teachers of other disciplines. Some student-athletes experienced stereotypical belief of some of the teachers about lower academic abilities of students actively engaged in sports and negative feelings towards them. Several respondents confessed that they felt a burden of high expectations form their coaches, peers, even parents and other people significant to them, and they were afraid of failure, poor athletic performance, injuries, social isolation. Due to time constraints student-athletes missed many extracurricular activities, and they felt disconnected form university life, and thus isolated form their peers.

Nobody of the research participants mentioned gender differences, especially social pressures regarding traditional beliefs about women's participation in sport. Nobody mentioned eating disorders that student-athletes may develop, especially female student-athletes, though those issues are widely discussed in research literature. The respondents also admitted that they did not experience differences due to their social class and economic situation, which is common among student-athletes in some other countries (Greer, Robinson, 2006).

Summary. The students' answers suggest that the subculture of student-athletes population is reflected in the social roles of students (athletic, social, and academic). A high level of ambition about athletic success strongly directs students towards the importance of the athletic role. Athletic culture that student-athletes live in is not fully accepted by the academic community even in a sports university. Thus, student-athletes encounter more role conflicts compared to students not so actively engaged in sports, and in many cases that creates difficulties for them in their educational and personal relationships.

References

Greer, J. L., Robinson, J. D. (2006). Student-athletes. In. Gohn, L. A., Albin G. R (Eds.) *Understanding College Student Subpopulations: A Guide for Student Affairs Professionals.* Washington: NASPA.

SOFTWARE DESIGN METHODS FOR OBSERVATION OF SPORT GAMES

Eimutis Karčiauskas
Lithuanian Academy of Physical Education, Lithuania

Introduction. Currently the processes of sport games, such as handball and basketball, are described using summery characteristics — summaries of successful and faulty actions in the game are presented. These characteristics are obtained using various notation systems (Hughes 2004). As information is transferred into internet however „play-by-play“ method is used more often, that is in online time scale the most important moments of the game such as throws, mistakes, their characteristics are recorded. However, the word format in which it is displayed is designed for reading, but not for digital processing. In describing a game according to (Huges 2004), it is very important to use all the available information about the competition, therefore, various description methods should be combined together, which would allow to deduce the connections between the players and decisions and avoid a dubbing of the individual events registration.

Methods. In this article we propose to combine the current statistical methods of play efficiency evaluation with the formal methods used in informatics. The combining is achieved using the five layers of game description (real and game time, players action, coach work, special marking), which partially fits to levels introduced by (Beetz M., Stammeier Th. and Flossmann S., 2004). However, we seek to introduce the corrections defining the connections between the individual layers and actions. The article suggests formalizing „play-by-play“ method as composition of finite automata by using sets, whose elements would be the types of the events, the game would be considered as the changes of regular conditions of automat (Huzurbazar A.V, 2003). Such formalization of the game would enable to supply and analyze not only summary characteristics, but as well the distribution of operations according to the time intervals as well as to trace back the interdependence of the events. Particularly, a tackle, waiting phase, beginning of a combination, breakthrough, a fault, etc. can be considered as set elements. The course of a match then can be analyzed according to the duration of the waiting phase. In addition, there would be a possibility to form automatically the parameters as attack duration.

Results. The proposed model and the corresponding software program allows handily analyze more events than in official match protocols. Therefore, it is possible to analyze more precisely the match parameters according to time distribution and to specify the classification of in-game actions. Also, the dependence of the team result on individual coach decisions, the dependence of individual actions on play-time and position can be calculated. The developed program also features expeditious diagnostics finding the operator mistakes in registration of the events (this is generalized in the formal method).

Discussion. The obtained results enable a more precise designing of software and the unification of game description methods. In this way, an exchange of game data between the various analysis programs, an analysis of various regularities according to official game protocols, as well as a deduction of game-style evolution becomes feasible.

References

1. Beetz M., Stammeier Th. and Flossmann S. (2004). Motion and Episode Models for (Simulated) Football Games: Acquisition, Representation, and Use. *In 3rd International Joint Conference on Autonomous Agents & Multi Agent Systems (AAMS).*
2. Hughes M., Franks I. (2004). Notational analysis of sport : systems for better coaching and performance in sport. *NY Routledge.*
3. Huzurbazar A.V., “Modeling time-to-event data using flowgraph models,” *in Advances in Methodological and Applied Aspects of Probability and Statistics*, N. Balakrishnan, Ed. London: CRC Press, 2003, pp. 561—574.

THE ATTITUDES TOWARDS COMMUNICATION IN SOCIAL SITUATION: DIFFERENCES BY TEACHERS OF PHYSICAL EDUCATION AND OTHER SPECIALISTS

Laimutė Kardelienė
Lithuanian Academy of Physical Education, Lithuania

Introduction. Reflecting about the abilities of human survival so important in the 21st century educational philosophers emphasize the significance of physical education as a school discipline in the context of other disciplines and form the aims of physical education which reflect not only the value component of its content, but also its possibilities to educate students and other social members and form their positive self-concept (Назарова, 2004). Thus the verbal competence of physical education teachers is worth attention (Чучалина и др., 2005) because it allows (or partly hinders) to carry out their social order — to form students' positive attitude towards their health (in the widest sense of meaning) as an essential value orientation. It should be noted that some studies indicated the influence of students' gender on the verbal behavior of teachers research also distinguished what teachers' language behavior was most suitable to solve educational dilemmas (Станкин, 2004), how the Pygmalion effect manifested in the physical education lessons (Alfermann, 1999). As there is not enough research on revealing teachers' attitude towards their communication, so we can enunciate the **research problem** as follows: What attitudes towards communication are typical of physical education teachers?

The research aim — to reveal teachers' and other specialists' attitudes towards their communication in social situation.

The research subjects. The study included 177 respondents (sports professionals and other educators, economists and dentists).

The research method was based on the В. В. Бойко questionnaire (*Методика диагностики коммуникативной установки*, 2000). Statistical data was analyzed by using descriptive methods and Fisher criterion.

The results of the study. The study revealed that the mean of the attitudes of respondents towards the communication was 47.19±1.6. The dentists, sport educators and other educators expressed more negative attitudes towards communication comparing to other respondents. All respondents were divided into two groups depending on the mean of their attitudes, namely positive and negative attitudes. The negative attitude was exposed by 72.3% of all respondents. The negative attitude towards the communication was most frequently mentioned among sports professionals (83.3%) and teachers of other disciplines (80.6%); even less among dentists (76.5%), and the least among primary teachers (61.1%) and economists (60.0%).

Discussion. Comparative analysis of physical education teachers' attitudes towards communication compared to other professionals revealed that physical education teachers, as well as dentists, expressed negative attitudes towards communication. This supports our hypothesis that one of the reasons for this is dissatisfaction with the job. For example, the low professional prestige and the consumer-oriented professional singleness of physical education teachers do not ensure good relationship with other teachers, pupils and their parents. Besides, we could train teachers with perfect professional skills, but this is not the reason why we could not improve teacher training, their psychosocial health. Teachers with high self-esteem are better able to implement suggestions about social and health education of a person, development of citizenship, and general physical education as part of holistic education is based on integration which becomes a necessity.

References

1. Alfermann D. Teacher-student interaction patterns in student groups. In Y. Vanden Auweele et al. (Eds.), *Psychology for Physical Educators,* p. 343—377. Champaign IL: H. Kinetics, 1999.
2. Назарова, В. А. (2004). Учащиеся об уроках и учителе. *Физическая культура в школе*, 4, 47—48.
3. Станкин, М. И. (2004). Арифметика взаимопонимания. *Физическая культура в школе*, 4, 44—46.
4. Чучалина, А. И., Чусовитина, О. М., Костхина Н. М. (2005). Теоретические основы профессионально-речевой подготовки будущих специалистов в области физической культуры и спорта. *Теория и практика физической культуры*, 10, 17—19.

ANALYSIS OF GENERAL PHYSICAL WORK CAPACITY OF STUDENTS WHO ARE NOT INVOLVED IN ACTIVE SPORTS

Aiva Karpavičienė
Lithuanian Academy of Physical Education, Lithuania

The aim of the research is to investigate and evaluate general physical work capacity of students who are not involved in active sports.

Results. The research proved that females (HSTI — 92.8) and males (HSTI — 99) general physical working capacity does not essentially differ ($p>0.05$). Absolute PWC170 and VO_2max indexes are reliably higher among the males ($p<0.05$). Relative PWC_{170} and VO_2max for females and males does not essentially differ ($p>0.05$). While analyzing the data of students studying in different groups, it was established that physical working capacity of the females studying applied physical activities is reliably higher ($p<0.05$) than of those studying kinesis therapy. Males indexes in almost all groups are quite similar ($p>0.05$).

Conclusions. General physical working capacity of students who are not involved in sports is very high. Males absolute PWC_{170} and VO_2max indexes are higher than those of females and relatively do not essentially differ. Aerobic working capacity of all students is high.

Keywords: students, step test, general physical work capacity, aerobic capacity.

References

1. Dyrstad, SM., Aandstad, A., Hallen, J. (2005). Aerobic fitness in young Norwegian men: a comparison between 1980 and 2002. Scand J Med Sci Sports, 15 (5), 298—303.
2. Maaroos, J., Landor, A. (2001). Anthropometric indices and physical fitness in university undergraduates with different physical activity. Anthropol Anz, 59 (2), 157—63.
3. Ortiepp, JR., Metrikat, J., Albrecht, M., Maya — Peizer, P. (2004). Relationship between physical fitness and lifestyle behaviour in healthy young men. Eur J Cardiovasc Prev Rehabil, 11 (3), 192—200.
4. Tongprasert, S., Wattanapan, P., (2007). Aerobic capacity of fifth — year medical students at Chiang Mai University. J Med Assoc Thai, 90 (7), 1411—6.
5. Vsetulova, E., Bunc, V. (2004). Effect of body composition on physical fitness and functional capacity in obese women. Cas Lek Cesk, 143 (11), 756—60.

ATTITUDE OF PERSONS ACTIVE AND INACTIVE IN SPORTS TOWARDS SEXUAL STEREOTYPES IN LIFE AND SPORTS: LITHUANIAN CASE

Saulius Kavaliauskas, Daiva Klimavičienė, Skaistė Laskienė, Jurga Gylienė
Lithuanian Academy of Physical Education, Lithuania

Introduction

The relevance of work is caused by abundance of articles and research in foreign literature on the problems of distribution of sexual roles and stereotype formation, whereas in Lithuania this topic has not been researched and analysed in detail so far. There is a lack of research, which would attempt to determine the attitude of persons active in sports towards sexual stereotypes. When analysing the attitude of persons, it is important to perceive the origin of sexual inequality and to understand which sexual differences are real and which are the outcome of stereotypes that have been formed in cultural process. During last 40 years the abundance of research has been carried out in order to find out the image of a typical woman and a typical man, and it was determined that 75% of respondents' opinions on the characteristics of opposite sex coincide. Women are regarded as more careful and superior than men in the social sphere. Men are regarded as more competent, intelligent, creative and able to control their environment. Besides, woman's thinking is often influenced by factors related to interpersonal relations, because she looks for the approval from others and men's thinking is more inclined to fighting and competition. Foreign psychologists, when researching into differences between men and women, have noticed only four statistically reliable psychological differences between sexes. These are the ability to orient oneself in space, mathematical abilities, language skills and aggressiveness. However, even these differences always depend on the specific situation.

Sports as a social environment can also influence the formation of stereotypes. Mastership, strength, aggressiveness, roughness, competence are attributed to a man here, while in sports woman is often associated with fragility, humility, fairness, passivity, therefore artistic branches of sports are attributed to girls and women already in school. Therefore it is important to ascertain the attitude of persons not only active but also inactive in sports towards stereotypes in sports and life, and to compare them.

Research tasks: to examine the peculiarities of the attitude of persons active and inactive in sports towards stereotypes in sports and life, to determine and to compare them.

Methods. Analysis of literary sources, method of analytic induction (when making conclusions), questionnaire (when examining the attitude of persons active and inactive in sports). The questionnaire consisted of 3 blocks (attitude, emotions and behaviour) with 6 stereotypes in life and sports in each. In order to examine, determine and compare the attitude of persons active and inactive in sports towards stereotypes in sports and life, we investigated 50 men and 50 women active in sports, and also 50 men, and 50 men and women inactive in sports, all from 18 to 50 years old.

Results. 80% of men active in sports and 78% of women active in sports think that there are no men's and women's branches of sport. 90% of men inactive in sports and 84% of women inactive in sports think that there are men's and women's branches of sport. 88% of all respondents who took part in the questionnaire think that sexual stereotypes exist in Lithuania.

Conclusions

Most part of those who are active in sports think that there are no men's and women's branches of sport (stereotypes in sports do are non-existent). Most part of those who are inactive in sports think that there are men's and women's branches of sport. Most of all respondents who took part in the questionnaire think (independently from sex and cultivated branch of sports) that sexual stereotypes exist in Lithuania.

RELATION OF PHYSICAL ACTIVITY AND HEALTHY LIVING OF IMPRISONED PEOPLE

Saulius Kavaliauskas[1], Vidmantas Vaičiulis[2]
Lithuanian Academy of Physical Education[1], Kaunas University of Medicine[2], Lithuania

Aim of the article: examine the relation of physical activity and healthy living of imprisoned people in Alytus Correction House.

The instantaneous anonymous quetionnairie has been used in the paper. The research was made in September 2006. The questionnaire involved 29 questions, 23 of which were closed questions and 6 open questions. 150 imprisoned people took part in the research, yet 11 of imprisoned people did not return questionnaires. Therefore, data of 139 imprisoned people has been analyzed in the paper. In the analysis of answers received, respondents were divided into two groups: physically passive and physically active. The reliability of differences between groups was evaluated by x^2 (square shi) test. The conclusion was made that the groups differ when the level of statistical significance was $p<0.05$.

Results: The research has revealed that most of the respondents understand the benefit of physical activity to their health (77.3% of physically active and 74.5% physically passive), yet physically active are only 42.8% of total imprisoned people in Alytus Correction house. The research has also revealed that physical activity has no statistically significant meaning to seasonal chill and airway inflectional diseases ($x^2=1.558$, $p>0.05$). Only 23.5% physically active and 30.4% passive imprisoned people do not fall ill with such diseases. Besides, the biggest part of respondents (63.5% of physically active and 60.4% of passive), say they are dissatisfied with the received amount of food.

One third of respondents say they follow the regime of healthy nourishment. 17% of both groups of imprisoned people say they have digestive system problems, the most frequent of which are the following: increased stomach (25.1%), gastritis (12.6%) and sore diseases of duodenum and stomach (12.6%). One of the statistically significant results is as follows: the dependence from drugs between physically active imprisoned people is much smaller (4.5%) if compared with physically active imprisoned people (18%) ($p<0.05$).

Keywords: physical activity, imprisoned people, harmful addiction, Alytus Correction House.

THE INFLUENCE OF VISUAL FEEDBACK FOR HANDS SPEED-ACCURACY ISOMETRIC CONTRACTIONS LEARNING

Edita Kavaliauskienė, Albertas Skurvydas, Jūratė Stanislovaitienė
Lithuanian Academy of Physical Education, Lithuania

The aim of this study was to examine the influence of feedback for learning speed-accuracy isometric contractions 20% of hands muscle force. The subjects in this study were healthy physically active right-hand dominant men (n=8) (20.0±1,5 years of age (mean ± standard deviation), 182.4±6.5 cm height, 73.0±5.7 kg body mass). The experiment was performed with isokinetic dynamometer "Biodex System Pro 3". Subjects performed the task with the right (dominant) hand, which was identifying by Olfield questionnaire. Each participant was seated for testing on the chair of isokinetic dynamometer with the backrest angle at 90º. Movement was doing in isometric contraction when elbow joint angle was at 80º. Three days before the experiment, subjects were given instructions how to perform speed-accuracy isometric contractions (SAIC), as well as were allowed to familiarize with the procedure and tested the maximal voluntary contraction (MVC). On the basis of MVC force were computed 20% MVC force. Subjects made 20 speed-accuracy isometric contractions (SAIC) with visual feedback information (VFI) and 20 without VFI. Rest time between contractions with and without VFI was 10 seconds. We provided each participant with verbal encouragement ant visual feedback by following to view the gradation of force on the monitor of isokinetic dynamometer.

The results of the research demonstrated that average of absolute and constant errors were significantly lesser when SAIC were performed with VFI ($p<0.05$). There were no statistically significant differences for variable error ($p>0.05$). Absolute, variable and constant errors significant decreasing ($p<0.05$) when performed 20 SAIC with VFI. Withal, we estimated that learning with VFI significant decreased absolute, variable and constant errors after first 5 SAIC ($p<0.05$) and farther unchanged.

The obtained results confirm other authors' (Todorov and Jordan, 2002; Scott, 2004) suggestion that feedback is very important for the learning a novel motor skill. VFI significant decrease absolute, variable and constant errors after first 5 SAIC. This indicates that when we learning a novel task in our brain rise internal models that make our movements more accurate and less variable (Imamizu et al., 2000; Takahashi et al. 2006).

In conclusion, visual feedback information significant decreases absolute and constant errors. The visual feedback information did not influence variability of isometric contractions. Performing with VFI accuracy significant increased after first 5 isometric contractions and farther unchanged.

References

1. Imamizu, H., Miyauchi, S., Tamada, T., et. al. (2000). Human cerebellar activity reflecting an acquired internal model of a new tool. *Nature*: VOL 403, 192-195.
2. Takahashi, C. D., Nemet, D., Rose-Gottron, C. M., Larson, J. K., Cooper, D. M. Reinkensmeyer1, D. J. (2006). Effect of muscle fatigue on internal model formation and retention during reaching with the arm. *Journal of Applied Physiology*, 100: 695-706.
3. Todorov, E., and Jordan, M., (2002). Optimal feedback control as a theory of motor *coordination. Nature Neuroscience: 5 (11): 1226-1235.*
4. Scott, S. (2004). Optimal feedback control and the neural basis of volitional motor control. *Nature Reviews Neuroscience*, 5: 534-546.

THE INFLUENCE OF LEARNING FOR SPEED-ACCURACY HAND'S ISOMETRIC CONTRACTIONS ACCURACY AND VARIABILITY

Edita Kavaliauskienė, Albertas Skurvydas, Jūratė Stanislovaitienė, Aleksas Stanislovaitis
Lithuanian Academy of Physical Education, Lithuania

The aim of this study was to examine the dynamics of accuracy and variability during speed-accuracy isometric contractions 20% of hands muscle force learning. The subjects in this study were healthy physically active right-hand dominant men. There were two groups: experimental (n=8) (20.0±1,5 years of age (mean ± standard deviation), 182.4±6.5 cm height, 73.0±5.7 kg body mass) and control (n=8) (21.4±0.8 years of age (mean ± standard deviation), 184±3.8 cm height, 71,0±3,9 kg body mass). The experiment was performed with isokinetic dynamometer "Biodex System Pro 3". Subjects performed the task with the right (dominant) hand, which was identifying by Olfield questionnaire. Each participant was seated for testing on the chair of isokinetic dynamometer with the backrest angle at 90º. Test was doing in isometric contraction when elbow joint angle was at 80º. Three days before the experiment, subjects were given instructions how to perform speed-accuracy isometric contractions (SAIC), as well as were allowed to familiarize with the procedure and tested the maximal voluntary contraction (MVC). On the basis of MVC force were computed 20% MVC force. In one learning day subjects made 20 speed-accuracy isometric contractions (SAIC) with visual feedback information (VFI) and 20 without VFI. Rest time between contractions with and without VFI was 10 seconds. We provided each participant with verbal encouragement ant visual feedback by following to view the gradation of force on the monitor of isokinetic dynamometer. After 30 seconds subjects made learning session: 3 repetitions with 20 SAIC with VFI (with the 10 seconds of rest in-between session). Experimental group made nine SAIC practices each other day and control group made the same test, but without learning. They performed test at the first and last practice of experimental group. Experimental group after one month repeated one practice test.

The results of the research demonstrated that both absolute and variable errors were significantly decreased after learning programme ($p<0.05$). After 9 practices absolute ant constant errors significant decreased when SAIC was performed without VFI, variable error statistically significant decreased when SAIC performed with VFI. Absolute, variable and constant errors significant decreased ($p<0.05$) after firs 60 SAIC. After one month repeated test with VFI show, that all errors were the same how in the 9 practise, but without VFI absolute error increased ($p<0.05$) and variable was the same($p>0.05$). Control groups errors of second practice performed with VFI significant decreased ($p<0.001$). There were no statistically significant differences when control group performed test without VFI ($p<0.05$).

In conclusion, nine learning practices significant increase accuracy and decrease variability of isometric contractions. The visual feedback information influences the accuracy of isometric contractions at the beginning of learning and for stability it is not important. The feeling of force improves after 60 trials.

CORRELATION BETWEEN THE INDICES OF THE JUDO ATHLETES' PHYSICAL CAPACITY AND THEIR SPORT SKILLS

Alma Kisielienė, Marius Vaidelys, Lolita Dudėnienė
Lithuanian Academy of Physical Education, Lithuania

Research objective. To determine the correlations between the sport skills of the judo athletes and the indices of their physical capacity.

Method and organization of research. *Tested persons*. The sportsmen of the Kaunas Judo club (n=43) have been tested. Their age was 22.06±4.06 years. According to their skills, all the sportsmen were divided into three groups: of high, average and low skills (on the basis of the Dan-Kiu system).

Chief method of investigation. The testing method was employed in the research. Testing lasted for two weeks. Static power, exploding power, strength endurance, strength speed, swiftness, endurance, dexterity and litheness.

Discussion of results. To determine the differences between the groups the Kruskal Wallis Test was used. The statistically significant differences between the groups with various skills were found out by testing the endurance of the arm power and exploding power of legs. Endurance of arm power was tested by the number of pull-up times — x^2=9.661; df=2; p<0.05, and by climbing a rope — x^2=7.001; df=2; p<0.05. The exploding power in legs was tested by five long jumps — x^2=8.494; df=2; p<0.05.

In order to estimate the correlation between the sport skills of the tested sportsmen and the indices of their physical capacity the tested sportsmen were not divided into groups. After having performed the Pearson Test of correlating relations, the correlations between the sport skills of the tested sportsmen and their arm power endurance and exploding power of legs have also been found out. Strong direct relation was determined between the skills and the number of pull-ups — x^2=0.544; p<0.01 and press-ups (x^2=0.346; p<0.05). Strong reverse relation between the skills and the speed of climbing a rope (x^2=-0.429; p<0.01) and strong relation between the skills and long jump (cm) — (x^2=-0.451; p<0.01) — and the result of five long jump (x^2=0.594; p<0.01) were also determined. Moreover, strong reverse result between the sportsmen's skills and their dexterity during the boomerang test (x^2=-0.570; p<0.01) was found out.

The data of the carried out research confirms the **conclusions** worked out by other investigators (Horswill, 1989; Franchini, 2005) — the judo sportsmen of higher skills demonstrate larger volumes of arm segments, higher anaerobic arm power and general anaerobic power and capacity.

References

1. *Eurofitas. Fizinio pajėgumo testai ir metodika*. Sud. Volbekienė V., Kavaliauskas S. 2002. Vilnius: Lietuvos sporto informacijos centras.
2. Franchini E., Takito M. Y., Kiss M. A. P. D. M, Sterkowicz S. Physical Fitness and Anthropometrical Differences between Elite and Non-elite Judo Players. *Biology of Sport*, 2005. Vol. 22 No 4, 315-328.
3. Horswil C. A., Scott J. R., Galea P. Comparison of Maximum Aerobic Power, Maximum Anaerobic Power and Skinfold Thickness of Elite and Non-elite Junior Wrestlers. *Int. J. Sports Med*. 1989, 10. 165-168.

DEVELOPMENT OF SPORTS CLUBS

Diana Komskienė
Lithuanian Academy of Physical Education, Lithuania

The goal: to investigate, evaluate and present peculiarities of activities for sport clubs's development.

Methods of research: investigation of scientific literature; analyses and summarization of students' researches made at LAPE; analyses and generalization of other researches made in Lithuania in this field of study.

Organization of the research. Research is qualitative, made on content analyses basis. To make a research there were provided main criteria as follows: sex, age, social status, income, education, service demand, motivation and price, loyalty for the club, employee motivation.

There were reviewed and selected researches, which were made in sports clubs by LAPE' students from 2003—2007 year. There were found 8 researches suitable for further research and fulfillment of this article goal.

There were found other 4 suitable researches for investigation, made in Lithuania and published during this time of period. It was noticed, that there were not found any similar researches or they are not anounced publicly.

Estimation of gathered data was made and interpretation of pecularities of activities for sports clubs's development is presented.

Discussion. The importance of leadership, as one of the main management functions and activities is emphasized. Activities in sport clubs are human orientated and the success of sport organization depends on management of human resources like: staff, customers and volunteers. Leadership can be helpfull for its ability to train right features. Investigation of literature and researches indicates, that pecularities of the activities in sport clubs involve motivation management of employees and customers. Main staff motivation means were found as: payment, security, friendly collective, recognition, evalution of done tasks. Customer motivation management depends on customer satisfaction and refers to such main aspects as: quality of the service, price, staff, programs, parking availability, children care, cleanness, comfortability and modern equipment. Other pecularities of activity refer to marketing, where brand management, creation of image and reputation, customer loyalty building and pricing are of the highest importance.

Resume. Present pace of life is mostly related with intelligence activities and stress situations. To fight these negative public aspects, more oftenly, sport and physical activity is underlined. For this purpose people need certain conditions for such acitivities, that is sport clubs. In modern market society it's rather difficult to attract new sport club' members or to maintain loyal customers for successful business development. In this article there were meny scientific literature investigations and summarization of this field study researches, which make possible development of sport clubs' activities more effective.

References

1. Parent, M.M., Foreman, P.O. (2007). Organizational Image and Identity Management in Large-Scale Sporting Events. *Journal of Sport Management*, 21, 15-40. Human Kinetics, Inc.
2. Robinson L. (2007). The Challenge Of Managing Customer Expectations Of Sport Services: A Theoretical Model. 12-th Congress European Association For Sport Management,
3. Vilares, J. M., Coelho, S. P. (2003). The Employee- Customer Satisfaction Chain in the ECSI Model. *European Journal of Marketing*, 37(11/12), 1703-1722.
4. Westerbeek H., Smith A., Turner P., Emery P., Green Ch., Leeuwen L. (2006). Managing sport facilities and major events. Routledge.
5. Howat, G. (2007). Predictors Of Customer Loyalty For Aquatic And Fitness Centres. *12-th Congress European Association For Sport Management.*

PHYSICAL DISABLED SWIMMER'S ATTITUDE TO CLASSIFICATION SYSTEM AND POSSIBILITIES TO REACH RESULT

Inga Kragnienė, Kęstutis Skučas, Diana Rėklaitienė, Jūratė Požėrienė
Lithuanian Academy of Physical Education, Lithuania

Disability classification have been developed and refined for various categories of athletic competition in an attempt to ensure that the "handicap" offered to individual participants is appropriate, allowing those with "even the most severe disability to compete in a fair manner with others competitors with similar degrees of disability" (International Stoke Mandeville Games Federation, 1982). Sport classification systems help to ensure that competition is equitable. Traditionally, disabilities have been conceptualized as limitations in physical, mental, or sensory in able-bodied sport. However, people with disabilities can now choose to participate in a wide variety of sport contexts (Sherrill, 1999).

Since the late 1980"s classification system for international swimming competition has been changed to the functional classification system, in which disability swimming is described as a complex social system with many individual' interaction for fulfilling specific functions that are necessary to optimize disability swimming (Sherrill, & Williams, 1996). The lack of investigation in this field shows that these questions are of great importance.

We designed a study and directed our investigation to the following **aim of the study —** to determine swimmers with physical disability attitude of and possibilities to reach good results. **Hypothesis of the research:** Sport classification system can help persons with different physical disabilities in the same functional system' class to have the same possibilities to reach results. This can influence the positive attitude to the classification system.

Methods and organization. The set of first research of investigated consisted of 32 persons with different physical disabilities, who participated in recreational swimming sessions. The participant's attitude according to the swimming classification system was defined by using questionnaire. The second research was carried out in Laboratory of Lithuanian Academy of Physical Education. Participants (n=7, persons with physical disabilities participated in competition at the national level) were tested by using an arm ergometer "Monark" (the wheel frequency — 70 times / min). The analyzer "Oxycon Mobile" has been used during the physical performance to evaluate pulmonary ventilation, respiratory frequency, oxygen usage (VO_2), oxygen pulse, the capacity of performance (W) as well as cardiac systole frequency. The recording of cardiac systole frequency has been carried out using the "Polar AccuRec-Plus" pulse meter. Participants were involved in eight weeks aerobic training program.

Results of the study. Persons with physical disabilities attitude to the swimming functional classification system of were positive, but a lot of participants had negative attitude to participation of able-boded in a disabled swimmers competitions. The study results showed that eight weeks aerobic training program had the positive influence on participants' aerobic capacity no matter what kind of disability. The improvement of participants capacities were no statistical significant.

References

1. Sherrill, C., & Williams, T. (1996) Disability and sport: Psychosocial perspectives on inclusion, integration, and participation. Sport Science Review, 5(1), 42-64.
2. Sherrill, C. (1999. Disability Sport and Classification Theory: A New Era. Adapted Physical Activity Quarterly, 16 (3) 206-215.
3. International Stoke Mandeville Games Federation (1982). *ISMGF guide for doctors*. Aylesbury, England.

THE PECULIARITIES OF LEARNING MOTIVATION OF SPORTINING AND NON-SPORTING STUDENTS AT LITHUANIAN ACADEMY OF PHYSICAL EDUCATION

Aurelija Kuzmienė, Irena Čikotienė
Lithuanian Academy of Physical Education, Lithuania

The paper deals with the research the aim of which is to reveal the peculiarities of learning motivation of sporting and non-sporting students. It has been hypothesized that students' learning motivation is closely related to their chosen study area. 225 first and second year students at three faculties (Faculty of Sports Biomedicine, Faculty of Sports Education and Faculty of Sport Technologies and Tourism) of Lithuanian Academy of Physical Education have been investigated by filling in the questionnaires in 2005. The data of investigation suggest the conclusion that there is an existing coherence between students' learning motivation and their self-esteem, as well as inter-relations with teachers and study area. Students with higher motivation for learning are characterized as having higher self-esteem and they emphasize the importance of inter-relations with teachers. These students have chosen studies at the faculty of Sports Biomedicine.

Problematic question: *Is there a link between student's learning motivation and study area?* The hypothesis for this question is: student's learning motivation is prognosticated by their chosen study area, it means, that students of Sports Biomedicine faculty in comparison with other faculties distinguishes for higher learning motivation.

The aim of the research — to reveal the peculiarities of learning motivation of sporting and non-sporting students at Lithuanian Academy of Physical education (LAPE) and to evaluate its dependence on study area.

Methods. The research has been done in 2005 at LAPE. 225 first and second year students at three faculties (Faculty of Sports Biomedicine, Faculty of Sports Education and Faculty of Sport Technologies and Tourism) of Lithuanian Academy of Physical Education have been investigated by filling in the questionnaires (110 male and 115 female students). Sporting students were chosen from the Faculty of Sports Education and Faculty of Sport Technologies and Tourism, and non-sporting students were selected from the Faculty of Sports Biomedicine. Methods of statistical analyses and questionnaire have been used for the research.

Results. The results showed that we strived to reveal the expression of student's learning motivation and to determine its link with study area, the premise was proved out that learning motivation could be prognosticated by study area. The research showed that more motivated students are studying at the Faculty of Sports Biomedicine. It can be explained by their weaker identification with sport activity that their learning motivation is weaker (Karanauskienė, Kardelis, 2005). It could be said that learning results give them bigger satisfaction and future plans promote them to learn better. Learning motivation could be related to the prestige of the speciality and motivating factors to enter University. Students with higher motivation emphasize the importance of relations with lecturers, but it doesn't mean that it could affect their grades; it means that they more often can address the lecturer to consult them. Better grades can raise self-confidence. Academic identity is also very important for student's self-esteem and good climate in academic environment. The research showed that there is a link between academic identity and academic achievements, the larger academic achievements, the greater academic identity. It could be noted that students with greater academic identity feel and evaluate academic environment better (Karanauskienė, Kardelis, 2005).

Suitable learning environment, good relations between students and lecturers could be strong reasons in promoting students' motivation to learn. Other researchers (Gardner, 1995) have emphasized the importance of psychological conditions in creating learning atmosphere.

Conclusion. 1**.** The research showed that students' learning motivation is mostly affected by inner motives, which are connected with their career conception and wish to be educated. Outer factors as estimation of other people motivates them less.

2. There is a link between learning motivation, relations between teachers and study area. Students, whose learning motivation is larger, emphasize the importance of the relations between lecturers and students and they have chosen studies in Sports Biomedicine faculty.

References

1. Brunevičiūtė, R. (2003). Mokymo(-si) strategijos pasirinkimas profesinės kalbos studijoms. *Kalbų studijos*, 4, p.1-5.
2. Gardner, R.C. (1995). Social Psychology and Second Language Learning: The Role of Attitudes and Motivation. London: Edward Arnold.
3. Kuzmienė, A., Čikotienė I., Kardelis, K. (2005) Veiksniai, lemiantys LKKA studentų motyvaciją mokytis užsienio kalbų. *Ugdymas. Kūno kultūra. Sportas. 5(59), 54-61.*
4. Karanauskienė, D., Kardelis, K. (2005). The Relationship Between student`s Academic Identity and Academic Achievements. *Socialiniai mokslai*, 1(47), 62-70.
5. Чаркова, М. Н. (2004). Возрастные особенности развития свойств внимания под влиянием мотивационного фактора (результаты исследования). *Мир психологии,* 1, 231-241.

LITHUANIAN OLYMPIAN SWIMMER R. Š. TRAINING PROCESS PECULIARITIES AND ALTERNATION OF THE RESULT IN 2004—2008

Nijolė Lagūnavičienė[1], Rimvydas Šalčius[1], Ginas Čižauskas[1, 2]
Lithuanian Academy of Physical Education[1], Kaunas University of Technology[2], Lithuania

Various authors present different training load variations, which are being implemented during four-year Olympic period. The dynamics of physical load during all the periods of preparation must refer to the interdependent link of the most important parameters in training process, common strategy of their formation, competition calendar, periodicity of preparation and to the other factors. Because of that it is relevant to make the research of the sportsmen's preparation course to the Olimpyc Games and its peculiarities.

Research aim: Olympian swimmer R.Š. training load strategy and the result alternation in 2004—2008 analysis.

Research objectives:

1. Analisys of training load and swimmer's result dynamics.
2. Sift and compare traininig zone intensity.

Research methods and organization: the research was based on literary sources, individual physical load analysis and mathematical statistics. The research was being implemented from the 1st September 2004 till the 14th August 2008, during the whole preparatory period to Beijing Olympic Games. The proceeding of each training was being investigated at different stages of yearly cycle i.e. mesocycles and microcycles. Swimmer's diary was also analysed.

Research results: swimming load in the different intensity zones and swimmer's result alternation in 2004—2008 is introduced in the chart:

Year	Overall swimming amount, km	Intensity zones,km				Best result 100 m butterfly, s
		I—II	III	IV	V	
2004—2005	1423	588	515	256	72	55.70
2005—2006	1195	645	417	100	46	55.90
2006—2007	1380	690	386,4	248,4	55,2	55.02
2007—2008	1442	690,9	326	312,1	113	52.90

Result consideration: The swimming amount during the period of 2004—2008 had been changing diversely. It was the highest during the olympic year and the lowest during the period of 2005—2006. During the period of 2004—2008 the sportsman carried the swimming load in different intensity zones: mostly it ranged from 3rd to 4th anaerobic-glycolytic zone. In the 5th anaerobic-creatine phosphokinase zone the intensity amount during the olympic year had grown twice. The best results were achieved in the Beijing Olympic Games.

References

1. Juozaitis, J.A., Dadelienė, R., Misiūnaitė, A., Pavlovska,L. (2002). Lietuvos rinktinės plaukikų fizinio parengtumo bei funkcinio pajėgumo rodikliai ir jų ryšys su specialiuoju darbingumu. Sporto mokslas, 2 (32), 49-54.
2. Karoblis P.. Sportinio rengimo teorija ir didaktika. — Vilnius: Inforastas, 2005. 520 p.
3. Lagūnavičienė, Nijolė; Golubev, Genadij; Kremneva, Irina; Pryimakov, Alexander. The structure model of trainings in the yearly cycle of elite swimmers // Педагогіка, психологія та медико-біологічні проблеми фізичного виховання і спорту: наукова монографія за редакцією проф. Єрмакова С.С.. ISSN 1818-9172. 2008, № 1. p. 175-178. [Ref. Index Copernicus] [M.kr. 07S]
4. Платонов В.Н., Плавание — Киев, 2000. — 495 с.

THE PARTICULARITIES OF SOCIAL INTERACTION OBSTACLES (CONFLICT, STRESS, EXPRESSION OF EGO STATES) WHEN WORKING AS A SPORT MANAGER

Skaistė Laskienė, Vilma Čingienė, Rasa Matusienė
Lithuanian Academy of Physical Education, Lithuania

Problem (research) question: How age, professional experience of the sport managers and number of subordinates influence the expression of social interaction obstacles?

Hypotheses:

1. The choice of conflict solution strategies largely depends on the age of sport managers: younger sport managers (in comparison with average age of those investigated) more often choose cooperation strategy, whereas older sport managers more often tend to choose compromise strategy.
2. The age of sport managers, professional experience, the number of subordinates and the size of organization has no considerable influence on sport manager's inclination to stress.
3. Professional experience has a great deal of influence on the expression of Ego states: Adult Ego state expression is more characteristic to the sport managers with less work experience (in comparison with the average work experience of those investigated), whereas the expression of the Patronizing Father Ego state appears to be considerably stronger among the managers with more professional experience.

Aim of research is to disclose the particularities of social interaction obstacles (conflict, stress, expressions of Ego state) when working as a sport manager.

Objectives of research:

- To define and disclose the particularities of conflict solution strategies of the sport managers in the aspects of age, professional experience and the number of subordinates.
- To define and evaluate the particularities of the inclination of sport managers to stress in the aspects of age, professional experience and the number of subordinates.
- To define and analyse the particularities of the expression of Ego states in the aspects of age, professional experience and the number of subordinates.

Conclusions

The managers of sport divisions in the municipalities of Lithuania more often choose cooperation strategies (more than a half), rather than other conflict solution strategies. The choice of cooperation and compromise strategies statistically significance differs in the aspect of the age of sport managers: younger sport managers (up to the age of 48) more frequently than older ones (48 and older) choose cooperation strategy, whereas the managers of an older age more frequently than younger ones tend to choose compromise strategy. The inclination of the majority of the sport managers investigated in the research is lower than the statistic standard. The age, professional experience and the number of subordinates of the sport managers do not considerably influence the inclination of the managers to stress. The expression of the state of a Criticising father is stronger among more than a half of the sport managers investigated in the research, and the expression of the Adult Ego is more characteristic to one-fifth of the managers. The expression of the states of a Patronizing father and the Adult Ego statistically significance differ in the aspect of Professional experience: the Adult Ego state expression is much stronger among the sport managers with less professional experience (up to 13 years), and the expression of the state of a Patronizing father is much more characteristic to the sport managers with more professional experience (13 and more years).

References

1. Brathwaite, T. W. (2004). Human resource management in sport. J. Beech and S. Chadwick (Eds.). *The business of sport management* (pp. 93—127). Harlow : Financial Times Prentice Hall.
2. De Dreu, C. K., Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: a meta-analysis. *Journal of Applied Psychology,* 4, 741-749.
3. Frone, M. R. (2000). Interpersonal conflict at work and psychological outcomes: testing a model among young workers, *Journal of Occupational Health Psychology,* 2, 246—255.
4. Simons, T. L., Peterson, R. S. (2000). Task conflict and relationship conflict in top management teams: the pivotal role of intragroup trust, *Journal of Applied Psychology,* 1, 102—111.

LIFESTYLES AND HEALTH BEHAVIOUR BY YOUNG SCHOOL-AGE CHILDREN

Skaistė Laskienė, Ilona Judita Zuozienė, Aurelijus Kazys Zuoza
Lithuanian Academy of Physical Education, Lithuania

Inactivity, overweight and malnutrition rank among the most frequent risk factors concerning the healthy development of children. The research was carried out within the framework of an international project coordinated by The German Sport University of Cologne. Material for the research was collected during 2006—2007 and the research was completed in June 2008.

Keywords: physical activity, health behaviour, lifestyles, young school-age children.

The research project is based on the hypothesis that the development of adolescents` lifestyles is a complex process in which physical activity, eating habits and media consumption play a major role.

Research Question: how these areas are integrated in the lifestyles leads to a strong differentiation of lifestyles between active and healthy lifestyles on the one hand and passive and unhealthy lifestyles on the other hand. Theoretical Framework: in order to analyse lifestyles, existing research looks at the attitudes as well as at the behaviours of people (Hartmann, 1999). This research project has its focus on behavioural patterns, namely those that are health related. In the context of health related research on young people's lifestyles the components physical activity, nutrition and media consumption are of crucial importance (Raithel, 2004).

Method. Participants from all countries (n=9340, Lithuania n=1038) have completed a questionnaire in a classroom setting. The advantage of the classroom-setting is that there are hardly any missing values and consequently — due to a stratified random selection of schools - no systematic bias in the sample (Oberwittler/ Naplava, 2002). This procedure also assures a stratified sample with regard to the socio-economic status of the children. In order to analyse the different health related behaviours validated instruments were used. With regard to nutritional behaviour the Food-Frequency-Method has been used. This method belongs to the retrospective measuring methods. The questionnaire consists of a food list of 21 different foods (cf. Vereecken et al. 2004). Additionally, the children have been measured and weighed. The obtained values for size and weight were used to calculate Body Mass Index. To analyse media consumption Todd/Currie recommend to use the following categories: high level television consumption (≥ 4 hrs per day) and high level computer consumption (≥ 3 hrs per day). Playstation consumption has been categorised analogously to computer consumption (cf. Todd/Currie 2004, p. 98f.).

Results. Comparing the data from all countries with regard to the prevalence of overweight and obesity, nutritional behaviour, media consumption and sports club membership following results can be pointed out: Lithuania has the lowest percentage of overweight (10.5%) and obesity (2.0%) in comparison to the other countries of this sample. The gap between boys and girls concerning the nutrition pattern index is eminently obvious in Germany and Lithuania.

References

1. Hartmann, P. H. (1999). *Lebensstilforschung. Darstellung, Kritik und Weiterentwicklung.* Opladen: Leske + Budrich.
2. Raithel, J. (2004). Lebensstil und gesundheitsrelevantes Verhalten im Jugendalter. *Soziale Welt 55,* 75-94.
3. Oberwittler, D., Naplava, T. (2002). Auswirkungen des Erhebungsverfahrens bei Jugendbefragungen zu 'heiklen' Themen: Schulbasierte schriftliche Befragung und haushaltsbasierte mündliche Befragung im Vergleich. *ZUMA-Nachrichten 51 (26),* 49-77.
4. Todd, Joanna & Currie, Dorothy (2004). Sedentary behaviour. In: Currie, C., Roberts, C., Morgan, A., Smith, R., Settertobulte, W., Samdal, O., et al.(Hrsg.), *Young People's Health in Context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey.* (Health Policy for Children and Adolescents, No. 4). Copenhagen: World Health Organization Regional Office for Europe, S. 98-109.

SERVING PE TEACHERS' PROFESSIONAL LEARNING EXPERIENCES IN SOCIAL CIRCUIT PERFORMANACE

Chung Li, Alberto Cruz, Kevin Kam
The Hong Kong Institute of Education, Hong Kong, China

Social circuit performance commonly known as acrobatics or jongleurs' show in the Western World has been the folk activities and entertainment for imperial function in the long history of Chinese culture. Social circuit activities in the forms of object and body manipulation like juggling, tumbling and balancing require participants to be trained with excellent level in manipulative skills, bodily coordination and balancing, arts of performing, creativity and team spirit. Recently, initiatives have been undergoing to introduce the activities in the school PE curriculum in Hong Kong. This paper reports a study on the learn-to-teach experiences of 48 primary and secondary school PE teachers participating in two 2-day professional development programmes respectively. Both quantitative and qualitative data were collected through post course evaluation questionnaire and interviews of 16 randomly selected participants. The interpretive inquiry and Lawson's occupational socialization perspectives were adopted as theoretical frameworks for generating meanings. The findings of the questionnaire analysis indicated that most of the participants (over 90%) "agreed" and "strongly agreed" the successful implementation and effectiveness of professional development programme on social circuit performance. In the interview, all participants perceived the activities positively as a viable PE curricular content. They described their professional learning experiences as satisfying, happy and interesting. Apart from their personal enjoyable experiences, they acknowledged possible values of the novel activity for their students for developing fundamental skills and physical fitness especially eye-hand coordination, cultivating Chinese cultural heritage, personal qualities and creativity, enhancing satisfaction and serving as inclusive activities for all regardless of the sporting ability. Most of them had shown their intention of putting on trial the new content in their PE curriculum. However, 3 out of 16 interviewing participants appeared to be affected by constraints resulted from their organization socialization and practical teaching consideration. They hesitated to include it in their teaching. In both the questionnaire and interviews, all participants commented that the professional development programme could have been with longer duration and expected to have some more advance training on the subject. They also expressed that inadequacy of supporting materials, incompetence of teachers for teaching the new activity, lacking of expensive equipment, encountering with managerial problems when introducing social circuit games and difficult to gain support from other PE colleagues were major problems of incorporating the activity in their school PE curriculum. The findings generate insights on how serving PE teachers' professional learning can be facilitated in their occupational socialization processes. Although teachers' personal professional learning experiences are important for their decision to implement the new curriculum, the barriers resulted from organizational socialization and practical teaching have to be tackled.

EMERGING BIOMEDICAL ENGINEERING TECHNOLOGIES FOR SPORTS

Arūnas Lukoševičius
Biomedical Engineering Institute of Kaunas University of Technology, Lithuania

Sport in general and especially such an event as the Olympic Games in particular is a very powerful factor which impacts development of new biomedical engineering technologies and related fields of science. In the present paper an overview of emerging technological tools and engineering solutions for testing, evaluation and prediction of the sportsman‘s condition and capabilities as well as modern training and competition equipment is presented.

Biomedical engineering (BME) being the broad field of research and technology [1] contributes to the sport science and practice in many aspects. For the modelling and simulation of the sportsman‘s complex psycho physiological phenomena BME uses the basic complex systems science [2] which allows to create models reflecting complex adaptive interactions between regulatory, cardiovascular, muscular and other subsystems. A model based approach is used for processing of biosignals, images and other multichannel data obtained by the modern sets of electrodes, sensors, imaging and navigation equipment. It was shown that the effectiveness and predictive capabilities of BME systems depends on two main factors: the amount of information available from input channels and also on the adequacy of henomenological models applied for the information mining and processing. Therefore main tendencies of BME developments in sports are directed towards smart (wearable, wireless, intelligent, micro- and nano-technology based) sensors allowing collecting an on-line information during various exercises as well as types and levels of physical loads. Self organizing networks of wireless intelligent sensors is being applied to acquisition of comprehensive information about the adaptivity and dynamics of physical state of sportsmen.

Multichannel data obtained from diverse sources (such as ECG, spirometry, movement trajectory, velocity, acceleration, force, energy consumption, temperature, blood supply etc.) are processed by the model based methods. This is a great challenge since the psychophysiologial system is nonlinear, complex and adaptive therefore conventional analysis methods are not sufficient for the full use of information obtained. By the application of latest instruments of complex systems analysis lot of new dependences were discovered, results shown were useful for prediction of sportsmen‘s results and for recommendations about training and competition strategy and tactics.

A lot of technological innovations in the training, fitness, rehabilitation, trauma prevention and treatment have been developed and used in sports as well. Short overview of emerging equipment and technologies is presented.

References

1. John D. Enderle, Susan M. Blanchard, Joseph D. Bronzino. Introduction to Biomedical Engineering. 2005, 1141. ISBN 0-12-238662-0
2. Thomas S. Deisboeck, J. Yasha Kresh. Complex Systems Science in Biomedicine. Springer, 2006, 850. ISBN-10: 0-387-30241-7
3. Estivalen M., Brisson P. The Engineering of Sport 7 vol. 1., Springer, 2008, 695p. ISBN-13: 978-287-09410-1
4. George K. Hung (Editor), Jani Macari Pallis (Editor) Biomedical Engineering Principles in Sports (Bioengineering, Mechanics, and Materials: Principles and Applications in Sports)by 528p, Lavoisier, 2008
5. Hruby, F. Michael TechnoLeverage: Using the Power of Technology to Outperform the Competition AMACOM Books, 1999, 230p., ISBN 0814404154

IMPACT OF HYPERTHERMIA ON WOMEN MUSCLE FATIGUE AND RECOVERY

Ieva Lukošiūtė-Stanikūnienė, Albertas Skurvydas, Marius Brazaitis, Soneta Ivanovė, Kazys Vadopalas

Lithuanian Academy of Physical Education, Lithuania

Introduction. Hyperthermia is characterized as an increase of body temperature in excess of heat dissipation capacity and is well-established as a limiting factor in exercise performance (Gonzalez-Alonso et al., 1999). There is lack of data showing effect of hyperthermia on body for a longer time.

Purpose. To establish impact of hyperthermia on women muscle fatigue and recovery upon muscle stimulation with various frequencies.

Subjects. The study group — healthy and physically active women (n=6). Their age — 22.2±3.4 years, body mass — 63.93±6.74 kg, height — 167.6±7.2 cm.

Methods. There were two studies performed — control study and experimental study. Experimental study differed from the control one because during it hyperthermia was passively induced instead of warm-up (the study group kept feet in the warm bath with water temperature of 44±1^{o}C sitting for 45 minutes). After the bath the participants were asked to sit on a special dynamometer chair and to perform 2 minutes-long maximal voluntary isometric muscle contraction (MVJ — 2 min). Control test was performed prior to the load and 15 and 300 s after the load (the muscle was stimulated by electrical impulses — 1, 10, 20, 50, 100 Hz (duration of stimulation — 1 s) and TT100 Hz (duration of stimulation — 250 ms, frequency 100 Hz)). Involuntary muscle contraction force momentum was registered as well as duration of half relaxation of TT100 Hz induced muscle contraction. Physiological (heat) stress index (PSI) was calculated according to formula (Moran et al., 1998). There is measures body mass and rectal temperature before and after passive heating. The heart rate was measured every 5 min during all heating.

Results. After passive heating, the rectal temperature an average increased 2.08±0.24^{o}C ($p<0.05$), the internal muscle temperature was (3 cm deep in muscle) — 2.99±0.29^{o}C ($p<0.05$). The subject lost an average 0.4±0.07 kg during the hypertermia experiment, and it made 0.62±0.13% of body mass. Physiological stress index *(10 point system)* shows that subjects underwent very big physiological stress — 8.85±1.13. The results has shown, that involuntary force was increased after passive heating when muscle was stimulated by different electric frequence impulses in comparison with control measurements, this difference was insignificant ($p>0.05$). The biggest force increase has been determinated when muscle was stimulated by high frequency — 50 and 100 Hz, the least — when muscle was stimulated by low frequency — 1, 10 and 20 Hz. During recovery, involuntary force was determinated insignificant after MVJ-2 min after 15 (A15) and 300 (A300) sec. in comparison with control measurements ($p<0.001$). Similar results have been obtained when muscle was stimulated by 100 Hz frequency and 250-ms electric impulse series (TT100 Hz). During hyperthermia investigation by calculating TT100 Hz muscle relax till half duration, has been determinated, that before load and after load 300 sec. the muscle has relaxed faster in comparison with control measurements. However 15 sec. after load muscle relaxation time has prolonged.

Conclusion. Main conclusions of the research: 1) hyperthermia improves momentary involuntary muscle contraction; 2) hyperthermia increases muscle fatigue upon performing sustained physical exercises; 3) greater increase in involuntary force momentum determined during hyperthermia occurred during high-frequency muscle stimulation rather than during low-frequency one.

Summary. The aim of study was establish impact of hyperthermia on women muscle fatigue and recovery upon muscle stimulation with various frequencies. Generally our study showed that fatigue after hyperthermia was increased by two mane determinants — the local changes of muscle and the changes in central nervous system.

References

1. Gonzalez-Alonso, J., Teller, C., Andersen, S.L. *et al.* (1999). Influence of body temperature on the development of fatigue during prolonged exercise in the heat. *Journal of Applied Physiology,* 86, 1032-1039.
2. Moran DS. Shitzer A, Pandolf KB (1998). A physiological strain index to evaluate heat stress. *Am J Physiology,* 275:R129-R134.

INTERFACE BETWEEN KAUNAS MIDDLE-AGED PEOPLE'S SUBJECTIVE HEALTH SELF-ASSESSMENT, PHYSICAL ACTIVITY AND SOCIO-DEMOGRAPHIC FACTORS

Edita Maciulevičienė, Kęstutis Kardelis
Lithuanian Academy of Physical Education, Lithuania

The aim of the research was to reveal the interface between Kaunas middle-aged people's attitude towards their health, leisure-time physical activity and socio-demographic factors.

Methodology. Exploratory sample included 916 respondents (392 men and 524 women) who were selected using random assignment from Kaunas citizens. Respondents aged 35—64 took part in the research. Interview method was applied to assess respondents' attitude towards their health and leisure-time physical activity, in addition, their socio-demographic characteristics were determined. Conventional statistical methods were applied to process the data of the research.

Results. The research data of Kaunas citizens aged 35—64 years attitude towards their health reveals that 25.1 per cent of respondents perceived themselves to be in good and very good health, 61.7 per cent reported that they were in fair health and 13.2 per cent assessed it as poor or very poor. Compared with males, females were less likely to assess their health as good or very good (29.8 per cent and 21.4 per cent, $p<0.01$). Data of the attitude towards physical activity, assessed in terms of frequency of physical activity during leisure time, reveals that 23.8 per cent of respondents were physically active, whereas others were classed as insufficiently active. The comparative analysis of data showed correlation between subjective health self-assessment, education and social status of respondents: people from lower social classes and lower educated are tend to report 2.6 times worse level of self-assessed health. Subjective health self-assessment becomes worse with increasing age: from 6, 3 per cent of respondents aged 35—44, 11.6 per cent of people aged 45—54 to 19.6 per cent ($p<0.05$) aged 55—64 years perceived themselves to be in poor and very poor health. One-dimensional data analysis revealed correlation between worse subjective health self-assessment and insufficient physical activity.

Conclusion. Logistic regression analysis revealed statistically significant likelihood that people from lower social classes, such as are insufficiently active during leisure time, and older ones will be more likely to assess their health worse and so will be women compared with men.

References

1. Rohrer, J.E. (2004). Medical care usage and self-rated mental health. BMC Public Health, 4:3.
2. Rėklaitienė, R., Kazlauskaitė, M., Tamošiūnas, A. ir kt. (2004). Kauno vidutinio amžiaus gyventojų subjektyvus sveikatos vertinimas ir mirties tikimybė (20-ties metų stebėjimo duomenys). (Self-rated health and probability of death among middle-aged Kaunas population (20-year follow-up)). Medicina, 40:807-815.
3. Aadahl, M., Kjer, M., Jurgensen, T. (2007). Perceived exertion of physical activity: Negative association with self-rated fitness. Scandinavian Journal of Public Health, 4,35:403-409.

PUPILS' ATTITUDE TOWARDS THE OLYMPIC GAMES

Daiva Majauskienė
Lithuanian Academy of Physical Education, Lithuania

Purpose of the research. To research the pupils' atittude towards the Olympic Games.

Organization and methodology of the research. 114 respondents were researched, the volume was made by the convenient way. The respondents' age was from 11 to 17.

The material of the research was analyzed by applying methods of mathematical statistics. The reliability of the difference in the results received was calculated by using the criterion of the chi square (χ^2) which is used for hypotheses for checking the variable distribution in the population. The level of reliability chosen was $\alpha=0.05$. The difference in the results was supposed to be significant when $p<0.05$.

Discussing the results. The research showed 82.26% of the boys and 94.23% of the girls knew the first modern Olympic Games had taken place in Athens. 84.62% of the girls and 79.03% of the boys thought the modern Olympic Games were different from the ancient Olympic Games.

By evaluating the knowledge about olympic ideals and symbols, 21.15% of the girls and 33.87% of the boys stated they have heard of olympic ideals. More girls (79.92%) than boys (59%) indicated they knew what a symbol of five olympic rings symbolized ($\chi2=5.65$; $p<0.05$). 36.5% of the girls and 51.61% of the boys stated they had heard of the olympic spirit. More boys (52.16%) than girls (23.92%) indicated they had heard of the Parolympic Games ($\chi2=5.65$; $p<0.05$). 26.92% of the girls and 38.71% of the boys indicated they knew what the Parolympic Games meant.

According to the data of the results of this survey, it became clear the respondents were interested in the modern Olympic Games. 50% of the girls and 64.52% of the boys indicated correctly the last winter Olympic Games had taken place in Turin. More girls (86.54%) than boys (66.41%) know the summer Olympic Games take place in Peking in 2008 ($\chi2=5.7$; $p<0.05$).

For establishing where the respondents get the information about the Olympic Games and the Parolympic Games outside the school, nine answers were given. It became clear 34.5% of the respondents received the information about the Olympic Games from their parents, however, 13.6% of them indicated they did not get any information outside the school. It was established too little attention was paid to the Parolympic Games in our country, even 53.7% of the pupils indicated they did not get any information about these Games outside the school.

The results received show the respondents are interested in the history of the Olympic Games and in the Olympic Games, it stimulates to pay more attention to implementing the programme of the Children and youth's olympic training.

Summary. A lot of scientists have proven in their works that physical culture and sport is an important cultural part of the society and it has a big influence on the youth's training (Miskinis, 2003; Smalinskaite, 2003; Puisiene, 2000; Telama, Naul, Nupponen, Rychlecky, Voudle, 2002). Prof. habil. dr. P. Karoblis' opinion is: "Sport, first and foremost the olympic sport, has become an inseparable part of science, culture, it means human glory and beauty, crowns the victory of good springs in a person, it highlights the meaning of common human values and sublimates a person's spirit" (Sporto mokslas, 2006,3,11).

References

1. Karoblis, P. (2006). Olimpinio švietimo humanistinės ištakos, perspektyvos ir problemos. *Sporto mokslas*, 3 (45), 10-14.
2. Miškinis, K. (2003). Moksleivių olimpinis švietimas ir kultūra. *Olimpinis švietimas ir kultūra. Mokslinės konferencijos medžiaga. Vilnius, 2003 m. lapkričio 7 d.*
3. Puišienė, E., Smalinskaitė, I. (2000). Moksleivių žinios apie Fair Play- motyvas elgesio kultūrai formuoti. *Sporto mokslas*, 4(22), 25-31.
4. Smalinskaitė, I. (2004). Moksleivių olimpinis ugdymas kaip pedagoginė sistema. *Sporto mokslas*, 1(35), 25-28.
5. Telama, R., Naul, R., Nupponen, H., Rychtecky, A., Voudle P. (2002) Sport Science studies, 11 by Verlag Hofman, Schomdorf, Germany.

THE PECULIARITIES OF MOTIVATION FOR SPORTS ACTIVITY AMONG BASKETBALL-PLAYING STUDENTS

Romualdas Malinauskas
Lithuanian Academy of Physical Education, Lithuania

The factors of motivation for sporting activity of students are researched not sufficiently enough. Various peculiarities of motivation are constantly presented in modern sport movement. Male and female basketball-playing students seeking good results in sports activity have their own motivation and goal setting strategy (Rychman, Hamel, 1995; Flood, Hellstedt, 2002). Only having a clear goals and strong motivation is possible to achieve victory (Malinauskas, 2006). Very often athlete faces failures because they set themselves goals and the peculiarities of motivation that do not satisfy their possibilities or are not concrete. **The problem** of the research work is that data, which would reveal the level of motivation of male and female students playing basketball, is still lacking. Research question: what are the peculiarities of motivation for sporting activity of male and female students playing basketball?

The object of the research is the peculiarities of motivation for sporting activity among male and female students playing basketball. It was presumed that male basketball players have higher level of motivation for sporting activity than female basketball players. **The purpose** of this investigation is to disclose the peculiarities of motivation for sporting activity among male and female basketball-playing students. The study raised the following tasks: to survey and compare male and female basketball-playing students according to the intrinsic motivation for sporting activity; to reveal and compare and female future sport pedagogues according to extrinsic motivation for sporting activity.

The survey of basketball-playing students employed R. Malinauskas (1998) method for identifying intrinsic and extrinsic motivation. The hypotheses of mathematical statistics were tested by the t-test. For the investigation, based on survey questionnaire, a random sample was composed of 95 students playing basketball (41 girls and 54 boys from 18 to 24 years old of Lithuanian Academy of Physical Education (LAPE), Kaunas Medical University (KMA) and Vytautas Magnus University (VMU).

Having compared the investigation results of motivation for sporting activity among male and female basketball-playing students it was established that intrinsic and extrinsic motivation of male basketball-playing students is in many aspects stronger than the motivation of female basketball-playing students. It was proved that male basketball-playing students indicated ($p<0.05$) those most important intrinsic motives: to strive to win, to try one's best, to seek mastership. It was determined that male and female basketball-playing students differed statistically significant ($p<0.05$) according to extrinsic motivation: male basketball-playing students have stronger motives of career development and recognition from the public.

Keywords: motivation of sporting activity, intrinsic motivation, extrinsic motivation, basketball.

References

1. Flood, S., Hellstedt, J. (2002). Gender differences in motivation for intercollegiate athletic participation. *Journal of Sport Bhavior,* 14, 159—168.
2. Malinauskas, R. (1998). Vaikinų, kurie renkasi boksą, motyvacijos ypatumai. *Sporto mokslas*, 3 (12), 20—23.
3. Malinauskas, R. (2006). *Sporto pedagogų ir sportininkų socialinio psichologinio rengimo ypatumai: monografija.* Vilnius: LSIC.
4. Rychman, M., Hamel, J. (1995). Male and female adolescents motives related to involvement in organized team sports. *International Journal of Sport Psychology,* 26, 383—398.

GLOBAL SELF-ESTEEM AND BODY FAT IN ADOLESCENTS ENGAGED IN BASKETBALL

Vilma Medišauskaitė[1], Skaistė Laskienė[2] , Jitka Kopřivová[1], Martin Sebera[1]
Masaryk University, Brno, Czech Republic[1], Lithuanian Academy of Physical Education, Lithuania[2]

The study examined the relation between the separate specific domains of physical self-concept: global self-esteem (the overall positive or negative feeling about one's self) and body fat (not being overweight) considering age and gender in adolescents — basketball players.

Our study sample consisted of 95 adolescents basketball players of those are 54 males and 41 females from different sport gymnasiums and clubs in Prague and Brno (Czech Republic). The respondents were divided into two age groups (the Ist — 13—15 and the IInd — 16—18 years old respondents).

The variables were assessed by the Physical Self Description Questionnaire (PSDQ, Marsh 1994). To analyze the interaction effects for our searched factors (gender and age involvement), MANOVA (Multivariate Analysis of Variance) and correlation was calculated. Significance level was chosen to be 10%. The results have proved our assumption that females will tend to have lower evaluation in body fat then males regardless of age. Next review focuses on measures of global self-esteem, defined as "the level of global regard that one has for the self as a person" (Harter, 1993, p. 88). The differences in evaluation on global self-esteem were revealed by age, but not by gender. Global self-esteem was found to be more positive in younger adolescents — basketball players — than in older players regardless of gender ($p<0.1$).

Keywords: global self-esteem, body fat, adolescents, age, gender, basketball.

THE NECESSITY AND EFFECT OF KNOWLEDGE TO SELF-EDUCATION

Aurimas Medonis, Vincentas Blauzdys
Vilnius Pedagogical University, Lithuania

This notice is analysing the influence of individually chosen physical exercise complex to the 10th grade schoolboys' knowledge necessity**.** The object of this study — the content and method of physical education lessons. The research is mainly associated with the values and aspirations at the secondary school, as well as with holistic direction of modern physical education.

The purpose of the research is to evaluate physical education knowledge effectiveness and necessity to the 10th grade schoolboys' self-education.

Fifty-nine schoolboys who belong to the main medical physical ability group and attend one of Vilnius gymnasium and one of Vilnius secondary school took part in the educational experiment. Schoolboys were chosen casually and distributed into experimental and control classes.

Independent variable — new method of improving physical features was designed in order to increase individually chosen physical exercise complex. This method improved physical education knowledge, established self-education, since the process was focussed to educate personality applying the method of collaboration. Physical education and social abilities were developed in order to educate personal responsibility and positive interdependence. The experimental program was applied to group E1 (3 classes). E1 group, differently from E2 group, could chose physical exercises from the list and also formulate their own physical exercises. Besides, for group E1 it was recommended to do physical exercises in pupils' free time at least once a week. Group E2 (control group — 4 classes) had the same physical education lessons as earlier. Physical education lessons of group E2 consisted of traditional method of improving physical features and sport games.

Research methods used are the following: analysis of literature, questionnaire and statistical analysis.

The survey shows the attitude of the 10th grade schoolboys towards physical features, practicing technologies, the content of physical education lessons as well as self-education.

Results of the questionnaire show us that educational experiment had positive influence on forming 10th grade pupils' attitude and opinion about physical features practicing technologies, the content of physical education lessons, self-education during their leisure, lessons and the benefits of physical exercises.

The hypothesis that the 10th grade schoolboys working out with individual performance physical exercise complex will improve selected physical features, develop positive opinion about sport, healthy life style and strengthen deliberate independent work out is confirmed. However, it is essential to indicate that a part of investigated schoolboys' knowledge was poor. That is why physical education teachers can use the General Physical Education Programme and Education Standards (2003) in order to efficiently educate their schoolboys, and, on their hand, pupils can more deliberately, more qualitatively get awareness about physical education and use the gained information meaningfully.

Keywords: knowledge, individually chosen physical exercise complex, self-education.

References

1. Bendrosios programos ir išsilavinimo standartai: priešmokyklinis, pradinis ir pagrindinis ugdymas. ─ V.: Švietimo aprūpinimo centras, 2003.
2. Blauzdys V., Bagdonienė L. Mokinių teigiamo požiūrio į kūno kultūrą kaip mokymosi dalyko ugdymas, didinant jo prasmingumą: monografija. ─ V.: VPU, 2007.
3. Blauzdys V., Vilkas A. Influence of knowledge of physical training the physical fitness of girls and boys at the third class of gymnasium // Movement and health: proceedings. ─ Opole: University of Technology, 2006, p.93-102.
4. Šveikauskas V. Mokymosi teorijos. Savimoka [interaktyvus]. ─ K.: KMU, 2007 [žiūrėta 2008-06-09]. Prieiga per internetą: <http://www.kmu.lt/pm/data/teorijos.pdf>.
5. Lietuvos Respublikos kūno kultūros ir sporto strategija 2005 ─2015 metams // IV Lietuvos sporto kongresas. ─ V.: LSIC, 2005.

COMPARATIVE ANALYSIS OF STANDARD MOTOR LEARNING OF ADULTS AND CHILDREN

Dalia Mickevičienė, Kristina Motiejūnaitė, Albertas Skurvydas, Diana Karanauskienė
Lithuanian Academy of Physical Education, Lithuania

Children have fewer motor skills than adults (Takahashi et al., 2003), so they perform tasks with both hands, demonstrate less elaborate synchronicity and more often use strategies of muscle co-activation (Schmitz et al., 2002).

Fitts's law implies that the closer and the bigger the target, the faster and the more accurate the movement (Pratt et al., 2007). However, its dependence on the person's age is not coherent. Hick's law explains the dependence of reaction time on the complexity of movement (Allen et al., 2004). We wanted to ascertain the working of Fitts's law and Hick's law when children and adults learn the tasks which require speed and accuracy in short time, i.e. when they perform a task of 5 series with 20 repetitions.

Research aim was to determine and compare the characteristics children and adults learning quick and accurate movements.

Methods. The research was carried out applying the analyzer of dynamic parameters of human leg and arm movement (DPA-1). The research participants were 29 healthy boys and girls aged 6.67±0.48 years, and 12 healthy men and women aged 22.47±1.46 years. We registered their reaction time of the right arm, the maximal and the average movement speed, the trajectory and the time of movement when they performed a complex task requiring speed and accuracy. The subjects had to react to the target appearing on the computer screen as quickly as possible and to push the handle of the device so that the circle of the handle symbol reached the target as quickly as possible, and in the most accurate trajectory, and then remained in it. The task included five series with 20 repetitions in each of them.

Research results and discussion. The analysis of the research findings revealed that the adults compared to the children learned quicker to perform quick and accurate movements when they performed a complicated task and learned to perform it for a short time. We established statistically significant differences between children and adults in all the registered indices.

Aiming to estimate the dispersion of the research indices we calculated the coefficients of variation of the indices in different tasks. It was established that children performed movements with greater variability than adults. The highest coefficients of variation were found in the indices of children's maximal speed (26—36%), and the lowest — in the trajectory indices of adults (3.6—7.9%).

The comparison of the coefficients of variation of all the children and adults' registered indices suggests that the dispersion of variants of all the indices of children is greater than that of adults.

References

1. Allen, P. A., Murphy, M. D., Kaufman, M., Groth, K. E., Begovic, A. (2004). Age differences in central (semantic) and peripheral processing: The importance of considering both response times and errors. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 59(5), 210-9.
2. Schmitz C, Martin N, and Assaiante C. (2002). Building anticipatory postural adjustment during childhood: A kinematic electromyographic analysis of unloading in children from 4 to 8 years age. *Experimental Brain Research,* 142, 354-364.
3. Takahashi CD, Nemet D, Rose-Gottron CM, Larson JK, Cooper DM, and Reinkensmeyer DJ. (2003). Neuromotor noise limits motor performance, but not motor adaptation, in children. *Journal of Neurophysiology,* 90, 703-711.
4. Pratt, J., Adam, J. J., Fischer, M. H. (2007). Visual layout modulates Fitts's law: The importance of first and last position. *Psychonomic Bulletin & Review*, 14(2), 350-5.

EFFECTS OF MACA BOSSTER FOOD SUPPLEMENT ON SPORTSMEN'S BODILY ADAPTATION TO PHYSICAL LOADS

Kazys Milašius, Rūta Dadelienė, Marija Pečiukonienė, Juozas Skernevičius
Vilnius Pedagogical University, Lithuania

Introduction. The Maca Booster food supplement, produced by the German firm "Almondi", is gaining popularity among sportsmen. Its basic component is the natural plant *Lepidium meyenii* (Maca) growing in the Andes 4000—4500 m above sea level. In folk medicine, maca is used to relieve fatigue, to improve metabolism, to normalize the functions of the vegetative nervous system, to improve the immune state, to strengthen the cardiovasculary system, to improve endurance under oxygen deficiency, etc. (1, 2, 3). However, these applications lack scientific substantiation. The aim of the present work was to elucidate the effects of the Maca Booster food supplement on sportsmen's physical capacity and the morphological and biochemical composition of blood.

Methods. The study cohort involved 18 sportsmen aged 20—22 years. They were administered five capsules of Maca Booster per day (two in the morning, one at noon and two in the evening). One capsule contained 800 mg of dry maca root powder. The sportsmen were examined before Maca Booster supplementation, after 10 and 20 days of taking the supplement, and 20 days after maca termination. Bosco's (1982) methods were used to establish single muscular contraction power (SMCP), and the method proposed by Margaria et al. (1966) was applied to determine anaerobic alactic muscular power (AAMP). Also, a 10-second test under maximal strain was employed. To find anaerobic glycolytic capacity (AGC), a 60-second maximum strain test performed on Monark-894E veloergometer was applied. The PWC_{170} test was used to assess the aerobic capacity. Vein blood samples were taken for morphological, biochemical and hormonal analyses.

Results. Over the study period, the absolute SMCP increased from 1997.2±111.1 to 2137.5±107.7 W and the relative SMCP from 25.9±27.4 W/kg ($p<0.05$). The relative AAMP index increased from 16.3±0.3 to 17.3±0.4 W/kg ($p<0.05$). Working power under a 10-s stress load increased from 18.3±0.5 to 20.3±0.5 W/kg ($p<0.05$). The AGC index increased from 494.8±12.3 W to 530.1±11.0 W ($p<0.05$) and its relative value from 6.4±0.1 to 6.8±0.1 W/kg ($p<0.05$). Blood lactate level increased from 13.6±0.5 to 15.5±0.6 mmol/l ($p<0.01$). After 20 days of maca supplementation, PWC_{170} increased on average by 8.8 W ($p<0.05$). In the leucocyte formula, with the leucocyte content enhanced, under 10 days of maca supplementation the lymphocyte percentage increased from 34.8 to 39.9 % and the number from 2.4±0.2 to 2.5±0.2 10^9/l ($p<0.05$). This increase, accompanied by a statistically significantly lower erythrocyte sedimentation rate, indicated that maca had induced lymphocyte activation. Changes in blood creatinekinase, creatinine, uric acid and urea levels have shown that maca supplementation may potentially increase bodily physical abilities. As soon as after 10 days of maca supplementation, a testosterone level increase from 28.6±1.9 to 31.9±2.2 μmol/l ($p<0.05$) was noted. After 20 days of maca supplementation, testosterone level statistically significantly decreased to 26.1±1.6 μmol/l. This fact indicates that Maca Booster supplementation (5 capsules daily) first enhanced testosterone formation and its blood level increased, however, later the same dose caused a decrease of testosterone level. Thus, our study has shown a positive effect of Maca Booster supplementation of sportsmen's physical capacity in various energy production zones and in their immune state.

References

1. Brinckmann J., Smith E. Maca culture of the Junin Plateau. J Altern Complem Med. 2004, 10 (3): 426-430.
2. Gonzales G., Cordova, A., Vega et al. Effect of *Lepidium meyenii* (Maca) on sexual desire and its absent relationchip with serum testosterone levels in adult healthy men. Androl. 2002, 34: 367-372.
3. Zuniga L., Flores D. Maca (monograph). Latin Pharma Expo. Lima, Peru: Latin Pharma. 2003, 8-11.

THE EFFECT OF L-CARNITINE SUPLEMENTATION ON PLASMA GLUCOSE, LACTATE CONCENTRATION AND AEROBIC CAPACITY

Izadi Mojtaba[1], Cheraghi Maryam[2], Bagheri Ghodrat[1], Khatereh Jamaat[1]
Islamic Azad University of Saveh Branch, Saveh, Iran[1], Islamic Azad University of South Tehran[2]

Introduction. Accordingly, the rate of fat oxidation during exercise is principally determined by the rate of carbohydrate utilization and the availability of circulating FA (Hollossy et al 1998). Carnitine (L-3-hydroxytrimethylamminobutanoate) is a naturally occurring compound that can be synthesized in mammals from the essential amino acids lysine and methionine or ingested through diet (Kraemer et al., 2008). Carnitine is a conditionally essential amino acid-like compound involved in the transport of long-chain fatty acids into the mitochondria during the beta-oxidation process (Hathcock et al., 2006). As reported in the majority of studies, an increase in maximal oxygen consumption and a lowering of the respiratory quotient. Treatment with L-carnitine also has been shown to induce a significant postexercise decrease in plasma lactate, which is formed and used continuously under fully aerobic conditions (Karlic et al., 2004). But Stuessi (2005) indicated that 2 g of L-carnitine taken 2 h before a first of two constant-load exercise tests had no influence on heart rate, oxygen consumption, respiratory exchange ratio, and blood lactate concentration. Despite an abundance of literature describing the basic mechanisms of action of L-carnitine metabolism, there remains some uncertainty regarding the effects of oral L-carnitine supplementation on in vivo fat-carbohydrate oxidation and plasma glucose content in normal subjects under normal conditions. Conflicting results characterized the early research focused on L-carnitine supplementation's ability to enhance endurance performance.

Aim. The purpose of this study was to determine the effect of acute carnitine supplementation (3 g, 2 h before exercise) on plasma glucose and Lactate concentration, lactate dehydrogenase (LDH), heart rate and VO_2max during submaximal cycling.

Method. Fifteen healthy males cycled for 20 min at 70% maximal O_2 uptake (VO_2max) while ingested oral L-carnitine (Int) or lactose (Con). This study performed in two separate stages: 1) Exercise protocol without L-carnitine or placebo supplementation. 2) Exercise protocol with acute L-carnitine or placebo supplementation (3 g, 2 h before exercise). Blood samples were drawn immediately followed up exercise for the purpose of calculation plasma glucose and Lactate concentration, lactate dehydrogenase activity (LDH), heart rate and VO_2max. A two-way repeated measure ANOVA was used to determine significant differences between the two groups. Statically significant was accepted at ($P<0.05$).

Result. The finding of our study showed that L-carnitine supplementation had no influence on plasma glucose and lactate. Also rest and submaximal heart rate, VO_2max and LDH activity was equal in pre and posttest ($P<0.05$). All variables unaffected in the control trial.

Table 1. **Mean and standard deviation in dependent variables of study**

Group	Glucose	Lactate	LDH	HR (rest)	HR (submaximal)	VO_2max
Placebo(pre)	101±12	50±18	300±59	74±7	163±15	33±7
Placebo(post)	79±21	41±14	335±34	74±7	161±16	34±8
Carnitine(pre)	97±15	40±17	353±95	68±6	160±17	35±9
carnitine(post)	79±25	37±15	359±46	66±8	158±18	36±11

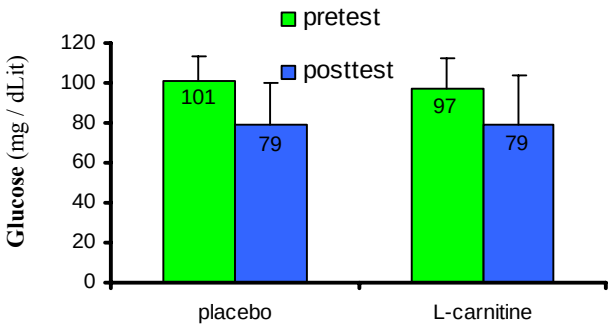


Figure 1. **Mean and standard deviation of plasma glucose in study groups**

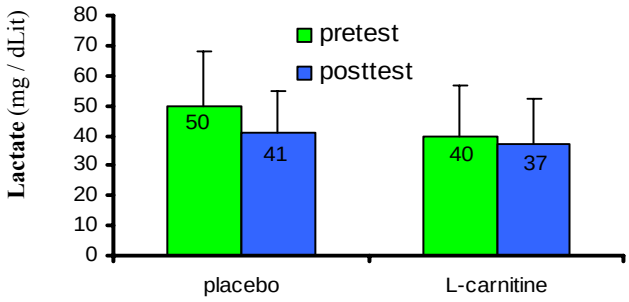


Figure 2. **Mean and standard deviation of lactate in study groups**

Discussion. A number of interventions have been used to increase FA availability and decrease glucose utilization and glycogen reservation before/during exercise including fasting, caffeine ingestion, L-carnitine supplementation, ingestion of medium chain triglyceride (MCT) solutions, ingestion of long-chain triglyceride (LCT) solutions, and infusion of intralipid emulsions. It is still a matter of debate whether the administration of L-carnitine improves performance of intensive endurance exercise. Most scientific studies rather question a positive effect of L-carnitine on a single exercise bout (Brass 2000). Increasing skeletal muscle carnitine content decreases muscle lactate content and increases glycogen storage, possibly via a carnitine-mediated increase in muscle fat oxidation (Francis 2006). But Eroglu (2008) and Abramowitz (2005) showed that acute L-carnitine supplementation has no effect on the metabolic and VO_2max, energy consumption, heart rate, respiratory exchange ratio, minute ventilation, oxygen pulse and blood lactate and CHO oxidation during exercise. Also our finding indicated that L-carnitine ingestion, 3 g for 2 h before exercise could not affect mentioned variables and aerobic capacity. Additional investigation is required to directly identify these supplementations on the substrate utilization and fat-carbohydrate metabolism and exercise performance.

Keywords: L-carnitine, glucose, lactate, metabolism, aerobic exercise, cycle.

References

1. Kraemer WJ, Volek JS, Dunn-Lewis C. L-carnitine supplementation: influence upon physiological function. Curr Sports Med Rep. 2008 Jul-Aug; 7(4):218-23.
2. Holloszy, J. O., W. M. Kohrt, And P. A. Hansen. The regulation of carbohydrate and fat metabolism during and after exercise. Front. Biosci. 3:D1011—D1027, 1998.
3. Hathcock JN, Shao A. Risk assessment for carnitine. Regul Toxicol Pharmacol. 2006 Oct; 46(1):23-8.
4. Karlic H, Lohninger A. Supplementation of L-carnitine in athletes: does it make sense? Nutrition. 2004 Jul-Aug; 20(7-8):709-15.
5. Stuessi C, Hofer P, Meier C, Boutellier U. L -Carnitine and the recovery from exhaustive endurance exercise: a randomised, double-blind, placebo-controlled trial. Eur J Appl Physiol. 2005 Dec; 95(5-6):431-5.
6. Brass EP (2000) Supplemental carnitine and exercise. Am J Clin Nutr 72(Suppl):S618—S623.
7. Francis B et al. An Acute Increase in Skeletal Muscle Carnitine Content Alters Fuel Metabolism in Resting Human Skeletal Muscle. The Journal of Clinical Endocrinology & Metabolism 91(12):5013—5018.

THE EFFECT OF HEPARIN INFUSION OF AVAILABILITY FREE FATTY ACID, GLUCOSE CONCENTRATION AND AEROBIC CAPASITY

Izadi Mojtaba[1], Cheraghi Maryam[2], Bagheri Ghodrat[1], Namdar Somayeh[1]
Islamic Azad University of Saveh Branch, Iran[1], Islamic Azad University of South Tehran[2]

Introduction. There has been continued interest in the regulation of fat and carbohydrate utilization in muscle tissue, as they are the main substrates for energy production during exercise in well fed humans (Spriet LL et al. 1998). Free fatty acids (FFA) have been shown to be major muscle substrates during the endurance exercise in humans (Dagenais GR et al. 1975). Many investigations have demonstrated that increasing fat availability increases fat oxidation and decreases carbohydrate use in the whole body and skeletal muscle (Spriet LL et al. 1998). Accordingly, one might expect a reduction in the rate of oxidation of blood glucose during exercise. However, the effects of increased FFA provision on muscle glucose uptake during exercise are equivocal. Whether elevated FFA may play a role in the rate of plasma glucose, other metabolism factors and aerobic exercise during prolonged exercise in humans is more controversial.

Aim. The purpose of this study was to determine the effect of altering substrate availability via heparin infusion on some influential factors in aerobic metabolism and performance during submaximal cycling. Although i.v. infusion contravenes the International Olympic Committee's doping regulations, this technique has the advantage of acutely elevating arterial FFA levels without additional substrate or hormonal changes. As such, this procedure affords insight into the biochemical regulation of CHO-lipid interaction in skeletal muscle during exercise.

Method. Fifteen healthy males cycled for 20 min at 70% maximal O_2 uptake (VO_2max) while infused with either heparin (Int) or lactose (Con). This study performed in two separate stages: 1) Exercise protocol without infusion heparin or placebo. 2) Exercise protocol with infusion heparin or placebo. Blood samples were drawn immediately followed up exercise for the purpose of calculation plasma glucose, free fatty acid (FFA), Lipase, lactate dehydrogenase (LDH), lactate, triglyceride, total cholesterol, heart rate and VO_2max. A two-way repeated measure ANOVA was used to determine significant differences between the two groups. Statically significant was accepted at ($P<0.05$).

Result. Infusion of heparin caused an increase in plasma FFA concentrations (1.27 +/- 0.30 vs 0.65 +/- 0.11 mmol/Lit). The increase in plasma FFA was associated with significantly decrease in triglyceride, rest heart rate and glucose concentration but exercise heart rate, Lipase, LDH, lactate concentration and VO2max were not different in pre and posttest by int. All variables unaffected in the control trial.

Table 1. **Mean and standard deviation in dependent variables of study**

Group	FFA	TG	Glucose	Lactate	LDH	HR (rest)	VO_2max	Lipase	Total Cholestrol
Placebo(pre)	.64±.14	158± 4	101±11	49±18	303±59	74±6	2.43±.58	138±24	165±33
Placebo(post)	.67±.16	173±42	95±13	41±14	333±34	74±7	2.53±.56	141±33	191±41
Heparin(pre)	.60±.09	185±57	97±14	36±18	339±51	76±9	2.34±.44	153±40	205±27
Heparin(post)	1.53±.54	90±24	84±12	35±13	350±40	68±6	2.57±.47	143±26	197±32

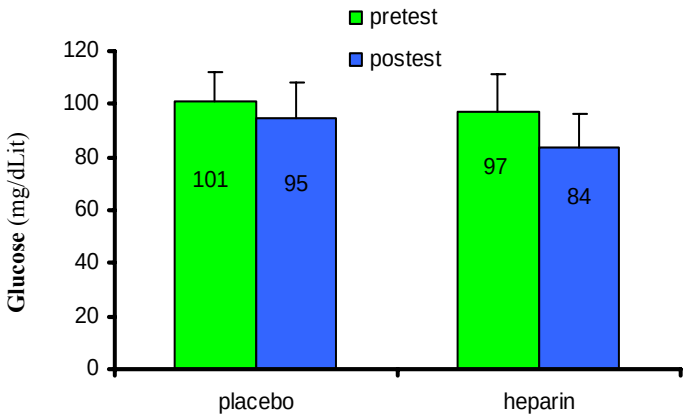


Figure 1. **Mean and standard deviation of glucose in study groups**

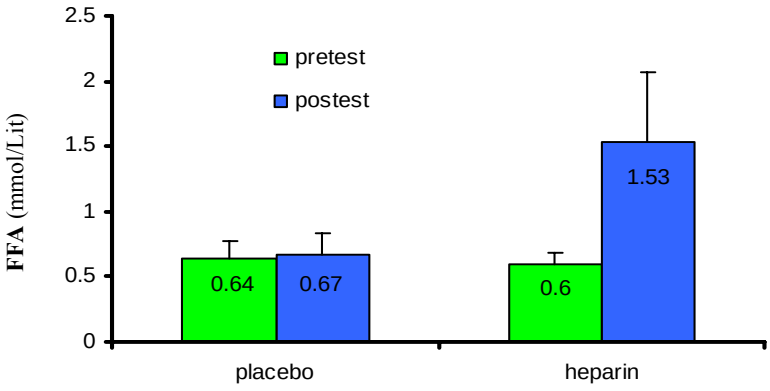


Figure 2. **Mean and standard deviation of FFA in study groups**

Discussion. The effect of increasing the availability of plasma FFA during exercise after heparin infusion was studied. Most of the studies that have examined the effect of intralipid plus heparin infusion on substrate metabolism during exercise have found marked reductions in the rates of whole-body CHO oxidation (Hawley et al., 2000). The finding of our study suggests that increasing FFA availability in exercise by acute heparin infusion can decrease plasma glucose and rest heart rate that probably associated with increase in fat oxidation and decrease in carbohydrate. Romijn et al reported that when FFA concentrations were elevated to 1—2 mM during intense cycling, by infusion of lipid plus heparin, there was a 15% reduction in calculated muscle glycogen utilization but no difference in plasma glucose. The findings of Layden et al. (2004) suggest that despite increased availability of plasma NEFA, the pattern of substrate oxidation during exercise does not change. One study utilizing low-intensity cycling and another using the one-leg knee kicking model report no difference in rates of CHO oxidation or muscle glycogenolysis. Our finding and the other results suggested that increased fat availability during submaximal cycling increases the rate of fat oxidation. In summary, it is likely that despite lack increase in VO_2max on account of heparin infusion, decrease in glucose utilization and increase in FFA leads to improve in exercise capacity and exercise endurance time. Further research is needed on the substrate utilization and fat-carbohydrate profile or other intervention factors in metabolism during exercise by heparin or the other supplementation.

Keywords: heparin, free fatty acid, metabolism, aerobic exercise, cycle.

References

1. Dagenais GR et al. Assessment of myocardial free fatty acid metabolism in humans during heparin infusion. Recent Adv Stud Cardiac Struct Metab. 1975; 10:3-16.
2. Spriet LL et al. 1998. Regulation of fat/carbohydrate interaction in human skeletal muscle during exercise. Adv Exp Med Biol. 1975; 441:249-61.
3. Layden JD, Malkova D, Nimmo MA. During exercise in the cold increased availability of plasma nonesterified fatty acids does not affect the pattern of substrate oxidation. Metabolism. 2004 Feb; 53(2):203-8.
4. Romijn, J. A., E. F. Coyle, L. S. Sidossis, X. J. Zhang, And R. R. Wolfe. Relationship between fatty acid delivery and fatty acid oxidation during strenuous exercise. J. Appl. Physiol. 1995; 79:1939— 1945.
5. Hawley JA, Burke LM, Angus DJ, Fallon KE, Martin DT, Febbraio MA. Effect of altering substrate availability on metabolism and performance during intense exercise. Br J Nutr. 2000 Dec; 84(6):829-38.

TIME COURSE OF BODY COMPOSITION, BLOOD LIPIDS AND LIPOPROTEIN CHANGES DURING AEROBIC CYCLING TRAINING IN YOUNG WOMEN

Asta Mockienė[1, 2], Arvydas Stasiulis[1], Daiva Vizbaraitė[1], Pranas Mockus[1]
Lithuanian Academy of Physical Education[1], University Vytautas Magnus[2], Lithuania

Aim of the research. To assess time course of body composition, total cholesterol (Tch), high density lipoproteins cholesterol (HDL-ch), low density lipoproteins cholesterol (LDL-ch), triacilglicerols (TAG) blood concentration changes during aerobic cycling training in young women**.**

Methods. Young, healthy, nonsmoking women (n=19) volunteered to participate in this study. They were divided in two groups. Women of experimental group (n=10) performed cycling exercises 3 times a week with intensity equal to first ventilatory threshold (determined from increasing cycling exercise test during first visit to laboratory) and duration of 60 min. Control group (n=9) did not train regularly during experimental period of two months. The subjects of experimental group were tested before experiment and after 2, 4, 6 and 8 weeks of training. Control group participants those were tested twice with 8 weeks interval.

Results. Body mass, BMI, body fat mass and TAG concentration decreased and HDL-ch concentration increased after 8 weeks of training program in experimental group ($p<0.05$). Blood Tch and LDL-ch concentrations did not change significantly. Body mass and BMI indexes started to decrease after 2 weeks of experiment, but significant changes were observed only after 6 and 8 weeks. Body fat mass was significantly decreased after 2^{nd} and 8^{th} week of aerobic training. HDL-ch significant increase was observed after 4^{th}, 6^{th}, 8^{th} weeks. TAG significant decrease was observed after 2 weeks of training. All the parameters were not changed in control group.

Conclusion. Two months of aerobic cycling exercises (intensity at first ventilatory threshold, duration — 60 min, 3 times a week) can induce significant body composition and blood lipid profiles changes in young women. The time sequence of significant changes of parameters investigated is as follows: body fat mass — 2 weeks, HDL-ch — 4 weeks, body mass and BMI- 6 weeks.

ASSESSMENT OF TAPPING TEST RESULTS OF PEOPLE WITH LOW BACK PAIN

Inga Muntianaitė Dulkinienė[1], Vidmantas Zaveckas[2], Jonas Poderys[1, 3], Alfonsas Vainoras[1, 4], Kristina Berškienė[1, 2]

Kaunas Medical University[1], Kaunas University of Technology[2], Lithuanian Academy of Physical Education[3], Institute of Cardiology[4], Lithuania

Introduction. The central nervous system takes an active part in the processes of whole human defensive activity, separate functions of organism as well as in metabolic and energy exchanges. Pain usually causes restriction of body functions.

The aim of this work is to apply the Tapping Test for people with back and leg pain syndrome in order to estimate the peculiarities of their hand and leg movement and to determine pain intensity dependence upon these peculiarities.

Method. The contingent of the study comprised 20—40 years old men (n=12) with low back pain and radicular pain of the leg. Control group consisted of healthy men of the same age (20—40 years old) (n=10). People with low back pain were assessed due to their pain intensity in the course of twenty-for hours separately by the pain in their back and leg. Accordingly the scale of analogous numerical rating ranging from 0 to 10 was filled in. (where 0 — no pain, 10 — worst imaginable pain). The examined group had to perform left and right hand and foot Tapping Test. The duration of performed movements in milliseconds was registered by applying a special computer programme created in Laboratory of Kinesiology at the Lithuanian Academy of Physical Education. Registered period duration of each movement was used in the calculation of Tapping Test assessing indices: CNS functional mobility — movement frequency at the beginning of the test (during 10 s), CNS functional stability — steadiness of movement frequency (non-decreasing), also known as fatigability index, i.e. calculating conversely — decrease from the beginning of the test till its end, and computer registered whole movement duration or average duration of one movement period in milliseconds.

Results and discussion. When hand tapping test was performed, a reliable difference of data results was revealed between left and right hand indices in both treatment and control groups. However, in comparison to each other both groups did not have differences in these indices ($p>0.05$).

When foot Tapping Test was performed, healthy people (from the control group) scored the same results with their right and left foot (Table 1). Movement frequency, average movement duration and fatigability index during the first 10s were statistically reliably stable.

Table 1. **Tapping test indices of healthy people**

Indices	Right leg	Left leg	Difference reliability
Movement frequency during the first 10s	50±5.1 *mov.*	48±6.6 *mov.*	$p>0.05$
Average movement duration	227.0±14.5 *msec.*	236.1±28.4 *msec.*	$p>0.05$
Fatigability	41.6±22.7 *percent*	42.2±26 *percent*	$p>0.05$

Meanwhile the patients undergoing the treatment for back pain resulted in different indices when comparing an aching and a healthy leg. (Table 2) The comparison of movement frequency of a healthy and aching leg in the first 10s reveals that a healthy leg performed more movements than the aching one ($p<0.05$). The average movement duration performed by a healthy leg was shorter than that of the aching leg. The indices of a healthy leg were statistically reliably the same as those in the control group. However the results of fatigability were somewhat unexpected, i.e. the fatigue of a healthy leg was statistically reliably lower than the one in the group of healthy people and similar fatigability in the tapping test performed by the aching leg.

Table 2. **Tapping test indices of people undergoing the treatment for back pain**

Indices	Healthy leg	Aching leg	Difference reliability
Movement frequency during the first 10s	45±9.6 *mov.*	35±10.4 mov.	$p<0.05$
Average movement duration	274.3±65.3 *msec.*	341.2±78.1 *msec*	$p<0.05$
Fatigability	24.6±19.5 *percent*	38.3±21.9 *percent*	$p<0.05$

Pain intensity assessment of a leg for people with back pain reveals interesting facts that there is no connection between pain and indices received during the Tapping Test. These indices were better for people suffering from severe leg pain (7—10 points) than for people with weak (1—4 points) or medium (5—6 points) pain.

Conclusions

1. The performance of classical Tapping Test allows assessing the change (deterioration) of the function of an aching leg, the index of which is movement frequency or duration of one movement period. CNS fatigue index does not provide objective information about the change of the condition.

2. The function deterioration of an aching leg does not depend on its pain intensity.

Abstract. The aim of the study was to compare the results of assessment of Tapping Test indices in health and low back pain cohorts and to determine pain intensity dependence upon these indices. All the subjects performed a classical 40 seconds Tapping Test by both of arms and feet, while the time intervals are recorded by milliseconds between separate motions. The results showed the change (deterioration) of the function of aching leg and not dependence of its pain intensity.

ISO STANDARDS AND LITHUANIAN ACCOMMODATION COMPANIES

Regina Navickienė, Jurgita Gečytė
Lithuanian Academy of Physical Education, Lithuania

The standards of ISO 9000 family are recognized as one of the best ways to secure the quality of products/services and satisfaction of the customer in the entire world. The Lithuanian companies follow the international experience and try to implement these standards of quality management systems. However, among 385 accommodation companies in Lithuania, only one hotel has implemented the ISO standard, which is not used even in the hotels that belong to the most famous hotel chains. No researches have been done on this topic in Lithuania.

Goal: to learn the opinion of the managers of 4*—5* hotels about the ISO standards, their influence on quality, personnel's qualification and reasons, why the Lithuanian hotels do not implement ISO standards.

Hypotheses: H1 — The managers of accommodation companies do not have or have too little information about the ISO standards and their influence on the quality of services;

H2 — The managers of accommodation companies consider that the implementation of these standards will require too many bureaucratic procedures, which will need extra time and resources;

H3 — ISO standards have direct effect on the qualification and competences of the employees regarding the satisfaction of the customers.

Research methodolpgy: to achieve the goal, the quantitative analysis was done, when the managers of 4*—5* hotels in Lithuania were questioned. The survey was done on the basis of the research done by Ruzevicius, Adomaitiene, and Sirvidaite in order to learn the benefit gained by the Lithuanian companies that have already implemented the ISO standards. The survey was done by sending the questionnaires by e-mail to the respondents, but at first they were personally contacted and introduced to the research. The managers of the hotels were chosen because they are the ones to make strategic decisions, including the decisions regarding introduction programs/systems of quality standards. The questionnaires consisted of 17 questions. They were answered by 44 respondents (74%).

Findings: Among all the managers, who have participated in the research, 93% are interested in ISO standards, and 34% have analyzed the possibility to implement them in their hotels. In the opinion of the managers, the absence of these standards in the hotels is determined by the following: ISO standards are not suitable in the hotel market—11%; the procedures of ISO standards need extra time and financial costs—18%; the ISO certificate will not attract more customers—22%; the hotels are not ready for this—15%; there are others, simpler models that guarantee the quality—21%; they have good internal instructions/rules that guarantee the quality management—6%; lack of knowledge—7%. The research data has revealed the following tendencies in the Lithuanian hotel business: in the future we are going to have hotels with the implemented ISO standards (36%), there are some doubting managers of the hotels, who are analyzing this possibility (53%), and only 11% respondents have answered that although they are interested in the ISO standards, they are not planning to implement them in the next 5 years.

H1 has not been proved. H2 has been partly proved. H3 has been partly proved.

Summary. ISO standards are the guarantee of quality that is important in all the business areas. However only 2% of the Lithuanian companies have implemented this quality management system, and this number is only 0,3% with regard to the accommodation sector. The quantitative research, where 74% of the managers of 4*—5* hotels in Lithuania have participated, revealed their opinion about the ISO standards and causes obstructing their implementation. One hypothesis out of three that were made has not been proven, while two have been proven partly. The research has scientific benefit and practical adaptability.

References

1. Cathy, H.C. (2003).Mature motorcoach travelers' satisfaction: a preliminary step toward measurement development. *Journal of hospitality & tourism research*. 27(3).
2. Kumburovic, A. (2004).Quality management system and ISO standarts — global phenoment of today. Center for entrepreneurship and economic development. *Household survey report.* 10.
3. Ruževičius, J., Adomaitienė, R., Sirvidaitė, J.(2004).Motivation and Efficiency of Quality Management Systems Implementation: a Study of Lithuanian Organizations. *The TQM magazine.* University of Vilnius. 15(2).
4. Snieška, V., Valentinaitienė, M. (2000).Viešbučių kokybės vertinimas ir kokybę reglamentuojančios sistemos. *Inžinerinė ekonomika.* 4(19).

CONTRIBUTION OF LITHUANIAN ACADEMY OF PHYSICAL EDUCATION BY DEVELOPING FOOTBALL IN LITHUANIA

Viačislavas Novikovas
Lithuanian Academy of Physical Education, Lithuania

Object of the research. History of Lithuanian physical education and sport.

Purpose of the research: to discuss the contribution of the Lithuanian Academy of Physical Education by developing football in Lithuania.

Methods of the research: 1. Analysis of archive documents. 2. Systematization and analysis of scientific literature. 3. Analysis of literary sources.

Results. After analyzing Kaunas District Archive, the archive material of the Lithuanian Academy of Physical Culture and other sources, we state the school being discussed is the school to prepare football players, coaches, referees. Some tens of students and graduates represent master teams and various selected football teams of our country, hundreds of them worked and have been working at football schools and train various teams. In 1949—2000 328 graduates were prepared.

The football team of the Academy (Lithuanian Academy of Physical Education) played among the strongest teams of Lithuania for 30 seasons. In 1959 they played at the final match of the Lithuanian Cup and won the second place, in 1962 and 1970 they became the champions of Lithuania. In various periods the teams were prepared by J.Vaskelis and A.Klimkevicius. At the then student championship of the USSR in 1963 they won the I place, in 1983 at the VIII Nation Games they won the I place, in 1984 the football team of the Lithuanian Academy of Physical Education became the winner of the student games of the former USSR (coach S.Stankus). In 1987 the footballers of the Lithuanian Academy of Physical Education V. Buzmakovas, I. Pankratjevas, R. Tautkus became the champions of the World Student Games on the strength of the selected student team of Lithuania (coach B.Zelkevicius).

V. Novikovas was the first to defend the doctor dissertation of social science about the topic of football (1989), later it was G.Girdauskas (1998).

The students of the Academy were V. Danilevicius, J. Mickevicius, J. Muliuolis, active football coaches, public characters, creators of Lithuanian modern football. V.Dirmeikis is the president of the Lithuanian Football Federation, B. Zelkevicius — a long time coach of Vilnius "Žalgiris" (in 1987 they won the III place at the championship of the former USSR) is the coach of the national selected team, A.Liubinskas is the head of Vilnius City Sport Department, the coach of the national selected team.

The students of the department of football also express themselves as sport referees. In various period H. Zakas, S. Sliva, V. Kazlauskas, A. Zuta, G. Mazeika, S. Slyva, N. Dunauskas received the names of referees of FIFA category. At this time S.Sliva works as the chairman of the Referee Committee of the Lithuanian Football Federatuib.

Summary. We state the modern history of Lithuanian football is the follow-up of traditions and problems characteristic for Lithuanian sport in 1920—1940 and after the war, also after restoring the independence in 1990. The history of Lithuanian football has become the subject of research by sport historians, teachers of higher schools. A component of the history of sport is the contribution of the Lithuanian Academy of Physical Education to the development of physical culture and sport in modern Lithuania, to the development of football in Lithuania. These are the football players, coaches, referees, heads of modern Lithuanian sport: J. Vaskelis, B. Zelkevicius, S. Sliva, V. Dirmeikis, J. Labutis.

References

1. Kauno apygardos archyvas. F.R. — 1320. Lietuvos valstybinis kūno kultūros institutas.
2. Kontvainis V., Novikovas V. (2001). Futbolas Lietuvoje. — Kaunas: LKKA, 310 p.
3. Lietuvos kūno kultūros ir sporto istorija / ats. H.Šadžius. — Vilnius: Margi raštai, 1996. 405 p.
4. LKKA Futbolo ir rankinio katedra 1981 — 2001 m. (2001). — Kaunas: LKKA. 80 p.
5. Rankinio, futbolo, ledo ritulio katedros einamasis archyvas.

ALTERATION OF HEART RATE DURING FRIENDLY AND OFFICIAL MATCHES OF HIGH-PEAK PERFORMANCE PLAYMAKER IN WOMEN HANDBALL

Gintarė Onusaitytė, Antanas Skarbalius
Lithuanian Academy of Physical Education, Lithuania

Introduction. There are little known about the alteration of heart rate intensity of high-peak performance players in handball during a match. Measuremt of heart rate allowed to predict energy expenditure which is one of the main indicators of physiological demands of athletes in indirect way (Bangsbo & Lindquist, 1992). The aim of the research was to determine the alteration of heart rate intensity during friendly and official (n=20) matches of high-peak performance playmaker in handball.

Methods. The heart rate of the playmaker was recorded by pulse meter "Polar Precision Performance" (Finland) in preparatory period in 2008 August (n=9 matches) and 20 matches of the Lithuanian championship in 2006/2007 and in 2007/2008 by pulse meter "Polar S610i" (Finland) and analyzed further with Microsoft Excel program. The data was registered starting with the warm-up and finished after the end of the match.

Results. The demands of heart function were higher in official matches than friendlies ones (Table): the total heart beats were higher 710 beats (first and the second half of the game) and in 15 beats·min^{-1} of the means value. The intensity requirements (taking into account means) were greater (7 beats·min-1; p<0 05 in first half of the official matches than friendly ones and 3 beats of the maximum value.

Table 1. **Heart rate of high-peak performance playmaker in handball during the game**

	Heart Rate	Matches	
		Official (n=20)	Friendly (n=9)
	Total (beats)	9354±884	8644±1206
Means±SD	Match	159±24	148±26
	First half	176±10	169±11
	Second half	174±9	165±15
	Warm-Up	144±22	122±18
	Half time	122±9	123±12
Min-Max	First half	147—193	135—190
	Second half	141—192	124—192
	Warm-Up	82—191	79—167
	Half time	102—148	102—149

Discussion. The total heart rate of the official matches was the same as the Ignatjeva and Portnov (1997) were faund 10 years before. Lupo and Seriacopi (1996) faunded the same tendencies in friendly matches as ours. The maximum heart rate was higher as Lupo and Seriacopi (1996) fixed, but seven beats less than Cardinale and Manzi (2002) estimated.

Conclusions. Findings suggests to conclude that the heart rate had a tendency to be lower 8±1 beats·min^{-1} in the second half as first one. The game intensity of female handball playmaker increases according to the level of competition.

References

1. Bangsbo, J., Lindquist, F. (1992). Comparison of various exercise tests with endurance performance during soccer in professional players. *International Journal of Sports Medicine* 13, 125—132.
2. Cardinale, M., Manzi. V. (2002). Special conditioning in Team Handball: Physiological demands of game-like drills. [interaktyvus]. 2002, spalis [žiūrėta 2007-10-22]. Internet link: <http://cis.squirming.net/article/index/php?id=361&style=printable%20-%2020k%20
3. Lupo, S., Seriacopi, D. (1996). *Analisi dell'allenamento e della gara*. Handball studi, 1, 21—35.
4. Игнатьева, В. Я., Портнов, Ю. М. (1997). *Гандбол.* Москва: Физкультура, образование и наука.

HEART RATE ALTERATION MODELLED BY FRIENDLY MATCHES OF HIGH-PEAK PERFORMANCE PLAYERS OF DIFFERENT POSITIONS IN HANDBALL

Gintarė Onusaitytė, Antanas Skarbalius
Lithuanian Academy of Physical Education, Lithuania

Introduction. Research on heart rate during handball competition is scarce (Cardinale & Manzi, 2002) and it is almost no scientific studies related to their position in the game (Alexander & Boreskie, 1989). Knowledge of heart rate during the game would provide insight into the physiological aspects of this sport, and it would be helpful in designing better training programmes (Hughes & Franks, 2006). The aim of the research was to determine the alteration of heart rate intensity in friendly matches (modeling contest of sport performance) of high-peak performance players of different positions in handball.

Methods. The subjects consisted of 7 female players of one team and were divided into five sub-samples according to playing position — back court players (n=2), wings (n=2), goalkeeper (n=1), pivot (n=1), playmaker (n=1). The heart rate were recorded in a friendly matches (n=9), starting registerd with the warm-up and finished after the end of the match during preparatory period using "Polar Precision Performance" (Finland) pulsometers. The appropriate statistical analysis based upon researh design were applied.

Results. The highest total heart rate were of playmaker (Table 1) than of the others players of different positions. The mean heart rate was different for each of the game positions. Wings and playmaker players heart rate and percentage of total playing time spent in maximal intensity during game were highest than of the players different positions. The maximal heart rate of playmaker was 9 beats·min^{-1} higher as goalkeeper, and 7 beats·min^{-1} higher as back court players.

Table 1. **The total (beats), mean (beats·min^{-1}), maximul heart rate and percentage of total playing time spent in maximal (MAX), hard (HARD), moderate (MOD) intensity activities during a friendly matches of high-peak performance female players of different positions in handball**

Playing Position	Heart Rate			Heart Rate Zones (%)		
	Total	Mean	MAX	MAX (162-180)	HAR (142-161)	MOD (126-143)
Back court	12323±2928	135±13	184±14	27±12	18±6	16±2
Wings	12680±2811	143±7	190±12	34±3	18±2	15±1
Goalkeeper	11963±2747	124±12	182±10	6±4	22±8	22±7
Pivot	13670±3059	137±14	187±9	31±13	12±5	11±4
Playmaker	14260±2943	142±11	191±12	33±12	15±3	16±4
Team	13000±2395	137±9	187±5	26±12	17±4	16±4

Discussion. Total heart rate of match was higher as the Ignatjeva and Portnov (1997) (9800/10800) found out. The mean heart rate of all players were less as the Lupo and Seriacopi (1996) (145 beats·min^{-1}) estimated and less as the Alexander and Boreskie (1989) fixed.

Conclusions. The players position on the court determine the work intensity. The wings and playmaker players had the highest load during the game as the others players. The goalkeeper had the lowest load during the game. Further research need to identify the relationship between motion, physiological demands and playing efficiency.

References

1. Alexander, J., Boreskie, L. (1989). An analysis of fitness and time-motion characteristics of handball. *American Journal Spots Medicine,* 17 (1), 76—82.
2. Cardinale, M., Manzi. V. (2002). Special conditioning in Team Handball: Physiological demands of game-like drills. [interaktyvus]. 2002, spalis [žiūrėta 2007-10-22]. Internet link: <http://cis.squirming.net/article/index/php?id=361&style=printable%20-%2020k%20->
3. Lupo, S., Seriacopi, D. (1996). *Analisi dell'allenamento e della gara*. Handball studi, 1, 21—35.
4. Hughes, M., Franks, I. M. (2006). *Notational Analysis of Sport.* London: Routledge.
5. Игнатьева, В. Я., Портнов, Ю. М. (1997). *Гандбол.* Москва: Физкультура, образование и наука.

CHALLENGING LITHUANIAN PETE

Rimantas Pacenka
Lithuanian Academy of Physical Education, Lithuania

On the one hand, physical education teacher education (PETE) is shaped by reality of the actual economic, political and cultural situation in the field, on the other hand it always reproduces values and believes that professional community fosters towards PETE.

The **purpose** of this study was to define what conceptual orientations are specific for Lithuanian physical education teacher education. The study is grounded in the occupational socialization literature and the findings are discussed in terms of what and how different concepts and elements of PETE programs are perceived and valued by Lithuanian PE teachers and PETE students.

This investigation was carried out using descriptive research **methodology**. Theoretical analysis was employed to explore the plurality of concepts and approaches towards PETE. The questionnaire, with structured answer options, concerning the concepts of (a) human body, (b) sport/movement culture, (c) physical education and (d) physical education teacher education, were adopted in order to collect relevant data.

PE teachers (n=400) randomly selected from different regions of Lithuania and final year PETE students (n=195) were questioned during pre-service and in-service training sessions (100% of response rate).

Data analysis. Quantitative data were processed with Statistical Package for Social Science (SPSS) procedures. For ease of interpretation, most findings were presented in the form of percentage and descriptive statistics. The use of ranks helped to recognize the level of importance in the PE objectives and PETE aspects repertoire as perceived by the teachers and students.

Results. Despite some visual evidence that the younger regeneration of PE educators perceive higher level of body-mind integrity, two thirds of respondents reproduce more or less *reductionistic* view of human body — as *an object of or instrument for the physical education.*

A substantial (up to 49%) and comparatively large students' than teachers group accept a traditional concept of Sport as a *decontextualized technical problem*.

An improvement of health and physical fitness and *development of physical variables (endurance, flexibility, muscle power)* in combination with "*skills and attitudes for participation in sports/movement culture*" were offered three leading positions in the ranking of PE objectives by all respondents groups. At the same time, all aspects related with the acquirement of competencies and context knowledge needed for participation in sports / movement culture takes four lowest positions of the list. Ranking the elements of PETE programmes three leading positions with some exception in perspectives of in-service teachers' were awarded for "*physical training technologies*", "*knowledge of kinesiology"* and *"pedagogical knowledge"*.

Concluding note. If we agree that, physical education teacher education is meant to produce competent physical education teachers who not only perform skillfully but also are willing and able to reflect on their teaching as well as to reason soundly about the aims of teaching in a vide social-political context of teaching, does recently presented findings provides a reason for optimism to brake *"the vicious circle of the self reproducing failure of PE"*?

PECULIARITIES OF CARDIOVASCULAR REGULATION OF SPINAL CORD INJURED HUMANS IN RESPONSE TO ORTHO-CLINOSTATIC STRESS

Aušrinė Packevičiūtė[1], Rūta Adomaitienė[1], Laima Samsonienė[2]
Lithuanian Academy of Physical Education[1], Vilnius University[2], Lithuania

Introduction: following spinal cord injury (SCI) part of sympathetic nervous system is disrupted from the brain stem control. This disruption results in disorders of cardiovascular system regulation mechanisms (Clayton et al., 2006). Impaired cardiovascular regulation may cause orthostatic hypotension or other negative impacts on persons' health and quality of life. However, there exist various adaptive mechanisms that may change cardiovascular regulation and compensate these cardiovascular disorders. A lot of attention was paid to find out these new possibilities of cardiovascular control in earlier and nowadays scientific investigations.

Some of researches discovered that after SCI not only descending sympathetic cardiovascular regulation is impaired, but there could be baroreflex mechanisms affected also (Maiorov et al., 1998; Teasell et al., 2000; Mathias & Frankel, 2002). To get these data orthostatic tests were performed. We did not find any investigation of parasympathetic outflow affecting baroreflex reactions in response to clinostatic test.

The aim: to ascertain the peculiarities of hemodynamic function and sympathetic and parasympathetic cardiovascular regulation of persons with spinal cord injury in response to ortho-clinostatic stress.

Methods:

1) arterial blood pressure (ABP) registered every two minutes;

2) passive ortho-clinostatic test (using tilt table);

3) hemodynamic measurements recorded continuously (heart rate monitor) during ortho-clinostatic test: a) heart rate (HR); b) reflector regulation of cardiovascular system: high and low HR frequency and their ratio (Grimm et al., 1997);

4) spectral analysis of HR variability.

The researches were carried out in Lithuanian Academy of Physical Education. Participants — 8 persons with SCI (4 tetraplegics, 4 paraplegics) and 7 able-bodied volunteers — control group.

Results: all persons with SCI show low level of sympathetic and parasympathetic cardiovascular regulation in response to orthostatic stress comparing to controls. In response to clinostatic stress sympathetic and parasympathetic outflow rises up, especially in tetraplegics.

Parasympathetic outflow to reflexive cardiovascular regulation predominates in persons with high level SCI in response to orthostatic stress, and sympathetic — in control group.

Ratio of sympathetic and parasympathetic outflow keeps stable reciprocal physiological relationships in able-bodied persons independently of body position. After SCI, sympathetic and parasympathetic regulation ratio may switch from reciprocal to direct, or even become not reliable.

Results are previous and investigation is continuing.

References

1. Claydon, V.E., Steeves, J.D., Krassioukov, A. (2006). Orthostatic hypotension following spinal cord injury: understanding clinical pathophysiology. *Journal Spinal Cord*, 44, 341-351.
2. Grimm, D.R., De Meersman, R.E., Almenoff, P.L., Spungen, A.M., Bauman, W.A. (1997). Sympathovagal balance of the heart in subjects with spinal cord injury. *American Journal Physiology*, 272 (2), 835-42.
3. Maiorov DN, Fehlings MG, Krassioukov AV. (1998) Relationship between severity of spinal cord injury and abnormalities in neurogenic cardiovascular control in conscious rats. *J Neurotrauma,* 15: 365—374.
4. Mathias, C.J., Frankel H.L. (2002) Autonomic disturbances in spinal cord lesions. In: Mathias CJ, Bannister R (eds). Autonomic Failure: A Textbook of Clinical Disorders of the Autonomic Nervous System, 4th edn. Oxford University Press: Oxford, pp 494—513.
5. Teasell, R.W., Arnold, J.M.O., Krassioukov, A., Delaney, G.A. (2000). Cardiovascular consequences of loss of supraspinal control of the sympathetic nervous system after spinal cord injury. Journal of Physical Medicine and Rehabilitation, 81 (4), 506-516.

EFFECT OF FITNESS CENTRES ENVIRONMENT FOR THE BEHAVIOUR OF WOMEN ENGAGED IN SPORT AND THEIR ATTITUDE TO THEIR BODIES

Simona Pajaujienė, Rasa Jankauskienė
Lithuanian Academy of Physical Education, Lithuania

Fitness club environment is created in pursue of encouragement of exercising persons to seek for beautiful, slim, young body. Various food supplements, even the names of workouts often target the body improvement and weight loss (Loland, 2000). Attire of women and attention of other exercising colleagues and their evaluations can also increase the motivation for slimness (Krane, 2001). Pursuit of physical perfection, slimness and muscle building may result pathological behaviour, eating disorders, depression etc. (Martin, et al, 1998). Therefore, the excessive emphasis on fitness, incorrect behaviour of coaches, and the environment of sports clubs may contribute to the problem.

The aim of study is to identify the links between the fitness environment and the behaviour of exercising women, and their attitude to own body.

Methods. Body mass index (BMI), exercising behaviour, and women attitude towards their body was evaluated according to anonymous 40-item questionnaire. The sample of 287 was selected from women involved in recreational physical activity in fitness clubs.

Results. The majority of women were normal BMI (n=222), 49 were overweight, 3 were obese and 13 were underweight. Mean age of the sample was 29.4±9 years. Most of women were practising fitness activity for figure improvement reason (39.7%), 3—4 times a week (63.1%) for more than 2 years (46.7%). 39% of women are engaged only in aerobics groups, 33.1% — in workout hall, 27.9% combine both types of sports. Our goal was to identify how women are affected by their sports environment. 29.9% of women experienced depression regarding their figures after attending a fitness club. The images in mirrors cause negative emotions for the majority (90.6%) of women regarding their bodies, 47% compared their bodies to the bodies of other women, and felt themselves inferior, therefore, one third of women avoids clothing emphasising their body shape during sports. These emotions and behaviour were more expressed among women with higher BMI ($p<0.001$). We considered the role of fitness instructor as the most significant factor of workout environment. 65.5% of women admitted that instructor is continuously explaining how to reduce the amount of body fat, and 23% of women were proposed by the coach to go on diet and to use slimming food supplements. This offer was more often related with overeating behaviour ($p=0.025$), and frequency of dieting ($p<0.001$) of women. It was revealed that the obligatory exercising is featured by women in fitness clubs. 87.1% of women admitted that concern about their body image force to exercise, and 35.9% of women exercise despite illness or injury for fear to miss a training session. For most women were characteristic compensatory behaviours and concerns after missed training: the women with the highest BMI "punish" themselves by limiting food, whereas women with normal BMI exercise for longer periods, and more intensively during the next workout session ($p=0.017$).

Conclusion. The research demonstrated that the training environment affects the behaviour of women, and their attitude to their bodies. Coaches should be more responsible and consider the behaviour of women weight loss, preventing the sports of turning into excessive exercising or addiction. Fitness environment may promote negative emotions towards own body, and compensatory behaviours after missed workout session, which can become one of the risk factors of psychological health.

References

Loland NW. (2000). The art of concealment in a culture of display: aerobicizing women's and men's experience and use of their own bodies. *Sociology of Sport Journal*, 17, 111-129.

Krane, V., Waldron, J., Stiles-Shipley, J.A., Michalenok, J. (2001). Relationships among body satisfaction, social physique anxiety, and eating behaviors in female athletes and exercisers. Journal of Sport Behavior, 24(3), 247-264.

Martin, K.A., Hausenblas, H.A. (1998). Psychological commitment to exercise and eating disorder symptomatology among female aerobic instructors. 2, 180-190.

THE EXPRESSION OF PERCEIVED SELF- COMPETENCE IN DIFFERENT AREAS AND ITS RELATION WITH GLOBAL SELF- WORTH AMONG PHYSICALLY ACTIVE AND NON ACTIVE ADOLESCENTS

Jolanta Paulauskienė, Skaistė Laskienė, Loreta Jamantienė
Lithuanian Academy of Physical Education, Lithuania

The expression of perceived self-competence in different areas and its relation with global self-worth among physically active and non active adolescents.

The aim of the study was to evaluate the expression of perceived self- competence in different areas and its relation with global self-worth among physically active and non active adolescents.

Problems of the study are as follows: To find out the expression of perceived self-competence of physically active and non active adolescents' and compare the results. To find out, which areas are connected the most with global self- worth of physically active and non active adolescents.

Hypothesis of the study: Perceived self- competence in areas of sport, appearance, social acceptance, romantic appeal is more developed for physically active adolescents, than non active ones. Global self-worth is more developed for physically active adolescents, than non active ones.

Many scholars (Archibald, Graber, Brooks-Gunn, 2003; Bosma, Williams, 2006) are interested in the stage of adolescence. This period is marked by immense change in individual's psychosocial, cognitive and physical development. Intensive psychophysical development suggests certain personality direction, changes in activeness and autonomy, which put adolescents into the contradictory situations, such as growing aspirations differing from reality, difficulties related with identity formation, inadequate self-value (Connell, 2005; Craft, Pfeiffer, Pivarnik, 2003, Cramer, 2003). Growing conflicts of adolescents' and adults' values, sense of identity, changing status in society make an individual perceive not only surrounding environment, but oneself as a part of it as well. The development of self-perception is the most intense at the stage of adolescence and it includes perception of self-concept, self-worth. Self-worth is one of the components of self-perception, reflecting individual's view at oneself and depending upon one's abilities, perceived competence. Adolescent, who is able to perceive oneself as being capable in many important areas, is tend to value oneself and be successful in socializing. Sport is one of the most acceptable activities for adolescents. Involvement in sport activity positively influences adolescents' self-worth, withdraw them from various addictions, helps to integrate into society.

Conclusions

The findings of the results suggest, that physically active adolescents tended to have superior perceived self-competence than non active ones in areas of sport, appearance, romantic appeal, social acceptance and global self-worth. Differences are dependable.

The results suggest a strong correlation between global self-orth and romantic appeal and weak correlation with behavioral conduct, among physically active adolescents. The results also suggest a strong correlation between global self-worth and social acceptance and weak correlation with romantic appeal.

References

1. Archibald, A. B., Graber, J. A., Brooks- Gunn, J. (2003). *Pubertal processes and psychological growth in adolescence.* Ed. by. G. R. Adams., D. Berzonsky. Handbook of developmental psychology. Blackwell publishing.
2. Bosma, H. A., Williams, L. L. (2006). Identity development- in- context: the school as an important context for identity development. *Through Self-Organization.* Cambridge: Cambridge University Press, 6 (1), 85-113.
3. Connell, R. W. (2005). Growing up masculine: rethinking the significance of adolescence in the making of masculinities. *Irish Journal of Sociology*, 14 (2), 11-28.
4. Craft, L. L., Pfeiffer, K. A., Pivarnik, M. J. (2003). Predictors of physical competence in adolescent girls. *Journal of Youth and Adolescence*, 32 (6), 431.
5. Cramer, D. (2003). Acceptance and need for approval as moderators of self-esteem and satisfaction with romantic relationship or closet friendship. *Journal of Psychology*, 137 (5), 28-31.

ADAPTATION AND PECULIARITIES OF PREPARATION FOR THE COMPETITIONS AT THE OLYMPIC GAMES IN BEIJING

Jonas Poderys
Lithuanian Academy of Physical Education, Lithuania

Peak performance is one of most complicated and important issues in coaching. The most desirable is to have the peak performance at the most important competition. The state ensuring the peak performance should be related to special tuning of the regulatory mechanisms (Viru, 2004). The result of this "turning" is an extreme mobilization of possibilities of neuromuscular apparatus and of body resources. The period of extreme concentration and motivation may have a negative influence of peak performance as well why a special attention to the structure of the preparation and training design must be given. On the other hand traveling across several time zones expose a sportsman to a shift his internal biological clock and the result is a transient desynchronization of the circadian rhythm lasting for a several days until the body adapts to new environmental conditions (Buxton et all, 2003; Atkinson et all, 2007; Lagarde, 2007).

This paper presents the review of practical experience and special assessments of adaptive changes at various places, i.e. during the pre-Olympic training camp at Sydney performed by members of Lithuanian Olympic team and by Lithuanian Track and Field Athletes at Beijing participating at 11th Juniors World Championship, at Bangkok participating at 24th University Games and at the Beijing Olympic Games. The special experimental assessment of influence of high temperatures to body functioning during the exercising also included. Special questionnaire and training program was taken into account as well. The analysis of the results obtained during the studies was analyzed by use the model of integral evaluation of the body functioning during exercise.

Complex dynamic system approach provides the possibility to keep a close watch on individual adaptive changes of the athletes and helps them better and faster to adapt to environmental changes and to local conditions. A summary of practical experiences and scientific studies allows to conclude:

1. Travelling across several time zones exposes the sportsman to a shift his internal biological clock and the result is a transient desynchronization of the circadian rhythm lasting for a several days until the body adapts to new environmental conditions. Between the symptoms expressed during these days it can be sleep disorders, higher irritability and difficulties with concentrating, bad appetite, fatigue and decrease in sports performance.

2. After arrivals to Beijing the characteristic feature is slower mobilization of body functions at onset of exercise for the first 4—5 days, though the level of mobilization during the exercise remains the same. The next characteristic feature is the slower recovery of various indices of cardiovascular system after exercise for the first 6—7 days. Between the reasons in slower the recovery after exercising, maybe, is the increase in vascular tonus, slowdown in repolarization processes, disturbances in balance of electrolytes and changes in dynamical balance between processes of capillary filtration and reapsorption.

3. There are some phases in process of adaptation to sudden change of geographical and environmental conditions before competition. Phase of activation of regulatory systems occurs first and the phase of increased energy demands is showed after 48 hours and lasts up to next five days.

4. Wide range of individual variations in character of adaptive changes in body depends on training and competitive experience of athletes, their personality, sleep and behavior habits and training loads performed before departure to the venue of competitions as well. The behavior of athletes and training strategies during the first days are important and can help accelerate the adaptation. In contrary, heavy training loads can decrease the speed of adaptive changes.

References

1. Atkinson G, Edwards B, Reilly T, Waterhouse J. Exercise as a synchroniser of human circadian rhythms: an update and discussion of the methodological problems. *Eur J Appl Physiol.* 2007; 99(4): 331-341.
2. Lagarde D Pharmacological approach to desychronization of the sleep-wakefulness cycle in the military and sport environment [Review, Article in French] *Ann Pharm Fr.* 2007, 65(4): 258-264.
3. Viru A.M., Viru M. The analysis of Peak performance in the physiological aspect. *Education, Physical Training, Sport.* 2004; 4: 5-9.

KINETICS OF PERIPHERAL BLOOD FLOW AND OXYGEN SATURATION IN MUSCULAR TISSUE ASSOCIATION WITH PECULIARITIES OF ADAPTATION TO ENDURANCE OR SPEED POWER EXERCISES WHILE PERFORMING THE BREATHING EXERCISE

Kristina Poderytė, Albinas Grūnovas, Jonas Poderys, Eugenijus Trinkunas, Birutė Miseckaitė
Lithuanian Academy of Physical Education, Kaunas, Lithuania

Exercise training improves vasodilatory capacity in normal subjects (Dziekan et al., 1998; Hughson, 2007). The task of this study was to assess the futures in changes of muscular blood flow and changes in oxygen saturation in muscular tissue while performing the breathing exercises. 17 well trained subject (*sprint sub-group — 8 and endurance sub-group — 7 athletes*) underwent two stops in breathing up to maximal duration with five minutes between them and during the second investigation — four cycles of breathing exercise combining the hyperventilation and breathing stops after inspiration up to submaximal duration. Changes in systemic arterial blood pressure, arterial blood flow in calf —measured by venous occlusion plethysmography, oxygen saturation (StO_2) — measured by near-infrared spectroscopy (Hutchinson Technology device , Model 325) and cardiac changes — 12 lead ECG indices were analyzed.

Results obtained during the study showed that all participant of the study were able to perform the longer breathing stops during the second trial and the more rise of diastolic blood pressure was observed. Breathing stops has made an influence to various cardiovascular changes even in calf muscle blood flow intensity and StO_2 in muscular tissue as well. There was found a significant decrease in arterial blood flow in a calf during the apnoe and the character of changes in muscle blood flow after the breath stops was similar to phenomenon of reactive hyperemia or post exercise hyperemia. The StO_2 in muscle decreased significantly at each breathing stop. The breathing exercise caused a significant changes of cardiac indices and changes in blood flow intensity and StO_2 in muscular tissue. The vasoconstriction of vessels caused a significant rise of diastolic and systolic blood pressures, changes in muscular blood flow intensity and StO_2. The kinetics of StO_2 in muscular tissue reiterated the peculiarities of peripheral blood flow.

The characteristic feature in kinetics of peripheral blood flow and in kinetics of StO_2 in endurance sub-group was the slower changes after each of increase of blood flow to decrease, i.e. the some delaying in changes from vasodilatation to vasoconstriction as it was observed in sprint sub-group. For the explanation of these results some approaches could be useful. The complex brain stem pathways for the reflexes are being precisely delineated (McCrimmon, 2006), together with their connections to the cerebral cortex where the voluntary control is localized (Widdicombe, 2006). One of the molecular mechanisms, which is a key component of the cardiovascular system functions regulation and determine its features, is the renin-angiotensin system, within on of the proteins encoded by angiotensin-converting enzyme (ACE) gene (Montgomery *et al*., 1999).

The results obtained during the study allows to hypothesize that velocity in kinetics of peripheral blood flow and StO_2 while performing the breathing exercise could be with the association of the *ACE* I/D polymorphism.

References

1. Dziekan G, Myers J, Goebbels U, Muller P, Reinhart W, Ratti R, Hafeli W, Dubach P. (1998).Effects of exercise training on limb blood flow in patients with reduced ventricular function. *Am Heart J.*,136(1):22-30.
2. Hughson, R.L. (2007). Regulation of VO_2 on kinetics by O_2 delivery. *Oxygen uptake kinetics in sport, exercise and medicine.* (pp. 185—211). London and New York: Routlege.
3. McCrimmon D. (2006).Central pathways of pulmonary and lower airway vagal afferents. *J Appl Physiol* 101: 618—627.
4. Montgomery, H., Clarkson, P., Barnard, M. *et al*. (1999). Angiotensin-converting enzyme gene insertion/deletion polymorphism and response to physical training. *Lancet*, 353, 541—545.
5. Widdicombe J. (2006). Reflexes from the lungs and airways: historical perspective. *J. Appl Physiol*. 101(2):628-34.

THE ANGIOTENSIN CONVERTING ENZYME GENE POLYMORPHISM'S ASSOCIATION WITH PECULIARITIES OF CARDIOVASCULAR FUNCTION DURING EXERCISE TESTS OF LITHUANIAN ELITE ATHLETES

Kristina Poderytė, Eurelija Venskaitytė
Lithuanian Academy of Physical Education, Lithuania

One of the molecular mechanisms, which is a key component of the cardiovascular system functions regulation and determine its capacity is the renin-angiotensin system, within on of the proteins encoded by angiotensin-converting enzyme (ACE) gene. There are two posible alleles of (ACE) gene: (I) allele with 287 bp Alu chain and (D) allele whith out 287 bp Alu chain (Thompson, Binder-Macleod, 2006). ACE gene (I) allele is related with better aerobic abilities and adaptation for endurance loads. (Montgomery *et al.*, 1999; Woods *et al.*, 2000). ACE gene (D) allele are related with better anaerobic abilities and adaptation for force-speed loads (Tsianos *et al*., 2004; Thompson, Binder-Macleod, 2006).

The aim of this study was to investigate the association of the *ACE* I/D polymorphism with the functioning of their cardiovascular system during dosed aerobic and maximal anaerobic exercise tests. Genetic and cardiovascular function tests were performed in the cohort of 29 Lithuanian elite athletes. DNA was extracted from peripheral blood cells and the ACE genotypes were identified by polymerase chain reaction (PCR) method. Standard 12-lead ECG and parameters of arterial blood pressure were registered during two exercise tests (of aerobic and anaerobic type).

The results obtained during the study showed that in sportsmen of the II genotype subgroups were registered the less changes in heart rate and arterial blood pressure, in duration of JT intervals during booth exercise tests. JT/RR ratio indices differed during aerobic type of workout only. The highest values of the changes in JT/RR were registered in groups of DD genotype, however recovery rate of this index were considerably slower compare it to another two groups. The recovery of cardiovascular functional indices was slower in DD genotype group. The study results sugest that genotype is an important egzogenious factor having influence on the kinetics of cardiovascular indices during exercising and on the speed of recovery after workloads. It was concluded that in the assessment of cardiovascular changes during the both aerobic or anaerobic exercise test the information about angiotensin-converting enzyme (ACE) gene of the athletes must be taken in to account.

References

1. Montgomery, H., Clarkson, P., Barnard, M. *et al*. (1999). Angiotensin-converting enzyme gene insertion/deletion polymorphism and response to physical training. *Lancet*, 353, 541—545.
2. Thompson, W.R., Binder-Macleod, S.A. (2006). Association of genetic factors with selected measures of physical performance. *Phys Ther.,* 86, 585—591.
3. Tsianos, G., Sanders, J., Dhamrait, S., Montgomery, H. *et al.* (2004). The ACE gene insertion/deletion polymorphism and elite endurance swimming. *Eur J Appl Physiol,* 92, 360—362.
4. Woods, D.R., Humphries, S.E., Montgomery, H.E. (2000). The ACE I/D Polymorphism and Human Physical Performance. *Trends Endocrinol Metab,* 11, 416—420.

THE EVALUATION OF LITERACY DEVELOPMENT OF SPECIALISTS IN PUBLIC HEALTH

Elena Puišienė, Kristina Visagurskienė
Lithuanian Academy of Physical Education, Lithuania

Health literacy is defined: "The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (*Healthy People 2010*). Health literacy represents the cognitive and social skills, which determine the motivation and ability of individuals to gain access, to understand and use information in ways, which promote and maintain good health. There are three types of health literacy: basic, functional and critical.

The elements that are needed to develop health literacy: the development of critical thinking, effective communication, group work, determining a problem and methods for solving it.

The development of interactive health literacy is based on person's ability to ponder on obtained information independently and to choose optimal way of action.

The aim of the research is to investigate the evaluation of development of health literacy of Lithuanian public health specialists.

The methods and research organization. The research has been carried out during the qualification courses held for the specialists of public health and organized by the Institute of Hygiene with participation of 256 specialists from Kaunas, Vilnius, Utena, Klaipeda, Siauliai and Panevezys schools. 45% of the time at the courses was meant for the development of theory and 55% — practice. The study place was Municipalities and Public Health Centers. The questionnaires were prepared according to the special form confirmed by the director of European social funding (14/02/2007, order No. 2007—2017 "Guide for ESF Projects". 5 propositions of display and assimilation of obtained information were given in the questionnaire. The answers to the questionnaire were: "I don't accept at all", I don't accept", "Neuter", "I accept", "I accept decisively".

The results and discussion. 73.6% of respondents evaluated the statement that "information was clearly displayed", 43.7% (I accept) — information was new and 38.2% (I accept decisively), and 7.2% answered that information was not new. 35.4% (I accept) and 60% (I accept decisively) predicated about that obtained information would be useful in their future work. 90.4% ((I accept and I accept decisively) answered that audiovisual information and theses helped for better acquisition of the information.

The main task of the development of health literacy is to promote people to solve their health problems and to fortify their own health. Motivation for enabling himself to solve problems should be very strong. An enabled person can critically analyze social, cultural and political environment. Enabling is a process when a person has an excellent understanding of healthy lifestyle knows how to control the factors of health risk and takes an active part in the development of public health. In this way people feeling harmony participate in the process of creating a sustainable healthy environment.

Harmoniuos components of healthy literacy are: understanding, ability to manage your own activity, the feeling of sense all these are concurrent with human ability to act in social and economic context.

The aim of functional healthy literacy is associated with communication, interactive — with the development of personal skills, critical — with personal and public enabling

Healthy literacy content is orientated to the solution of personal and public health problems and the content determines community's openness to changes, because when they learn to cope with problems, this learning becomes meaningful.

References

1. Bryant T.(2002). Role of knowledge in public health and health promotion policy change. *Health Prom Int* 17(1):89-98.
2. Kickbuch IS. (2001). Health literacy: addressing the health and education divide. *Health Prom Int*;16:289-97.
3. Michael S. Wolf PhD, MPH, Julie A., Gazmararian PhD, MPH and David W. Baker MD, (2007). MPH. Health Literacy and Health Risk behaviors Among Older Adults. *American Journal of Preventive Medicine.*

DEVELOPMENT OF PEDAGOGICAL COMMUNICATION IN PHYSICAL EDUCATION CLASSES AT SECONDARY SCHOOL

Vinga Rakauskienė, Laimutė Kardelienė
Lithuanian Academy of Physical Education, Lithuania

Introduction. In the process of studying at school, adolescents frequently have to overcome difficulties of biological, psychological and social maturation and to meet the requirements for studying, behaviour and communication which are set by his/her environment. When the requirements set upon the adolescent are excessive and his/her personal resources are inadequate to the solution of the problem, assistance by a qualified specialist is required, which is aimed at applying theoretically sound and practically verified methods in order to assist the adolescent to decrease the urgency of the issue and the emotional tension that it causes. The primary priority is rendered to the methods of cognitive impact, which require less time of the client and the specialist, are based upon theory and more structured (Kazdin, 2000, Seligman, 1995). One of those is a widely applied theory referred to as *Solution focused brief counselling* (De Schazer, 1985).

Objective: to evaluate development of pedagogical communication in physical education classes at secondary school while applying short term counselling.

Methodology. Solution-focused three interventional sessions with a client were conducted using methodology described by De Jong&Berg, 1988; De Shazer, 1988. Initial semi-standardized interview was held with 213 schoolchildren. The changes were evaluated by using ten point progress evaluation scale and by repeating the interview.

Participants: 213 students aged 13 to 19 took part in the analyses. Approximately 60% of them were girls and about 40% were boys. There were two groups: experimental and comparative groups. The experimental group consisted of 62 participants aged 13 to 18. They were consulted according to SFBC and compared to the comparative group. The comparative group was important to assess spontaneous alterations of their issues, because no intervention was used with these students. These participants of the analysis filled in a questionnaire where they stated their most urgent recent issue and assessed the difficulty of their issue in the scale from 0 to 10, where 0 stands for the highest level of problem while 10 means that there is no problem. They filled in the same questionnaire after 4 weeks, where they stated their most urgent recent issue and assessed the difficulty of their issue in the scale from 0 to 10. The comparative and the experimental groups did not differ in terms of age and gender.

The main results. 85.2 per cent of consulted students and 27.3 per cent of the comparison group showed improvement on the progress evaluation scale ($p<0.05$). The consulted students showed improvement in relationship with physical education teachers evaluated by the repeated interview ($p<0.05$). No significant changes happened in students within the group of comparison.

Conclusions and implication. School shows demand towards briefer methods of counselling. The data confirmed that student counselling in the school setting based on the solution-focused approach is an efficient method improving the students capacity' for solutions. While being counselled schoolchildren acquire new knowledge improving their psycho-social competences. That is why the relationship between physical education teachers and students are estimated to improve.

Conclusions: 1. Those adolescents who were consulted according to the *Solution focused brief counselling method* showed a decrease of the severity of the issue. However, those adolescents who were not consulted according to the *Solution-oriented counselling method* did not show any alterations regarding the severity of the problem.

2. The application of short term counselling when dealing with communication issue between schoolchildren and physical education teachers is effective.

References

1. De Shazer, S. Keys to solution in brief therapy. New York, NY: W.W. Norton and Company, 1985.
2. Kazdin, A.E. Psychotherapy for children and adolescents: Directions for research and practice. New York: Oxford University Press, 2000.
3. Seligman M. The effectiveness of psychotherapy: the consumer report study // American Psychologist, 1995 — p. 965-974.

EFFECT OF WARMING ON THE SKELETAL MUSCLE POWER AND FATIGUE FOR MEN PERFORMING CONCENTRIC EXERCISE

Irina Ramanauskienė[1], Albertas Skurvydas[2], Marius Brazaitis[2], Saulė Sipavičienė[2], Šarūnas Klizas[2], Aiva Karpavičienė[2]

Kaunas University of Technology[1], Lithuanian Academy of Physical Education[2], Lithuania

The majority of physiological processes and various other processes taking place in the body are closely related to changes in body temperature (Bennett, 1990). Direct warming of extremities may have considerable effect on muscle force and muscle capacity during concentric exercise (Sargeant, 1987; Ball et al., 1999). With rise in temperature tendons, ligaments and the connecting tissue are able to extend to a greater extent which brings improvement in the amplitude of movements in the joint (Kirkendall & Garrett, 2002).

The aim of the research was to establish the effect of warming on the skeletal muscle power and fatigue of men performing concentric exercise.

Methods of the study. The participants of the study were 10 healthy male, age: 19—23 years; height — 177.8±5.8; weight — 78.2±6.1, fat — 7.5% (fat mass — 5.6 kg).The participants of the study were seated in isokinetic dynamometer. The type of concentric contraction is automatically established by the system exercising in isokinetic regimen. We tested average power (AP). Control measuring have been made before load, after 10 min, 30 min, 60 min and 24 h after the load; concentric load — 50 leg extensions and flexions in the knee joint at the fixed 180º / s speed. The force was tested in different conditions of thigh *quadriceps femoris* muscle strain. The leg during electrical stimulation was fixed at different angles of knee joint (they were 90^o and 135^o angles — the greater the angle, the less the length of the muscle. Quadriceps muscle was stimulated at different frequencies of 20 (low P20) and 100 (very high P100) Hz. Control measuring have been made before concentric load, after 20 min, 70 min and 24 h after the load. The maximal voluntary contraction force (MVCF) also was registered before concentric load, after 20 min, 70 min and 24 h after the load. Before and after muscles heating and after concentric load we have measured muscles temperature with needle thermometer. Creatine kinase activity in blood serum was estimated 1 h prior to load and 24 h after it.

Results. We have established AP of warmed muscle during leg extension in the knee joint at the fixed 180^o / s speed to be significantly higher ($p<0.05$), compared to the usual temperature. Quadriceps muscle after stimulating was significantly higher ($p<0.05$) of warmed muscle, at different frequencies of 20 (low P20) and 100 (very high P100) Hz. MVCF also was significantly higher of warmed muscle ($p<0.05$). We have found during testing fatigue index (FI) of AP for men's knee extensors to be the highest in the case of warmed extensors and extensors at their usual temperature — during contractions 41—50 respectively. There was a significant change in the inner muscle temperature after muscle warming (39.5ºC) for 45 min ($p<0.001$), compared to the initial (prior to warming 36.93ºC) values. After performing concentric load there was a significant increase ($p<0.05$) (40.1ºC).

Discussion of results. When muscle temperature is increased, a decrease in ATP and creatine phosphate during intensive exercise and the accumulation of products of their disintegration is greater than in conditions of doing the exercise at normal muscle temperature. It has been established that a rise in muscle temperature accelerates the processes of ATP hydrolysis (Ball et al., 1999) and anaerobic glycolysis (Febbraio, 2000). It is believed that an improvement in muscle power after warming is determined by the increased muscle contraction rate. The cohesion of myosin cross — bridges with actine and their release accelerates due to a faster ATP hydrolysis (Ball et al., 1999) and owing to Ca^{2+} kinetic properties (Ichihara, 1998). V. Bružas (2004) carried out an experiment and determined that following the warming of leg muscles there occurred a significant increase in the force of involuntary isometric contraction of the *m. quadriceps femoris* (except for the force evoked by stimulation at 10 Hz frequency), as well as in relaxation speed up to half-force, the power of pedalling on the veloergometer and jump height, whereas no changes in

maximum voluntary force took place.

Conclusion. Muscle warming increased maximal voluntary contraction force and muscle contraction power in men's knee extensors, but did not cause any changes either in the rate of muscle fatigue or in the rate of muscle recovery performing concentric exercise.

References

1. Ball, D., Burrows, C., Sargeant, A. J. (1999). Human power output during repeated sprint cycle exercise: the influence of thermal stress. *European Journal of Applied Physiology*, 79, 360—366.
2. Bennett, A. F. (1990). Thermal dependence of locomotor capasity. *American Journal of Physiology*, 259, R 253—258.
3. Bružas, V. (2004). *Šildymo poveikis raumens funkcijai, nuovargiui ir atsigavimui maksimalaus intensyvumo fizinio krūvio metu ir po jo: biomedicinos m. daktaro disertacija*. Kaunas: KMU.
4. Febbraio, M. A. (2000). Does muscle function and metabolism affect exercise perfomance in the heat? *Exercise and Sport Science Reviews,* 28, 171—176.
5. Ichihara, Y. (1998). Effect of temperature on Ca induced Ca release (CICR) rate. *Masui,* 47 (3), 281—285.
6. Kirkendall, D. T. and Garret, W. E. (2002). Clinical perspectives regarding eccentric muscle injury. *Clinical Orthopaedics and Related Research*, (403 Suppl), S 81—89.
7. Sargeant, A. J. (1987). Effect of muscle on leg extension force and short-term power output in humans. *European Journal of Applied Physiology*, 56, 693—698.

REACTION TIME AND MOVEMENT FREQUENCY OF INDIVIDUALS WITH INTELLECTUAL DISABILITIES

Diana Rėklaitienė, Jūratė Požėrienė
Lithuanian Academy of Physical Education, Lithuania

Individuals with intellectual disabilities are known to encounter motor difficulties in their daily living, although their movements do not appear greatly different from those of general population (Latash, 2000). Regarding perceptual and motor processes, numerous authors have reported that individuals with intellectual disabilities are slower and more variable in reacting to a stimulus as well as in preparing and completing movement (Kulatunga-Moruzi, & Elliott, 1999; Lalo, & Debu, 2003).

The aim of this study was to identify reaction time and movement frequency of individuals with intellectual disabilities. To achieve this aim the following **tasks** had to be completed: 1) to determine the differences in psychomotor reaction by performing the moves with the dominant (right) and non-dominant (left) arms; 2) to determine the difference between reaction time and movement frequency by performing the movement males as females; 3) to determine the difference of persons with intellectual disabilities and their able-boded peers between reaction time and movement frequency and accuracy by performing the movement with the right and the left arms.

Methods and organization. Participants of this study were 17 individuals whit intellectual disabilities (age 19.32±1.47 years) (10 males, 7 females) from local boarding-school and 18 able-boded students (age 20.56±0.98 years) (11 males, 7 females) having any sport activities. All participants were right-handed (dominant) and had normal or corrected vision.

To measure reaction time and movement frequency, we used the apparatus *Reaction Meter — RA-1.* This device is used for measuring of reaction time; assess the functional state by use "Finger Tapping-Test" or other individually adjusted tests. The experiment consisted of 3 tests: reaction time and movement frequency measurement and tapping test (the values of reaction time in milliseconds and frequency of arm movement during 40 seconds). All participants engaged in a practice phase prior to experiment. The participants sat at a table in front of the apparatus such that the centre of the body was aligned with the centreline of the apparatus. Participants were instructed to focus on the on the green or red light and encourage to push button or move metal stick as quickly as possible according to the tasks of tests.

Statistical analysis was conducted using STATISTICA for Windows version 6.0. Descriptive statistics (mean scores and standard deviations) was computed for the total sample, males and females. The *t* test was used to determine differences in reaction time and movement frequency of participants.

The results of the study showed that arm reaction time of all participants with intellectual disabilities were lower as compared with their able-boded peers ($p<0.05$). There were no significant differences in the psychomotor reaction time of the participants with intellectual disabilities movements performed with the right arm between males and females. The able-boded males' demonstrated equal reaction time of both arms, and females had better reaction time in right arm ($p>0.05$). The movements of females were more precise that movement of males in both groups of the study.

References

1. Kulatunga-Moruzi, & Elliott, (1999). Manual and attentional asymmetries in goal — directed movements in adults with Down syndrome. *Adapted Physical Activity Quarterly*, 16, 138-154.
2. Latash, M.L. (2000). Motor coordination in Down syndrome: the role of adaptive change. In D.J. Weeks, R.Chua, & D. Elliot (Eds.), *Perceptual — motor behaviour in Down syndrome* (pp. 199-223). Champaign, IL: Human Kinetics.
3. Lalo, E., & Debu, B. (2003). Visuospatial attention and motor preparation in individuals with Down syndrome. *Adapted Physical Activity Quarterly*, 20, 134-149.

ASPECTS OF ADAPTABLE BEHAVIOR OF ADOLESCENTS WITH INTELLECTUAL DISABILITIES

Kristina Rilienė[1], Inga Kelpšienė[2], Vida Ostasevičienė[1]
Lithuanian Academy of Physical Education[1], A. Astrauskas firm "The First Step"[2], Lithuania

Over the world integration process is onward movement very actual to evaluate disabled child's adaptability behavior which can be definable as independence, ability to acclimatize, social and emotional maturity. Person with intelectual disabilities must have to obtain not only good education but also he must have to integrate to society: to behave with decorum, to find decree, to communicated with people who are round about. Youth with learning disability want to take responsibility for their actions by themselves, to segregate from family, to find a job, but it is very difficult to appreciate themselves and the possibilities. So, it is becoming very important to ascertain mentally retarded youth emotion and behavior reasons, actions reasons which would be easier better to understand and help them.

Aim of the research: investigate mild mentally retarded youth adaptable behavior and emotion features and compare it expression with teacher rating.

Goals: 1) Investigate mild mentally retarded youth school problems and compare teacher rating; 2) Traverse mild mentally retarded youth internal and external problems and compare teacher rating; 3) Investigate mild mentally retarded youth personal adjustment and compare teacher rated personal adjustment of youth.

Contingent and organization. In Kaunas food industry school where investigated mild mentally retarded youth 17—18 years old (3 girls and 2 boys). Considering to it, that abyssal youth features where tested using difficult procedure the results where analyzed using qualitative analyzing method. For this research we have chosen 5 mild mentally retarded youth. In pursuance to find more information in research take part 1 teacher, he rated separately every disquisition.

Methods of the research: 1) Testing using standardized questionnaire BASC — 2 (*Behavior Assessment System for Children, Second Edition)* „Self-Report Scales Report" (12-21 ages) and „Teachers Rating Scales Report" 2) computer program "BASC-2 ASSIST™ scoring and reporting system" was used for treating the date of the standartized questionnaire.

The research results:

1. In school problems scale the mean problem show upped sensation seeking, the behavior of 4 adolescent are in risk sustaining clinical scale, teacher report that school problems have 4 adolescent. For mild mentally retarded youth is typical delinquent behavior, which manifest poor school skills and conflicts with teachers.

2. Internal problems as propose have 2 youth, teacher report that with internalizing problems interfere 4 adolescent clinically significant.

3. Teacher report that externalizing problems have 5 adolescent, which evidence like hyperactivity and aggressive behavior.

4. The research result shows that 5 mild mentally retarded youth have poor adjustment, the same results we were in teacher rating. So we can make conclusion that mild mentally retarded youth have poorness adjustment and social skills.

References

1. Irwin, C. E., Millstein S. G. (1991). Correlates and Predictors of Risk-taking Behavior during Adolescence//Lipsitt L. P., Mitnick L. L. Self-Regulatory Behavior and Risk-taking: Causes and Consequences. — New Jersey, p. 410.
2. Luftig, R. L. (1988). Assessment of the perceived shool loneliness and isolation of mentally retarded and nonretarded students. *American Journal of Mental Retardation*, 92 (5). p. 472.
3. Ollendick T. H., King N. J. (1994). Diagnosis, Assesment, and Treatment of Internalizing Problems in Children: The Role of Longitudinal Data. *Journal of Consulting and Clinical Psychology,* 62 (5), p. 918—927.

HEALTH BEHAVIOUR THEORIES AND STUDENTS' ATTITUDE TO PHYSICAL EDUCATION

Inta Mara Rubana, A. Abele
Latvian Academy of Sport Education, Latvia

One of the most important determinants of health is physical activity. During adolescence an essential part of physical activity is physical education (PE) or sports classes. In praxis often student's negative attitude towards PE lessons can be observed and as a result avoidance of PE arises which is also often supported by their parents. Several theories and models have been developed to explain how people accept their behaviour, such as social cognitive theory, the theory of reasoned action/planned behaviour and the health belief model. Theoretical models can help sport teachers to find out the best way to motivate students to attend sports classes and involve into out-of-class sports activity, as well as the teachers should raise the quality of sports classes considering the content, methodology and environment.

Aim of the research: to analyze health behaviour theories in complex with research data concerning pupils' motivation to attend sports classes.

Method of the research: school-age children inquiry.

Time of the research: the study years 2005/2006 and 2006/2007.

Subjects of the research: 937 adolescents aged 12—16.

Results. The present study demonstrates that many factors are potential determinants of motivation to participate at school PE classes. Social Cognitive Theory (SCT) [1] appears as a guide to understand students' motivation to attend PE classes. It is possible to use SCT variables for PE methodology and curriculum development. One of the strongest determinants for PE attendance is student's self-efficacy what is confirmed by students participated in the survey: "I cannot accomplish all exercises, cannot achieve desirable results; too many and high norms" [2]. Students' answers to the questionnaire reveal that often they do not have enough skills to perform exercises during sport lessons: "lack of skills for the exercise". The mentioned reasons for attending out-of-school practices indicate that sometimes students' expectations at PE classes have been ignored:

The results of this survey prove that sports teachers do not want to award for diligence and good intentions. They only approve good achievements in this or that kind of sport.

A majority of respondents complained of bad relation with the sports teacher, the teacher's intolerance, negative and abusive remarks.

This study allows identify motivational determinants and suggest possible change strategies in order to develop PE curricula, promote students' interest to PE and attendance of sports classes.

Determinant	Potential change strategies	Examples for school PE
Self-efficacy	Approach behaviour change in small steps to ensure success, be specific about the desired change.	Teach skills; recognize success; show process used to be successful.
Behaviour capacity	Promote learning through skills training.	Conduct skill analysis; provide skill training; evaluate/recycle skill training.
Expectations	Take notice positive outcomes of participation at PE classes.	Identify all possible outcomes; praise positive outcomes; not compare with others.
Reinforcements	Promote self- initiates, rewards and incentives.	Reward attitude change; reward any success; praise personal goals and reward goal attainment.

Conclusions

1. Emotionally positive evaluation of the PE classes has a negative dynamics with pupils' age increase, what indicates an inadequacy between students' interests, needs and PE organization. In order to decrease the tendency it is necessary to promote a positive students' attitude towards them by taking into account psycho-emotional and psycho-social factors.

2. It would be advisable for PE teachers to arouse more interest in the students by inviting them to do sports they like and are able to practice in free time activities, and during sport classes to put the primary goal to create a positive attitude towards different sports activities not achieving a certain statistical results.

3. Teachers should create an environment where students feel satisfied and happy regardless of their personal capabilities.

References

1. Bandura, A. The explanatory and predictive scope of self-efficacy theory. J. Soc. Clinic. Psych., 1986, 4, 359-373.
2. Biddle S, Armstrong N. Children physical activity: an exploratory study of psychological correlates. Social Sci. Med., 1992, 34, 325-331.

INDICATORS OF TRAINING AND PERFORMANCE OF ATHLETES 12—13 YEAR AGED IN RHYTHMIC GYMNASTICS

Renata Rutkauskaitė, Antanas Skarbalius
Lithuanian Academy of Physical Education, Lithuania

Introduction. The efficacy of athlete's sport performance depends on the targeted training in certain periods, individual adaptation of an athlete to the loads of training and competitions (Perl, 2000). The adaptation to physical loads, intensity of training loads and competitive activities of the rhythmic gymnastics has not yet been studied. The **aim** of this work was to establish the impact of training indices on sport performance of 12—13 year aged athletes in rhythmic gymnastics.

Material & Methods. The structure of the content of 4 different training programs (loads, the time for choreography, element learning, competitive routines and athletic training in each training session) as well as athletes' sports performance (technical, athletic fitness) and anthropometric features of 12—13 year aged athletes (n=5 in every group) in rhythmic gymnastics from the city of Kaunas were recorded during annual macro-cycle. The design of athletes' training programs composed significant differences ($p<0.001$) in the indices of training loads (from 10.2 to 14.2 hours per week), days of training (from 233 to 283 days a year) and training content. Appropriate statistical methods (one-way analysis of variance — *ANOVA,* the principal factor analysis — communalities = r squares) based upon the experimental design were applied.

Results. No statistically significant differences were established between the body composition indices of athletes in all training programs comparing the indices before and after experiment ($p>0.05$). Statistically significant differed ($p<0.05$) the indices of athletic fitness. The integral index of sport performance was different before the beginning ($F=8.01$; $p < 0.05$) and after ending ($F=5.35$; $p<0.01$) of the season. No statistically significant differences ($p>0.05$) were established between the indices of biomotor abilities (specific endurance, co-ordination abilities, flexibility, balance, explosive strength, speed-endurance) in different training groups. At the beginning of the season ($F=5.56$; $p<0.001$) and at the end of it ($F=9.06$; $p<0.001$) the realization of the body movement techniques with different tools was different. The body movement technique indices (at the beginning of the season — 4.57±1.12; at the end of the season — 4.24±0.74 and movement with tools indices (at the beginning of the season — 3.03±0.94 and at the end of the season — 3.33±0.62) of most effective training program were the highest.

Discussion and Conclusion. Effective sport performance of 12—13 year aged athletes in rhythmic gymnastics were conditioned by all indices of technical fitness ($r=0.745\div0.895$), integral index of athletic fitness ($r=0.854$), and separately significant in explosive strength ($r=0.743$) and endurance ($r=0.708$). At this age of athletes in rhythmic gymnastic the significance of body composition indices for sport performance became greater: lower body mass index ($r=–0.599$), body fat index ($r=–0.538$). Effective sport performance was also preconditioned by dominating choreographic training (34.6%), more time for practicing competitive routines (up to 30.3%), changes in training loads in different micro-cycles — applying two waves of increasing loads a week. Different training loads of the micro-cycle were applied using the principle of gradual training load increase (Медведева, 2002). On Wednesdays and Thursdays in the training and competitive micro-cycles athletes received higher loads, and in the pre-competition micro-cycle higher loads were applied three days in turn (from Tuesday till Thursday), which allowed athletes to prepare for the competition properly saving their strength and adapting to the loads applied (Perl, 2004).

References

1. Mester, J., Perl, J. (2000). Grenzen der Anpassungs- und Leistungsfahigkeit des Menchen aus systematischer Sicht: Zeitreihenanalyse und ein informatisches Metamodell zur Untersuchung physologischer Adaptionsprozesse. *Leistungssport*, 1, 43—51.
2. Perl, J. (2004). Modelling Dynamics Systems — basic aspects and applications to performance analysis. *International Journal of Sport Science in Sport,* 3 (2), 19—28.
3. Медведева, И. М. (2002a). Построение програм микро- и мезоциклов подготовки квалифицированных фигуристов. *Педагогіка, психолоія та мед. — біол. пробл. физ. вихования і спорту*. Харьков, 10. [žiūrėta 2004 03 15]. Prieiga per internetą: <http://www.nbuv.gov.ua/articles/2002/10awrsbp.zip>.

WOMEN AND SPORT IN SOVEREIGN LITHUANIA (1920—1940) THE OUTSET OF WOMEN SPORT IN SOVEREIGN LITHUNIA

Birutė Saulė Sabaitė
Lithuanian Academy of Physical Education, Lithuania

Research object: History of Lithuanian physical education and sport.

Research aim: discuss women's participation in physical education and sport in sovereign Lithuania.

Research methods: 1. Analysis of archival documents. 2. Systematization and generalization of research literature. 3. Analysis of literature sources.

Results. The spread of physical education and sport in Lithuania, both male and female, was developing, proliferating and being accepted by the society controversially. The question of women's participation in sport was urgent: they had to overcome old traditions and attitudes, to create the new ones and to prove, as Dr. A. Jurgelionis maintained, that women had to take up sport and to state why and when it was necessary for them. The greatest enthusiasts were the women who had returned from Russia — I. Janaviciute-Kripiene and E. Kubiliunaite. In 1922 women participated in Lithuanian championships of basketball and track-and-field events, and their results were constantly improving. The analysis of archival documents, periodicals and the works of Lithuanian historians of physical education and sport of that period showed that by many authors women sport was understood as art which gives women grace and flexibility. Women should not have matched men in strength. The first women section was considered the section established by E. Kubiliunaite-Garbaciauskiene in the Lithuanian Club of Physical Development in 1921. The following women section was established by the Rifle Company. In 1923 J. Sulginas and J. Sulginiene initiated women's amateur sports club, and its 54 members were engaged in basketball, track-and-field events and shooting. In 1923—1924 women section were established at LFLS, Commercial school, "March" and KSK. The members of the sections were pupils, students, very few clerks and workers. The best results were achieved by H. Ivanauskiene (shooting), P. Radziulyte (shooting, track-and-field events). The latter was Lithuanian champion and prize holder in 1923—1928, in 1928 she participated in Amsterdam Olympic Games, then she played in LFLS basketball team. H. Ivanauskiene disseminated the ideas of physical education not only in Lithuania, but abroad as well (like K. Steponaityte — A. Mrijosiene, M. Baronaite, etc.). In 1931 Lithuanian Sports League Committee of Women Sport organized the first sports festival for women proving that women started to work more methodically and extensively. In 1932 the festival program included all sports branches were women participated: swimming, tennis, track-and-field athletics, cycling, gymnastics, handball, volley-ball and basketball. Ten sports organizations participated in it. They represented LFLS, LGSF, LDS, ASK. In this period most of those organizations were represented by students. The spread of women sport was promoted by the Rifle Company and "Young Lithuania". All those women teams competed among themselves. In 1930s Lithuanian started cooperating with Latvian teams, and Lithuanian teams were introduced in the SELL Games.

Summary. Despite the fact that many corporations established and promoted women sports teams at the end of the period discussed, there were many problems left in women sport: it did not spread widely in the provinces, there was no solidarity in the organization of teams, the improvement of sports facilities and the preparation of coaches were also problematic, as well as trying to overcome social attitudes. Solving those problems can be linked with the activities of different sports leaders and active participators in sports.

References

1. Lietuvos centrinis valstybės archyvas. F. 933. Kūno kultūros rūmai.
2. Lietuvos kūno kultūros ir sporto istorija / Ats. Red. H. Šadžius. — V.: Margi raštai, 1996. — 405 p.
3. Lietuvos sporto žinynas / Sudarė A.Bertašius. — V.: LSIC, 1999. T.1. — 205 p.
4. 1920 — 1940 metų Lietuvos kūno kultūros ir sporto periodinė spauda.

CARDIOVASCULAR FUNCTION DURING THE CONSTANT-LOAD AND ALL-OUT EXERCISE TESTS

Rita Sadzevičienė, Kristina Poderytė
Lithuanian Academy of Physical Education, Lithuania

The idea of complexity can be understood in the context of processes in nature generating systems with more parts and special relations between various kinds of parts. The fractal dimension can be viewed as a relative measure of complexity, or as an index of the scale-dependency of a pattern. The relations between systems in human organism usually are nonlinear and their formalization is quite difficult task. There is well known fact that human health, harmonic development of human body strongly depends on that relations between systems, on the complexity of all body functions. Decrease of complexity in human body leads to disintegration between various functions. Since the cardiovascular system is one of the constituent part and a holistic system of the body therefore the reactions of cardiovascular system to constant-load tests or all-out tests allows one to assess the functional capabilities and functional peculiarities of the body. The objective of this study was to compare the peculiarities of cardiovascular functioning during the constant aerobic and all-out exercise tests in non-sportsman and well trained athlete's cohorts. The study participants were 17 voluntary students non-athletes and 63 well-trained athletes (*all participant were members of various national teams*). A computerized ECG analysis system "Kaunas-load", developed at the Kaunas Medical University Institute of Cardiology, was employed for 12 synchronous lead ECG recording and analysis. All the participants underwent three exercise tests: 1 — bicycle ergometry — every one minute stepwise increase in workload; 2 — Roufer test — 30 squats per 45s; 3 — 30 s vertical jump test. The computer system "Kaunas Load" was employed for registration and analysis of 12 leads ECG. Dynamics of heart rate (HR), and ratio of JT and RR intervals (JT/RR) were investigated. To avoid influence, in calculation, of different range of parameters, the HR and JT/RR were normalized according to their physiological (max—min) scale of changes. Were investigated widely used fractal dimensions — information dimension (ID) and correlation dimensions (CoD). Initial data was discrete values of all discussed parameters at each level of load and during rest.

Heuristic assessment of the results obtained during the study showed that the greatest changes of various cardiovascular indices were observed in non-sportsman cohort during the constant load exercise test but there were no such differences during the all-out tests. The fractal analysis of the results showed that a significant differences between studied groups were found during 30s jump test for HR in CD (between endurance sportsmen, non-athletes and sprint athletes) and ID calculations (between sportsmen and non-sportsmen). Differences in dimensions for parameter JT/RR were more expressed, especially for Roufje and 30s jump tests. Significant differences were between athletes and non-athletes cohorts and non-athletes have the smallest all dimensions values. For more detailed analysis we chose information dimension (ID). It shows quite big differences in our studied groups and is sensitive to the person's functional state.

Conclusions:

1. The greater mobilization of cardiovascular system when performing constant-load exercise tests is rather characteristic for non-athletes than sportsmen's cohorts. Constant-load exercise tests rather than all-out exercise tests are more suitable for assessments of individual peculiarities or differences between the cohorts.

2. The use of all-out exercise tests depends on the tasks of assessments. The stepwise increase in workload is more suitable for health related testing and anaerobic jump exercise tests or compounds of constant aerobic and all-out anaerobic tests — for testing of well-trained athletes.

KINEMATIC ANALYSIS OF MULTIPLE TRIALS OF ELITE DISCUS THROWERS

Raminta Sakalauskaitė, Danguolė Satkunskienė
Lithuanian Academy of Physical Education, Lithuania

The purpose of this study were to identify kinematic characteristics of the techniques that influence the official result and release velocity by elite discus throwers and by a given thrower and to classify parameters thus permit generalizations about most effective techniques for elite discus throwers and for each athlete.

Methods. The participants of the study were the finalists in the man's discus throw event at the 2006 V. Alekna' World Discus Throw Competition (Vilnius, Lithuania). Eight finalists were from six countries and their best results were 66 to 73 metres.

Two Canon-XM1 camcorders, operating at a sampling frequency of 25 Hz, were used to record the performances of the subjects on each trail. One camcorder was placed to the rear of the throwing circle and the other was placed to the side of, and in line with, the midline of the circle. The angle between the optical axes of the two cameras was approximately 90°. Six throws by each athlete were recorded. Calibration cube with eight reference marks were placed in the throwing circle after competition and their positions recorded for calibration purposes. The centre of the discus was digitized at a sampling frequency of 50 Hz, starting five fields before the instant the athlete's right foot breaks contact with the ground at the end of the first double support phase and ending with the third field after the instant of discus release. The instance of right-foot takeoff at the end of the first double support phase was used for cameras view synchronization.

A stepwise multiple regression analysis was used to determine the variables that could produce a higher release velocity and official result. The overall significance level was set at alpha = 0.05.

Results. The stepwise multiple regression analysis to determine the relationships between official results and selected technical parameters yielded five variables in the equation: length of discus way of release, length of discus way in the end flight phase, speed in the end flight phase, angle of discus path in the end first single support phase and length of discus way in the end first double support phase (R^2=0.99, F5,1=49936, p<.00340). Beta values indicated that length of discus way of release (Beta=1,562) carried the highest weighting of the five variables.

The regression predictors for elite discus throwers release velocity were: length of discus way of release, length of discus way in the end first single support phase, height in the end second single support phase, height of release, relative duration first single support phase, relative duration second single support phase, speed in the end second single support phase, length of discus way in the end first double support phase and angle of discus path in the end second single support phase (R^2=0.87, F9,32=31,624, p<.00000). Length of discus way of release (Beta=0.599) and length of discus way in the end first double support phase (Beta=0.418) carried the highest weighting of the nine variables.

References

1. Hay, J., Yu, B. (1995). Critical characteristics of technique in throwing the discus. *Journal of Sports Sciences*, 13, 125-140.
2. Yu, B., Broker, J., Silvester, J. (2002). A kinetic analysis of discus throwing techniques. *Sports Biomechanics*, 1 (1), 25-46.
3. Woo, B. H., Zatsiorsky, V. M. (2006). Variability of competition performance in throwing and jumping events in elite athletes. *Human Movement*, 7 (1), 5-13.

SELF-EVALUATION OF HEALTH OF ATHLETES WITH DISABILITIES AND ITS INFLUENCING FACTORS

Laimutė Samsonienė[1], Algirdas Baubinas[2], Konstancija Jankauskienė[3], Gintaras Zavadckis[4]
Health and Sports Center at Vilnius University[1], Institute of Public Health at Vilnius University[2], Department of Physiology, Kaunas University of Medicine[3], Lithuanian Paralympics Committee[4], Lithuania

Background

The International Olympic and Paralympic Committees have decided that in 2012, the Olympic and Paralympic Games in London will take place at the same time.

The aim of the research was to measure the self-evaluation of health of athletes with disabilities.

Methods

An anonymous inquiry of athletes with and without disability was performed in 2006. We analyzed 235 questionnaires filled by the participants of the study; 159 subjects were with, and 76 — without disability. The Lithuanian Paralympic Committee approved the questionnaires and gave an agreement for the study. The inquiry was performed in Lithuanian sports clubs for the disabled and in the Lithuanian Academy of Physical Education. Statistical data analysis was performed using SPSS v. 13 software package.

Results

Research results showed that the respondents evaluated their health in a similar way despite their gender and the level of their sportsmanship ($p>0.05$): 33.7% of athletes evaluated their health as "good", 54.8% of the respondents thought it was "satisfactory", and 11.5% — "poor". It has been proved that health impairments were influenced by other factors by 81.5 — 95.5%, and not by high training loads, competition stresses, lack of self-confidence or the coaches' mistakes. It should be noted that as many as 9.6% of athletes consulted their doctors because of heartaches. Athletes took medicine: 40.1% of athletes — for headaches; 25.5% — for pains in their back and legs; 15.3% — for the stomachache, and 10.2% — for the heartache. It was established that 51.6% of the research participants were satisfied with the services of the specialists of sports medicine, though 21% of them did not have the possibility to use those services (more of such athletes were members of sports clubs compared to the members of the national teams ($p=0.02$)).

Conclusion

Irrespective of their mastery level and gender athletes with disabilities evaluated their health as follows: 33.7% of them thought it was good, 54.8% — satisfactory, and 11.5% — poor. Only 56.6% of athletes with disabilities were satisfied with the services of sports medical professionals, 21% of them indicated that they had no possibility to use those services.

References

1. Williams T. Sociological perspective of sport and disability: Structural functionalism. Physical Education Review, Vol. 17. Nr. 1, p.p.14-22. 1994.
2. Ducinskiene D., Kalediene R., Petrauskiene J., Sumskas L. Evaluation of suitability of Word Health Organization questionnaire for assessing quality of life of university students. Sveikatos mokslai 2002, Nr. 3 p. 53-8.

COMPARATIVE ANALYSIS OF INTRA-CYCLIC VELOCITY FLUCTUATION AND ARM-LEG COORDINATION OF THE WORLD AND LITHUANIAN INTERNATIONAL LEVEL BREASTSTROKE SWIMMERS WITH FLAT STYLE

Danguolė Satkunskienė[1], Valentina Skyriene[2]
Kaunas University of Technology[1], Lithuanian Academy of Physical Education[2], Lithuania

The purpose of this investigation was to carry out comparison of intra-cyclic velocity fluctuation and arm-leg coordination among Lithuanian and World international level breaststroke swimmers to identify the technical factors limiting swimming velocity of Lithuanian swimmers.

Four Lithuanian male swimmers whose expertise expressed in percentage of the world record (% of WR) for the 100 m breaststroke on the average reached 92.9±4.7% and nine French swimmers (91.4±2.4% of WR) (Chollet et al., 2004) were included in the analysis.

Lithuanian swimmers were simulated the 50 and 100m paces swims starting in the water in a 25-m pool. All swimmers filmed from side view underwater with one video camera moving parallel to the swimmer on a tracking system and one panning video camera above water. Moments defining begin–end phases were determined from video analysis using a 50 Hz video player of SIMI Motion 2D software. In addition, a body landmark on the pelvis was digitized. Dropped scale lines suspended from the lane cable were used for calibration. The intra-cycle pelvis velocity was obtained by video analysis. The breaststroke cycle was divided into five arm and leg phases. The duration of each phase was expressed as a proportion of the whole stroke cycle. Arm–leg coordination was determined by measurement of the time gaps between the different stroke phases of each pair of motor limbs (Chollet et al., 2004, Leblanc et al., 2005). Based on time gaps effective glide, effective propulsion, effective leg insweep and effective recovery were used to identify the different stroke phases on the body. Average swimming velocity was calculated from the video recording over a 10-m distance. The stroke length was calculated from the average speed and stroke rate.

There were no significant difference between Lithuanian and World international level swimmers swimming velocity, stroke rate and stroke length. Analysis of time velocity curves showed that the maximum velocity peaks for Lithuanian swimmers corresponding to the end of arm outsweep and than during arm insweep velocity was decreased. The first increase in velocity associated with the leg extension was markedly less then increase occurred during arm propulsion phase and the velocity peak occurred before the end of leg extension.

Lithuanian swimmers had a longer duration of the upper limbs propulsion phase (47% vs. 30% on average) and first part of leg recovery (22.4% vs. 13.3%), shorter duration of the arm recovery (17% vs. 26% on average), arm gliding especially by swimming 100 m pace (34.76% vs. 48.12%) and leg gliding especially by swimming 50 m pace (23.1% vs. 41.4%); shorter $T1_a$ and $T1_b$ time gap (measuring the glide effect) and negative T2 time gap what meant that the beginning of leg recovery overlapped the end of arm propulsion.

It was concluded that efficiency of propulsive and non propulsive phases of Lithuanian elite breaststroke swimmers were less that world elite swimmers by swimming same speed.

References

1. Chollet, D., Seifert, L., Leblanc, H., Boulesteix, L., Carter, M. (2004). Evaluation of arm-leg coordination in flat breaststroke. *International Journal of Sports Medicine*, 25 (7), 486-495.
2. Leblanc, H., Seifert, L., Baudry, L., Chollet, D. (2005). Arm-leg coordination in flat breaststroke: a comparative study between elite and non-elite swimmers. *International Journal of Sports Medicine*. 26(9), 787-797.

COMPARATIVE CHARACTERISTICS OF PHYSICAL DEVELOPMENT AND PHYSICAL ACTIVITY OF 10- YEAR-OLD SCHOOLCHILDREN OF GRODNO, KRASNOYARSK AND KAUNAS

Andrej Shpakov[1], Ludmila Klimatskaya[2], Ekaterina Sergeeva[2], Skaistė Laskienė[3]
Grodno State University Named by Yanka Kupala, Belarus[1], Krasnoyarsk State Medical University Named by prof. V.F.Voino-Yasenezkiy, Russia[2], Lithuanian Academy of Physical Education, Lithuania[3]

The improvement of children's health is one of the most important purpose of educational process and upbringing.

The aim of the study was a complex research of 10-year-old schoolchildren in Grodno (Belarus), Krasnoyarsk (Russia), and Kaunas (Lithuania).

The methods: special questionnaire has been used as the basic method. BMI (Kromeyer-Hauschild and Cole methods) was used for comparative assessment of body mass.

Results. The use of BMI (Kromeyer-Hauschild method) allows to reveal 5—7% of Grodno and Kaunas children and 3.8% of Krasnoyarsk children with signs of obesity and expressed obesity. 6.6% of Grodno boys, 3.6% of Krasnoyarsk boys and no more 4% of girls of all investigated groups were obese. The higher level of expressed obesity of Grodno children than Krasnoyarsk children (accordingly 4.2% and 3.3%) is confirmed by Cole method as well. 5.0% of Grodno boys, 3.2% of Krasnoyarsk boys and 3.4% of girls in each city have expressed obesity. It is very important that the use of the both methods shows that 15.3% of investigated schoolchildren (154) in Grodno and 10.5% of investigated schoolchildren (100) in Krasnoyarsk have the tendency to obesity and increased body mass. One of the preventive measures of obesity and the diseases connected with obesity is the necessary level of physical activity at school and out of school. The majority of 4 grade schoolchildren indicate that physical training and sport are very important for them. In spite of it, more than 30% of investigated children indicate that they play out of doors very rarely and the level of their physical activity is very low. Nevertheless about half of all 4-grade schoolchildren are engaged in sports activities in three cities. We revealed that one of main reasons of physical inactivity of 4-grade schoolchildren is physical inactivity of their parents, who must demonstrate the important role of physical activity in health care. For example, 48.7% of mothers and 42.2% of fathers are not engaged in physical activity in Grodno, and accordingly 35.4% and 29.2% in Krasnoyarsk. Total number of families, in which none of parents goes in for sport, is about 30% in each city. One of the most important cause of decreased level of children physical activity is the increase of the time of passive leisure (TV, computer, game pad).

Discussion. The level of physical activity and the tendency to obesity and loss of weight of younger schoolchildren in Grodno, Kaunas and Krasnoyarsk are investigated. The preferable type of active and passive leisure is revealed as well.The body mass index allows to assess the degree of conformity of weight and height, so that to estimate indirectly increased, normal and decreased body mass. It should be mentioned that acceleration or slowdown of biological maturation leads to some inconformity, so one should be careful to use this "adult" index in children. Kromeyer-Hauschild method is recommended for 9—11-year-old children. This method allows, taking into account the BMI, to divide children into 6 groups, from low body mass up to expressed obesity. Cole method is used for quick assessment of the tendency to gain weight. According to Cole method, all children are divided into three groups: without any signs of obesity, with signs of obesity, expressed obesity.

References

1. Kromeyer-Hauschild, Katrin et al. (2001). Perzentile für den Body-mass-Index für das Kindes- und Jugendalter unter Heranziehung verschiedener deutscher Stichproben. Monatsschrift Kinderheilkunde, 149, (8), 807-818.
2. Szpakow, A., Omelianchik, S., Polubinskaya, S. (2007) The structure of nutrition of younger city schoolchildren. Vestnik SPbGMA, 2, 123-124
3. Климацкая, Л.Г.; Шпаков, А.И.; Laskienė, Skaistė. Результаты сравнительного изучения фактического питания 10-летник школьников Красноярска, Гродно и Каунаса // Вопросы детской диетологии. 2008, Т. 6, № 1. p. 27-30.

COMPLEX MONITORING SPORT PERFORMANCE IN HANDBALL

Antanas Skarbalius
Lithuanian Academy of Physical Education, Lithuania

Introduction. Constant analysis of the loads and sports results enables to manage sport performance seeking that athletes would be of the best sport fitness during the main competition. Correlative relations between training loads and sport performance create a possibility to establish changes of sport performance. Manifestation of models may be short-term and of longer duration. The problem is that variables of several types (content and intensity of loads) act simultaneously. It is possible to apply further one metamodel of training and sport performance and to compare it with real sport performance (Perl, 2001). Biochemical indices might be the main criterion of determined respond of athletes to applied loads. In order to predict tendencies of modern mens' handball it is necessary to monitoring elite handball sport performance permanently. Due to the enormous progress of information technology, computer-based analysis and data interpretation has become an increasingly important area of research in sport science. Information technologies in sport are especially important when questions of implementation and practical use are addressed to, such as the support of teams during competitions (Franks, Hughes, 2004). The aim of the present study was to carry out monitoring system of handball athletes sport performance.

Material & methods. The indices of sport performance (namely: the goals scored, the number of attacks undertaken and their efficiency, the percentage structure of positional attacks and counterattacks and the efficiency of these attacks) of 344 handball matches during 9 Olympic Games (the years 1972—2008) and anthropometric indices (height, weight) as well as the age of 1689 handball players were analysed (Skarbalius, 2002; 2006). During the period of 20 years 443 matches have been registered and analysed using worked out system of registering and analysing team actions during handball matches (Krusinskiene, Skarbalius, 2002). One alternative experiments were applied every season during the period of 1981—2003. All values are expressed as means ± SD. The data were analysed by means of the variance (ANOVA) method. The value of $p<0.05$ was accepted as significant.

Results & discussion. The phenomenon of the Olympic Mens' Handball lies in the fact that with a constant increase in the indices of height, body mass and age of handball players the game becomes more active and dynamic in character. Though most frequently handball players of the national teams that had taken higher places were of better physical development than handball of the national teams that had taken lower places, however, there were no regularities established. In some Olympiads national teams comprised by players of greater height and body mass as well as senior age became champions, in other Olympiads a reverse dependence could be observed (Skarbalius, 2002, 2006). Two computers and two experts are needed to input data of both teams. The programme worked out by us enables one to estimate team actions and make decisions about the playing tactics and strategy of the team (Krusinskiene, Skarbalius, 2002). Intensity of loads applied in handball per week was carried out by equation: $I = (A/K) \times \Sigma(SIV)$, where: I — intensity, A — training h per week; K — training units per week; Σ (normalization: Low —1; Moderate — 2; High —3; Max — 4). Rank of micro-cycle intensity were found out in such a way: Maximal >35, Intensity of 1 training unit bpm >180; High 30—35, Intensity of 1 training unit bpm 170—180; Moderate 20—30, Intensity of 1 training unit bpm 150—170; Low <20, Intensity of 1 training unit bpm <150.

References

1. Franks, I., Hughes, M. (2004). *Notational Analysis of Sports. Routledge.* Taylor & Francis Group.
2. Krušinskienė, R., Skarbalius, A. (2002). Handball Match Analysis: Computerized Notation System. *Education. Physical Training. Sport,* 3(44), 23—33.
3. Perl, J. (2001). PerPot: A Metamodel for Simulation of Load Performance Interaction. *EJSS* 1, 2.
4. Skarbalius, A. (2002). *Peculiarities of Olympic Mens' Handball.* Kaunas: LAPE.
5. Skarbalius, A. (2006). *Modern Mens' Handball.* Kaunas: LAPE.

VALUES OF SPECIAL PHYSICAL ABILITIES, AEROBIC PERFORMANCE AND PLAYING SKILLS OF WHEELCHAIR BASKETBALL PLAYERS ACCORDING TO DISABILITY, AGE, PLAYING EXPERIENCE

Kęstutis Skučas, Vytautas Skučas
Lithuanian Academy of Physical Education, Lithuania

Because of discussion among researchers and shortage of research works in respect of special physical abilities, aerobic performance and playing skills of wheelchair basketball players. There are actual and relevant scientific research analyzing these problems in aspects of player's age, disability and time playing wheelchair basketball.

Aim of the research was to determine and evaluate special physical abilities, the aerobic performance and playing skills of weelchair basketball players according to playing experience, age and disability.

Methods and organization. By methods of testing and pedagogical observation 42 wheelchair basketball players participating in wheelchair basketball competitions were under research. Participants of the research were divided into different groups according to their age, disability and time playing wheelchair basketball. The following wheelchair basketball players participating in the research according to the International wheelchair basketball classification system were divided: eight 1—1.5 point players, fifteen 2—2.5 points players, 8— 3—3.5 points players, 11 — 4—4.5 points players. Speed, quickness, anaerobic endurance, basket shooting, passing accuracy tests were used (Hedrick, Byrnes, Shaver, 1994; Valandewijck, Daly, Theisen 2003). Research method — constantly increasing continuous physical load have been applied to 21 wheelchair basketball player using an arm ergometer "Monark". Wheeling frequency was 70 times/min (rotations). The gas analyzer "Oxycon Mobile" was used during the physical performance to continuously register pulmonary ventilation, respiratory frequency, oxygen usage (VO_2), the capacity of performance (W). Physical load was increased until maximal intensity zone. Thresholds and maximal intensity zones of power, maximal heart rate, VO_2 values were determined.

The results of research revealed that values of special physical abilities 1—1.5 point players were different in comparison with other groups. The best results of special physical abilities were achieved of 25—35 age group players and were depended of different time of playing wheelchair basketball (speed — 6.1 s; anaerobic endurance — 92.1 m). The best wheelchair basketball playing skills results achieved 3—3.5 and 4—4.5 points players groups. These players scored 11—17 points, shooting accuracy were 37—40%, made 18—20 passes per game. Age did not influencied wheelchair basketball playing skills of the players. Playing time of group 6—10 years and more most influence wheelchair basketball playing skills of the players. These players scored 11 points, shooting accuracy were 37%, made 21 pass per game. Investigation showed that the worst aerobic performance values were the players groups of 35—45 years old in comparison with other age groups. 56.2 W work power on aerobic threshold, 85.8 W on anaerobic threshold, 148 W on critical intensity zone. Playing time of group 6—10 years and more most influenced values of aerobic performance: 89.6 W work power on aerobic threshold, 121.3 W on anaerobic threshold, 181 W on critical intensity zone.

References

1. Hedrick B., Byrnes D., Shaver L., (1994) .Wheelchair Basketball (2nd Edition). Paralyzed Veterans of America.
2. Valandewijck Y.C, Evaggelinou C; Daly D.; Siska Van Houtte; Joeri Verellen; Vanessa Aspeslagh; Robby Hendrickx; Tine Piessens; Bjorn Zwakhoven (2003). Proportionality in Wheelchair Basketball Classification. Adapted Physical Activity Quarterly, 20(4).

THE EFFECT OF TWO STRETCH-SHORTENING EXERCISE BOUTS PERFORMED WITHIN 60 MIN ON MUSCLE FATIGUE AND DAMAGE

Albertas Skurvydas[1], Sigitas Kamandulis[1], Nerijus Masiulis[1], Aušra Jansonienė[2]
Lithuanian Academy of Physical Education[1], Kaunas University of Technology[2], Lithuania

The well documented symptoms of muscle damage include prolonged impairment of muscle function measured during both voluntary and electrically stimulated contractions, protein leakage from the injured muscle fibres, and delayed-onset muscle soreness (Friden and Lieber, 2001). It has been noticed that after repeated bout of the same exercise the symptoms of muscle damage are not so markedly expressed and this phenomenon is called repeated bout effect (RBE) (Nosaka and Clarkson, 1995). A few studies were carried out when exercise bout was repeated prior to full recovery of previous bout ((Nosaka and Newton, 2002). The limitation of these studies was that repeated bout was performed as late as 3— 6 days after the first bout. However, adaptation effect could be more rapid than it has been shown. No detailed study of RBE on muscle function when exercise bout was repeated after very short period has been performed.

The aim of this study was to examine whether repeated exercise performed 60 min after the first one exacerbates muscle fatigue and damage. Due to very short time between the bouts greater muscle function impairment during second than first bout was expected.

In order to examine whether RBE manifest itself in very short time the same subjects performed two high-intensity jumping bouts with a 60-min rest period. Physically active men students from the Lithuanian Academy of Physical Education volunteered for this study (n=10). Indicators of muscle fatigue were decrease of voluntary and electrically evoked muscle performance immediately after exercise, whereas prolonged impairment of muscle function (from 30—60 min to 48 h after exercise) was considered as muscle damage symptoms. We have chosen the stretch-shortening exercise bout of 50 jumps assuming that is an adequate amount of muscle stretches to induce significant changes indicative of muscle damage.The quadriceps muscle force evoked by electrical stimulation at 15 Hz (P15) and 50 Hz (P50) frequencies and maximal voluntary contraction force (MVCF) were recorded before and 2 min, 30 min and 60 min after 50 jumps (bout 1). The experimental protocol was repeated (bout 2) at 60 min after bout 1. Muscle soreness and CK activity at 48 h after bout 2 was determined and these were presenting cumulative effect of both bout 1 and bout 2.

The results demonstrated a significant decrease in P15, P50 and MVCF during bout 1 ($P<0.05$). The force did not recover within 60 min after exercising ($P<0.05$). After bout 2 the MVCF and P50 decreased to the same level as after bout 1 irrespective of the recovery rate. A similar tendency in P15/P50 force ratio changes was observed after bouts 1 and 2.

The main finding of our study is that repeated bout performed 60 min after the first one does not exacerbate either muscle fatigue or muscle damage. Our data showed that adaptation occurs much earlier than two days after exercising. Rapid adaptation cannot be attributable to reduced inflammation, repair or remodeling of damaged fibres, as well as to reorganization of the intermediate filaments. These mechanisms are too slow to account for repeated bout effect. It is more likely that during first bout weak areas of certain fibres are eliminated. In this case all the fibres susceptible to damage were damage in first bout. Another explanation could be that neural control changes occur. In conclusion it could be suggested that in very short time repeated stretch-shortening cycle exercise does not have a deteriorative effect on muscle function. Repeated jumping bout performed 60 min after the first does not exacerbate muscle fatigue and muscle damage.

References

1. Nosaka, K., Newton, M. (2002) Repeated eccentric exercise bouts do not exacerbate muscle damage and repair. Journal of Strength and. Conditioning Research, 16(1):117-122.
2. Nosaka, K., Clarkson, P. M. (1995). Muscle damage following repeated bouts of high force eccentric exercise. Medicine and Science in Sports and Exercise, 27, 1263-1269.
3. Friden, J., Lieber, R. L. (2001). Serum creatine kinase level is a poor predictor of muscle function after injury. Scandinavian Journal of Medicineand Science in Sports, 11, 126-127.

PECULIARITIES OF STRENGTH DEVELOPMENT OF WEIGHTLIFTERS DURING MESOCYCLES

Rimantas Slavikas[1], Egidijus Slavikas[2]
Lithuanian Academy of Physical Education[1],
Kaunas Jaunalietuviu Sports Organization School[2], Lithuania

Strength development during a mesocycle, a macrocycle in weightlifting has always been at the focus of Lithuanian coaches' attention. The development of special physical preparedness and strength increase during mesocycles is one of the most significant objectives for the weightlifters of high performance largely because of their targets for high evaluation in the competition and the technique promotion in the events of the snatch, and the clean and jerk. During the training process the increase of lifted weights frequently results in overtraining and injuries. Consequently, 80% of the Lithuanian Combined Team members are suffering from injuries at the moment.

As the level of the weightlifter's performance rises, the boundary that impedes the effectiveness of strength development methods occurs, and the increase of training workload does not provide the expected result in the competition. This plateau is difficult to overcome or to shorten the period it lasts.

Methods: 1. Testing. 2. Mathematical statistics: arithmetic mean, reliability of the average arithmetic mean in the different stages of the research (Stjudent *t criterion*).

12 members of Lithuanian Combined Weightlifting Team participated in the research. 6 testees are studying at Klaipeda's University and training in Klaipeda's Weightlifting Sports School (coach S. Miečius). The rest 6 are the students at the LAPE and are training in Kaunas Jaunalietuviu Sports Organization School (coach E. Slavikas).

Aim of the research — to investigate how the special physical preparedness of weightlifters is influenced by the two strength development exercises during the microcycle in one training session. All the studied started their training 03 09 2007 after two-month summmer holidays and were training for 3 mesocycles undertaking the special programme. The level of speed force was controlled in regard to high jump with an arm swing. High jump measurements were performed after the warm-up under no loads prior to the beginning of the training and after the training session.

Results. The weightlifters taking part in the fourth trainings of the microcycle performed only two exercises: squat-stands with the barbell placed on the shoulders and barbell lifts. Such pattern of suggested training process planning coaches do not use. The traditional method when an athlete performs 5—7 different exercises but the squat-stands and lifts are performed at the end of main part of the training is most frequently used. The programme is applied to one macrocycle which includes three mesocycles. The structure of all three mesocycle tainings was the same. 6 microcycles comprised the macrocycle. The average barbell weight in the third taining as compared with the second one was decerased 3—5 kg and in the fifth training as compared with the fourth one it was reduced 2—3 kg reliably ($p<0,05$). During the sixth trainings maximum weights were lifted in squats and lifts. The result of high jump during the first mesocycle increased 2 cm, 3% ($p<0.05$). The result of high jump during the third mesocycle increased 2 cm, with reliability $p<0.05$. After strength load trainings the result of high jump decreased 4cm and in the second and the third mesocycles — 3 cm ($p<0.01$).

Conclusions. There is a number of world-wide methods to develop muscle strength. However, only part of it are scientifically tested (Skurvydas A., 2001). The level of weightlifters' result increase is mostly impacted by the level of speed force development. Speed force is the force that overcomes the resistance when muscles contract quickly (Ivaškienė V., 2002). Finally, it could be assumed that to effectively develop strength level for high performance weightlifters it is necessary to perform only squats and barbell lifts once a week during the training.

References

1. Skurvydas, A., Gedvilas, V. (2001). *Fizinių ypatybių lavinimo teorija ir metodika.* Kaunas: LKKA.
2. Ivaškienė, V. (2002). Fizinių ypatybių lavinimas per kūno kultūros pamokas. Kaunas.

YOUNG SPORTSMEN MUSCULAR FUNCTIONAL ADAPTATION TO PHYSICAL LOADS

Jelena Solovjova, Imants Upitis, Juris Grants
Latvian Academy of Sport Education, Latvia

Correct posture is the ideal position for humans, which is defined by movement stereotype, skeletal and muscle balance. Due to a large amount of motions to be performed during the exercise and loads on separate muscle groups, muscular imbalance is possible, which is connected with shortening of separate muscles. In order to study the effect of posture specific changes 59 athletes (20 swimmers, 20 ice hockey and 19 basketball players; ages 14 through 17) were tested. Tests were completed by method of visual diagnostics static and dynamics by L. Vasiljevas (1996) [3] and muscular functional testing by V. Janda, 1994, [1], H. Kendall, F. Kendall, 1982, [2]. Based on these two methods an express diagnostics program, which included measuring the changes of 8 sagital points from the vertical plane along with functional testing of 11 muscle groups, was developed. To detect the placement of the center of the body mass digital balance analizator was used.

Common to all three groups, it was found that the standing posture was falling forwards. Hockey players were found to fall 9.1 cm (±0.5 cm) forward from the vertical plane taken of the ankle, swimmers were 5.5 cm (±0.4 cm) while basketball players were 10.7 cm (±0.6 cm) forward. In all three groups the upper pelvis point was found to tilt forwards. Hockey players fell 10.4 cm (±0.7 cm) forward, swimmers fell 7.8 cm (±0.5 cm) forward and basketball players fell 8.8 cm (±0.6 cm) forward. Ice hockey players had the largest misalignment in the upper pelvis (10.4 cm±0.7 cm), swimmers had the largest misalignment at the shoulders (10.6 cm±0.4 cm) and basketball players had the largest misalignment at the ears (10.7±0.6 cm).

Functional muscle testing highlighted changes in the postural muscles of the three groups. The M. rectus femoris muscle was shortened in every ice hockey player (100.0%), in 84.2% of basketball players and 41.0% of swimmers. The M. hamstring muscle was shortened in 64.0% of ice hockey players, 60.0% of swimmers and 57.9% of basketball players. It was also found that the M.iliapsoas muscle was shortened in ice hockey players, swimmers and basketball players respectively (77.2%, 84.0, 73.0%). The shortening of these postural muscles causes an increase in lordosis. This is believed to be the cause of future joint pain in the knees and lower back.

Fasic muscles were found to be less effective in everyday activities with poor tone. The M. rectus abdominus was weak in 77.0% of ice hockey players, 47.0% of both swimmers and basketball players. The shoulder blade stabilizing muscles were weak in 70.0% of swimmers and 42.0% of basketball players. This group of muscles was unchanged in ice hockey players.

Conclusions

1. Sagital postural profiles have been created of ice hockey players, swimmers and basketball players.

2. Each sport leads to postural changes in athletes due to specific functional changes in muscles. Ice hockey players have a characteristic forward pelvis tilt. Swimmers have characteristic forward rolling shoulders. Basketball players are “falling forward.”

It is believed that an imbalanced training load causes these postural changes.

References

1. Janda, V. (1994). *Manuelle muskelfunktion diagnostik*. Berlin, Ullstein, Mosbv,
2. Kendall, H. O., Kendall, F. P. (1982). *Muscles testing and function.* The Williams and Wilkins Company.
3. Васильева, Л.Ф. (1996). *Визуальная диагностика нарушений статики и динамики опорно-двигательного аппарата человека*.Иваново: МИК.
4. Town, G. P. (1985). *Science of Triathlon Training and Competition.* Champaign, Illinois: Human Kinetics.

PHYSICAL EDUCATION DISABLED PEOPLE AFTER STROKE INJURY ENROLLED IN DANCE MOVEMENT EDUCATION ACTIVITY

Alvydas Soraka[1], Albertas Skurvydas[2], Laima Sapežinskienė[3]
Klaipėda University[1], Lithuanian Academy of Physical Education[2], Kaunas University of Medicine[3], Lithuania

The aim of the work: to examine the possibilities of the disabled people's physical education using dance movement in their rehabilitation. *Study objectives* were to analyze *theoretical and practical* possibilities of disabled people's physical education using dance movement and to determine the impact of dance movement on physical, emotional and social state of the disabled.

Method and organization. In order to achieve the aim, the methods of scientific methodological literature analysis, testing of dance impact on independence and balance (using Barthel index and Tinetti scale), as well as data and mathematical statistical analysis were chosen. *The study was organized* into two stages. During *the first stage* (from June 2006 to June 2007), the questionnaire survey was conducted in non-hospital environment in various towns of Lithuania; in the second stage (from 24 September to 1 January 2008), testing and data analysis was performed in Palanga Rehabilitation Hospital and in *the Department of Neurorehabilitation in Rehabilitation Clinic of Kaunas University of Medicine*.

Results and discussion. In total, 434 respondents participated in the study, 350 of them had disability. It was determined that the participation of disabled people with spinal cord injury dependent on a wheelchair in experimental program of dance movement had impact on their physical state. Testing results revealed that dance movements: 1) increase the disabled independence from other people in every day life, since their independence increased by 56 per cent in group E and by 48 per cent in group K; 2) positively affect the balance of the disabled (it improved from 32.5 to 85.0 per cent in group E, and from 0 to 27.5 per cent in group K); more effectively and strongly influences the physical state of the disabled whose primary rates of balance (relation of medium intensity, ρ=–514, when $p<0.001$) and independence (relation of medium intensity, ρ=–0.623, when $p<0.001$) were worse at the beginning of the experiment and less time passed after the trauma. Having processed the data of the questionnaire survey, it was assessed that emotional state improved more for disabled women (54 per cent) than for disabled men (36 per cent) who participated in dance classes. It was ascertained that improvement in social state is already observed in the first dance classes (communication with group members 26.5 per cent) and it increases while the disabled are into expedient activity (28.6 per cent), i.e. when participating in performances, trips (in non-hospital environment).

Conclusion. With reference to scientific literature analysis and studies of various Lithuanian and foreign scientists, it was ascertained that dance movement classes as well as structured and unstructured dance methodologies adapted to the disabled improve physical state of disabled people even if they are after medulla injury and dependent on a wheelchair. The *hypothesis* that 'dance movement positively changes disabled person's physical, emotional and social state' was validated. The developed experimental dance education program is adequate and it is recommended to be applied to the disabled with spinal cord injury, dependent on a wheelchair while they still are in rehabilitation hospital.

References

1. Goodill, Sh.W. (2005). An Introduction to Medical Dance / Movement Therapy. Health Care in Motion. London: Jessica Kingsley Publishers.
2. Haisma, J.A. and others. (2007). *Physical fitness in people with a spinal cord injury: the association with complications and duration of rehabilitation*. / Clinical Rehabilitation, Vol. 21, No. 10, 2007, p. 932-940, DOI: 10.1177/0269215507079134; SAGE Publications.
3. Hill, K. (1976). Dance for physically disabled persons: a manual for teaching ballroom, square, and folk dances to users of wheelchairs and crutches.
4. Karoblis, G. (2003). Dance as Phenomena in the Context of Everydayness: modern ballroom dance. / Social Sciencies, Philosofy., VMU.
5. Skurvydas, A., Zuozienė, I.J., Stasiulis, A. (2007). Physical Activity and Health. LKKA.

THE INFLUENCE OF VISUAL FEEDBACK AND DIFFERENT PERCENTAGE MVC FORCE ON THE ACCURACY AND VARIABILITY OF CONTINUOUS ISOMETRIC CONTRACTIONS

Jūratė Stanislovaitienė, Albertas Skurvydas, Rasma Bartkutė, Edita Kavaliauskienė, Aleksas Stanislovaitis
Lithuanian Academy of Physical Education, Lithuania

It is observed that the accuracy of human movements depends on such factors as motor learning, human motor memory, muscle coordination, temporal and spatial awareness (Goodbody & Wolpert, 1998), complexity of movement, etc. (Shadmehr & Moussavi, 2000). Proper muscle force development is essential in human motor control. Movement performance likewise movement skills training are a constant correction of mistakes considering the information about movement (Todorov and Jordan, 2002).

The aim of this study was to determine the influence of visual feedback (VF) and different percentage MVC force on the accuracy and variability of continuous isometric contractions (IC).

Research methods and organisation. The subjects of the research were eight physically active males (n=8; age 20.0±1.5 yr, height 182.4±6.5 cm; weight 73.0±5.7 kg, BMI 22.0±1.7 kg/m^2 (Mean ± SD). The subjects had to perform continuous isometric contractions at 20%, 50% and 70% of their MVC force. Prior to testing, the subjects were introduced to the testing procedure, the subjects were checked to determine their dominant hand and their MVC. After three days of rest, the subjects took part in the main experiment where they had to perform two continuous IC with and without VF. Uninterrupted periods of IC lasted for 13 s, however, only the data from the last 10 s was used for the analysis since during the first 3 s the subjects were able to reach their MVC force and sustain it for the subsequent 10 s. The sequence of task performance for each subject was selected by randomly.

Results. The study shows that the absence of visual feedback (VF) and different percentage MVC force reduce the accuracy of continuous isometric contractions (IC). When the movement is performed with VF and last longer than 150 ms, proprioceptic information allows to make necessary corrections during the movement (Magill, 2007). When the movement is performed without VF, the number of feedback sources decrease and the so called “noise” of sensory feedback based on the motor command occurs reducing the accuracy in movement performance (Todorov & Jordan, 2002; van Beers et al., 2004). The study also shows that when a percentage of the IC force increases, the IC accuracy and variability decrease. During the increase of a percentage of the IC force, muscle electric activity increases. It was also determined that muscle electric activity does not depend on VF, i.e. muscle is activated by performing continuous IC both with and without VF.

References

1. Goodbody, SJ. & Wolpert, DM. (1998). Temporal and amplitude generalization in motor learning. Journal of Neurophysiology, 79, 1825—1838.
2. Magill R.A. (2007) Motor learning and control: concepts and applications. McGraw-Hill International edition.
3. Shadmehr, R. & Moussavi, ZM. (2000). Spatial generalization from learning dynamics of reaching movements. Journal of Neuroscience, 20, 7807—7815.
4. Todorov, E. & Jordan, M.I. (2002) Optimal feedback control as a theory of motor coordination. Nat. Neurosci., 5, 1226—1235.
5. Van Beers, R.J., Haggard, P. & Wolpert, D.M. (2004) The role of execution noise in movement variability. J. Neurophysiol., 91, 1050—1063.

THE CHARACTERISTICS OF REACTION TIMES AND MOVEMENT FREQUENCY IN SPRINTERS DURING THE TRAINING PROCESS

Jūratė Stanislovaitienė, Aleksas Stanislovaitis, Ričardas Reimaris, Edita Kavaliauskienė, Albertas Skurvydas
Lithuanian Academy of Physical Education, Lithuania

Reaction time depends on physical fatigue and the fatigue of central nervous system (CNS), therefore, this indicator can help to determine athlete's physical and mental condition (Bullok et.al., 1997). Physical exercises can improve athletes' reaction time, however, this improvement is not very notable since it depends considerably on the development of athletes' genotype adaptation (Rogers et al., 2003). Reaction time depends on whether a stimulus is familiar to an athlete and, if it is familiar or expected, athlete's reaction time will be better compared to an unfamiliar trigger (Schmit and Gordon, 1997; Brebner et al., 1980). Reaction time depends to a great extent on the "baggage" of experience obtained by an athlete in training (Skurvydas, 1998). Movement frequency test helps to determine the functional liability of musculo-nervous system and enables to compare the indices of work capacity and functional state: CNS mobility, asymmetry, fatigue and general work capacity.

The aim of the research is to analyse and compare the characteristics of reaction times and movement frequency in sprinters during their training process.

Research organisation. The subjects of the research were sprinters (n=15), who were tested in the preparatory, competitive and transition phases. Reaction times and movement frequency were determined with a device for reaction time measurement RA-1. The subjects were seated in a special chair. The chair was adjusted to the athletes' height so that the athletes would be able to sit with their knees a 90-degree angle. The subjects had to perform 10 movements with their right hand and 10 movements with their left hand in order to measure of their reaction time. They had to respond to the green light stimulus with their right hand and to the red light stimulus with their left hand as fast as possible. For the measurement of movement frequency, the subjects had to take a "stick" and during the 10s period they had to hit with it the surface of the device as many times as possible. The number of hits to the device was registered and calculated.

Research results. The study shows that sprinters' reaction time during different training periods (preparatory phase compared to competitive phase) improved ($p<0.01$). In competitive phase, when athletes' physical loads were reduced and athletes reached optimal level of their physical fitness, the mean reaction time of their right hand improved significantly and in the last test it reached the highest point (156.14±12.91 ms). Although sprinters' movement frequency slightly improved during different training phases, statistically significant difference was not evident ($p>0.05$). In the first test, movement frequency was 89.25±13.71 times, while at the end of competitive phase it was 95.71±10.69 times. This observation supports the claim that movement frequency decreases with the increase of athlete's physical load.

References

1. Bullok J., Boyle J., Wang M.B. (1997). Physiology. Wroclaw: Wyd. Medycine
2. Rogers M. W., Johnson M. E., Martinez K. M., Mille M.L., Hedman L. D. (2003). Step training improves the speed of voluntary step initiation in aging. The Journals of Gerontology, Series A 58(1), 46-52.
3. Schmit R.A., & Gordon G.B. (1997). Errors in motor responding, rapid corrections and false anticipations. Journal of Motor Behaviour, 9, 101-111.
4. Brebner T.J., & Welford A.T (1980). Introduction: an historical background sketch. In A. T. Welford (Ed.), Reaction Times. Academic Press, New York, pp. 1-23.
5. Skurvydas A. (1998). Judesių valdymo ir sporto fiziologijos konspektai. Kaunas: LKKI.

THE EFFECT OF MODERATE-INTENSITY AEROBIC PHYSICAL LOAD ON THE BODY TEMPERATURE AND RUNNING RESULTS IN PHYSICALLY INACTIVE PERSONS

Aleksas Stanislovaitis, Jūratė Stanislovaitienė, Vaidas Verbickas, Edita Kavaliauskienė, Albertas Skurvydas
Lithuanian Academy of Physical Education, Lithuania

Direct heating of body limbs can have a strong effect on muscle force and strength during isokinetic exercises (Ball et. al., 1999; Ramanauskienė, 2006). A range of different studies have been carried out related to muscle heating and the analysis of muscle force, velocity and power increasing muscle temperature passively: heating body limbs and/or applying electrostimulation in laboratory but not in specific conditions. **The aim of the study** is to determine the effect of moderate-intensity aerobic physical load on the body temperature and running results in physically inactive persons.

Research organisation. The subjects were healthy physically inactive males aged 20—23 (height 181.7±6.2 cm; weight 71.7±8.6 kg, n=15). The test lasted for two days in a 17—18°C temperature environment. On the first test day, before testing, the body temperature was measured placing a mercury thermometer in the armpit for 5 minutes (Dollberg et. al., 2003). Before performing the test, the subjects did stretching exercises without warm up. The start line was curved 70 cm before the line, indicating the beginning of 10 m distance. The take-off foot was placed before the start line, while the trail leg was behind it (1—2 feet). The subjects started to run independently, i.e. without the starter's command. The subjects ran the distance at maximum efforts as fast as possible with run time recorded (Mamkus et. al., 2004). After one such run race immediately 1 km run followed (the distance had to be covered in 5 min.). After the running the subjects had a 1 min. active rest and ran 10 m from a standing static position. The described activities were repeated 3 times. The body temperature was measured and one additional 10 m run from a standing static position was performed immediately after the last run and then after 20 min. On the second test day, the beginning phase of the test was the same as on the first day, however, this time the subjects ran 10 m from a standing static position 3 times in a sequence with 5 min rest between the trials. The body temperature was measured immediately after the last run.

Results. The study carried out on the first day showed that after 1 km run (covered in 5 min), the 10 m run mean velocity increased significantly ($p<0.05$), comparing it with the result before 1 km run. The 10 m run mean velocity increased from 5.54 to 5.76 m/s. The subjects' results also increased significantly after the second 1 km run (covered in 5 min.), i.e. 10 m run increased significantly ($p<0.05$) to 5.83 m/s. However, after 20 min. from physical load when the subjects had passive rest, the velocity in the 10 m run decreased to 5.55 m/s, although it was not statistically significant ($p>0.05$). The change in the body temperature was statistically significant ($p<0.05$), increasing from 36.7°C to 37.2°C immediately after the run. After 20 min. from the load the body temperature returned to normal (36.8°C).

References

1. Ball, D., Burrows, C., Sargeant, A. J. (1999). Human power output during repeated sprint cycle exercise: the influence of thermal stress. European Journal of Applied Physiology, 79, 360-366.
2. Dollberg, S., Mincis, L., Mimouni, F., B., Ashbel, G., Barak, M. (2003). Evaluation of a new thermometer for rapid axillary temperature measurment in preterm infants. Am. J. Perinatol. 20(4), 201-4.
3. Mamkus, G., Stanislovaitis, A., Skurvydas, A., Streckis, V. (2004). Sportininkų greitumo ir galingumo testavimas. Treneris. 1, 43-52.
4. Ramanauskienė, I., Skurvydas, A., Brazaitis, M., Mickevičienė, D., Daniusevičiūtė, L., Dubosas, M., Masiulis, N. (2006). Šildymo poveikis kelio tiesiamųjų ir lenkiamųjų raumenų nuovargiui ir atsigavimui. Ugdymas. Kūno kultūra. Sportas. 1 (60), 48-55.

SPECIFICITY OF GAS EEXCHANGE RESPONSES DURING INCREASING CYCLE AND ARM ERGOMETRY TESTS IN CYCLISTS AND KAYAKERS

Arvydas Stasiulis, Inga Pravdinskienė
Lithuanian Academy or Physical Education, Lithuania

The **aim** of this study was to determine the specificity of gas exchange responses during increasing cycling and arm cranking exercises in cyclists and kayakers.

Methods. Well-trained cyclists (n=7) and kayakers (n=7) participated as subjects in this study. On different days each subject performed increasing (IE) cycling and arm cranking exercises. Pulmonary gas exchange was continuously recorded using portable gas analyser "Oxycon Mobile" (Jaeger, Germany). Maximal and sub-maximal parameters of aerobic capacity were determined. Blood lactate concentration was also measured at 5th and 20 min after IE.

Results. During cycle ergometry relative VO_{2max} (p=0.043), first and second ventilatory thresholds (p=0.002), peak power (p=0.001), maximal heart rate (HR) (p=0.022) and HR at second ventilatory threshold (p=0.022) were significantly higher in well-trained cyclists group. On the contrary, during arm ergometry absolute VO_2 max (p=0.004), second ventilatory theshold (p=0.01) and peak test power (p=0.002) were significantly higher in well-trained kayakers.

Conclusion. The specificity of long-term adaptation to cycling and kayaking training loads is more expressed in power related aerobic capacity parameters when increasing cycling and arm cranking tests data are compared.

EFFECT OF PRIOR ECCENTRIC EXERCISE ON THE VO_2 KINETICS DURING HEAVY CYCLING EXERCISE IN MALE BASKETBALL PLAYERS

Arvydas Stasiulis, Kristina Jonaitytė, Loreta Dubininkaitė
Lithuanian Academy of Physical Education, Lithuania

Introduction

The oxygen uptake (VO_2) kinetics may vary with work rate (WR) or under different conditions of exercise e.g. prior exercise (Tschakovsky, Hughson, 1999). One hundred drop jumps performed at maximal intensity every 20 s have been shown to cause the increase oxygen costs of ergometer cycling exercise in moderately trained students (Ratkevicius et al., 2006). The aim of this study was to examine the influence of prior drops without jumps on VO_2 kinetics during heavy cycling exercise in male basketball players.

Methods

Eight male basketball players of national level (age 19.5±0.53 yr, height 191.0±5.8 cm, and weight 86.5±9.78 kg) volunteered to participate in this study. Subjects completed four protocols on separate days. During the first day they performed continuous increasing cycling exercise (ICE). In the second examination the subjects performed constant cycling exercise (CCE) with which consisted of 3 min unloaded cycling, 9 min cycling with intensity in the middle between maximal oxygen uptake (VO_2peak) and first ventilatory threshold (79.5±2.5% of VO_2max) and 3 min of unloaded cycling. In the third examination the subjects performed one hundred drops from 0.47 m height with eccentric contractions of thigh muscles at the end every 20 s (D), rested passively for one hour and then performed CCE. Following 24 hours the fourth examination was performed using the same protocol as in the second one. Testing was performed on mechanically braked cycle ergometer (Monark 834E) while cycling at 70 rpm. At the end of each 9 min CCE, a blood sample was collected from the finger tip for immediate analysis of blood lactate concentration ([lactate]). Rating of perceived exertion was evaluated by the subject at the end of each CCE, and muscle pain was assessed on the next day after eccentric exercise. Pulmonary gas exchange was measured breath-by-breath throughout all tests. VO_2peak was determined as the highest value in 15 s period before the subjects' volitional termination of the ICE. The VO_2 response during exercise and recovery periods of CCE was fitted the bi-exponential function. The first 20 s were always removed from the analysis. In addition the slow component was calculated as the difference between the end exercise VO_2 and the 3rd min VO_2.

Results

Prior eccentric exercise had no effect on time constants of VO_2 response during on- and off-transitions during CCE. The VO_2 values at the 3rd, 6th and 9th min of CCE did not change significantly during all examinations. The rating of perceived exertion was slightly but not significantly elevated at the end of CCE one hour and 24 hours after eccentric exercise. The subjects felt moderate muscle pain (4.0±2.9) 24 hours after eccentric exercise.

Discussion/Conclusion

The prior eccentric exercise did not cause any change of VO_2 kinetics during heavy CCE in male basketball players despite augmented efforts and muscle pain. This may be associated with adaptation of basketball players to such kind of activities which are often involved in their training process.

References

1. Ratkevicius A., Stasiulis A., Dubininkaite L., Skurvydas A. (2002). Muscle fatigue increases metabolic costs of ergometer cycling without changing VO2 slow component, Journal of sports science and Medicine, 5(3), 440-448.
2. Tschakovsky, M. E., Hughson, R. L. (1999). Interaction of factors determining oxygen uptake at the onset of exercise. J. Appl. Physiol. 86(4), 1101—1113.

ANTHROPOMETRICS INDICATORS ANALYSIS OF MEN AND WOMEN SWIMMERS AT THE BEIJING OLYMPIC GAMES

Birutė Statkevičienė
Lithuanian Academy of Physical Education, Lithuania

For many years scientists have been discussing if the elite swimmers' swimming different distances anthropometric indicators differ among themselves depending on the distance they compete in the world's major competition events.

Research Objective. To determine if Beijing Olympic swimmers' anthropometrics indicators differ depending on their swimming distance events.

Research Methods. Anthropometry, mathematical statistics

Research Organization. Research took place in 2008 at the end of Beijing Olympic Games swimming events. Anthropometrics indicators were compiled for freestyle men and women swimmers participating in finals of the Beijing Olympic Games at different distance events. Data arithmetic averages, averages' standard deviation, averages' difference reliability were calculated using T test p indicator. Men's and women's swimmers' anthropometrics indicators average heights, weights, BMI, body surface area, start reaction times, athletes' ages were compared. The obtained data was compared among the swimmers subject to the distances in which they competed.

Obtained Data. From received data we noticed that the different free style distances women swimmers had different anthropometrics indicators. The largest anthropometrics indicators belong to women swimming the 50 m free style distance. They were the oldest, tallest as compared to swimmers in the first time Olympic Games distance of 10 km. There was no significant in averages of athletes' body weight depending on the distance in which they took part. The same tendency was observed for men swimming the 50 m and the 10 km distances. Regardless of the above, all men and women swimmers are attributed to tall and very tall category of athletes.

Conclusion. The swimming finalists at the Beijing Olympic Games differed in their anthropometrics indicators' averages depending on the swim distance during the competition. The largest swimmers competed in the 50 m free style events, while the smallest competed in the 10 km distance. The same tendency was observed for men and women.

COMPARATIVE ANALYSIS OF START REACTION TIMES BY TOP SWIMMERS IN WORLD CLASS COMPETITION

Birutė Statkevičienė
Lithuanian Academy of Physical Education, Lithuania

Research Objective. To determine if the start reaction times by the world's top swimmers (men and women) changed during world's most significant competitions.

Tasks. 1. To determine any changes in start reaction times by top men and women swimmers at various distances during the Beijing Olympics, Athens Olympics and 2007 World Swimming Championships. 2. To determine if start reaction times changed depending on the swim events' distances. 3. To determine if there is a differences in start reaction times between individual swimmers (men and women).

Research methods. Analysis of official results data and mathematical statistics.

Research organization. Research took place during years 2004—2008. Research subjects were world's best swimmers who participated in the 2004 year and the 2008 Olympic Games and 2007 World Championships in Montreal. The athletes were divided by gender and swim events' distances in which they participated. Research data were taken from the international data base of the Olympic Games' and World Championship's official results register. Research was performed on free style swimmers' start reaction times taken from the 2004 and the 2008 Olympic Games and 2007 World Championships in Montreal. Obtained data averages and standard deviation were calculated, and the averages' difference reliability was determined with the assistance of T test and p indicator.

Obtained Data. Data shows that start reaction times for both men and women differ subject to the distance of the swim event. The best reaction times were established by swimmers in the 50 m free style. There is an observed tendency that as the distance increases, so does the swimmers' start reaction times. It also appears that start reaction times are better for the very top swimmers: start reaction times are better in the finals as compared to semi-finals for all distances.

Regardless of which Olympic Games or World Championships the swimmers participated, their start reaction times averages differences is not significant. This was observed for men as well as women.

It was observed that the top men's reaction times in many cases were better than women's.

Conclusion. The World's top swimmers' start reaction times change subject to the swim events' distances. Start reaction times differences between Athens Olympic Games Beijing Olympic Games and the World Championships in Montreal were not significant. It was observed that in many case men has a faster start reaction time than women.

WHAT MAKES THE WORLD'S BEST SWIMMERS OF THE PAST 50 YEARS?

Birutė Statkevičienė, Oksana Grišina
Lithuanian Academy of Physical Education, Lithuania

As analysis is made of the various athletic achievements, of particular importance are the athletes' anthropometrical indicators. They are important in all branches of athletics because each branch requires a specific body type to the particular athletics venue. In particular, anthropometric indicators are very important to swimming because the body type and form dictate good streamlining and less water resistance while swimming.

Objective. To analyze the anthropometrical indicators of the top men and women swimmers in the world of the past 50 years and to determine under which Zodiac sign they were born.

Tasks. To determine the anthropometrical indicators of the world's best swimmers subject to the countries they represented at. Determine under which Zodiac sign they were born.

Research methods Literature sources' analysis, anthropometrics and mathematical statistics methods

Research organization. Research took place during December, 2007 through February, 2008. Anthropometrical indicator data for the various national swimmers was found on the internet. We analyzed their body height and weight indicators, calculated their body mass index, body surface area and determined under which Zodiac sign they were born. Statistical methodology was applied to the obtained data. We calculated indicators' averages, squared deviation, averages difference reliability was determined according to T test p indicator. We summarized the obtained data.

Obtained data and their analysis. The world's best swimmers of the past 50 years average 173.6±6.5 cm, average weight is 62.6±5.6 kg, body mass average 20.8±1.6, body surface area average 1.79 m^2. The beast men swimmers average 188.7±9.3 cm, average weight 81.0±10.4 kg, body mass average 21.54±1.7, body surface area average 2.09 m^2. It appears that among men and women swimmers the dominant Zodiac sign is Aquarius. Significant anthropometric indicator differences were noted among the various representative members of their nations subject to their country of origin in the major swim events of the world. The tallest women were from Russia while the tallest men were from the USA. The world's best swimmers were born under various Zodiac signs but there appears a higher frequency in Aquarius.

Conclusions. The obtained data contributes to the world's best swimmers anthropological indicator scientific data base because up to now there has not been any data regarding the swimming athletes' Zodiac signs and the differences in the anthropological indicators subject to the country which they represented.

HIGH RATE OF EXERCISE ADDICTION AMONG HUNGARIAN UNIVERSITY STUDENTS: SYMPTOMS OF DYSFUNCTION OR ALTERED CULTURAL INTERPRETATION?

Attila Szabo, L. Balogh, Z. Gáspár, Julia Bösze, M. Váczi
Eötvös Loránd University of Science, Budapest, Hungary

The beneficial effects of physical activity on both mind and body are known facts in the scientific literature. However, there are cases when individuals overtrain and devote most of their attention to their physical activity or sport. For these people training becomes the central and most important object of concern in their lives. Such behaviors and attitudes may lead not only to injury (and the overlooking/ignorance of injury) but also to personal and social problems. To mention a few, over-devotion to training may adversely affect spousal relationships, it may hinder the completion of tasks at work or in school, and it may even lead to social isolation. When athletes or recreational exercisers exhibit such obsessive and compulsive exercise patterns, the behavior is referred to as *exercise addiction* or *exercise dependence* in the sport and clinical literature (Szabo, 2000).

The incidence of exercise addiction is very rare, possibly accounting for about 3% of the exercising population. However, Szabo and Griffiths (2007) found that the rate of exercise addiction in British sport science university students — based on results gathered with the *Exercise Addiction Inventory* (EAI — Terry, Szabo, & Griffiths, 2004) — was nearly twice as high as in the average exercising population. Consequently, those involved on a daily bases in both theoretical and practical aspects of sports may be the prime candidates for the dysfunction that, like other behavioral addictions, could have severe detrimental effects on the person's life.

Following up on the findings of Szabo and Griffiths, in the current study we examined the rate of exercise addiction in 128 Hungarian sport sciences and recreational science students of whom 74 were males and 54 were females and all were studying at a large university. The instrument we used was a translated version of the six symptom-assessing EAI. The results were alarming since 16% of the current sample scored in the exercise addicted range of the EAI. This figure is nearly 2.5 times greater than that reported by Szabo and Griffiths in 2007. To further scrutinize the data, we have grouped the participants according to individual or team sport participation and compared the mean scores of the two groups. Team sport participants scored higher on EAI than those taking part in individual sports ($p>.03$). However, the effect size (Cohen's *d*) was moderate only (.39).

Given that exercise addiction is not normally diagnosed in team sport participants (Szabo, 2000), the findings suggest that the semantics describing the six symptoms of exercise addiction — on which the surface diagnosis or proneness is based — may convey culture-specific sporting values that translate in the exaggerated ratings. This could be the most plausible explanation for the current findings, because a 16% rate is highly unlikely especially in a nation in which exercise addiction was not scientifically investigated and it is almost unknown to most health professionals.

References

1. Szabo, A. (2000). Physical activity as a source of psychological dysfunction. In Biddle S.J.H., Fox, K.R., & Boutcher, S.H. (Eds.). *Physical activity and psychological well-being* (pp. 130-153). London: Routledge.
2. Szabo, A & Griffiths, M.D. (2007). Exercise addiction in British sport science students. *International Journal of Mental Health and Addiction*, 5(1), 25-28.
3. Terry, A., Szabo, A. & Griffiths, M.D. (2004). The Exercise Addiction Inventory: A new brief screening tool. *Addiction Research and Theory,* 12, 489-499.

TRAINING TO MUSIC IN HUNGARIAN RECREATIONAL BASKETBALL TEAMS

Attila Szabo, Zoltan Gaspar, Laszlo Balogh, Mark Vaczi, Julia Bösze, Endre Kelemen
Eötvös Loránd University of Science, Budapest, Hungary

The movement enhancing properties of music is consensual knowledge in the scholastic literature. To date the benefits of music have been studied primarily in individual aerobic activities dictating a steady movement pace. Exception was the study reported by Szabo and Hoban (2004) in which the authors examined a volleyball team playing at the British national level. The athletes were studied under three conditions: no music / control, slow music, and fast music. The authors found that music reduced perception of fatigue and that fast music was preferred over slow music.

In the current study we have adopted the methodology used by Szabo and Hoban (2004). Twenty-eight participants from three basketball teams (17 males and 11 females; mean age = 20.6 years) were tested three times: control, no music session, slow classical music session, and fast classical music session. The tempo in the fast music session was approximately twice the tempo of the music played during the slow music session. The three sessions were counterbalanced to account for order effects. Four measures of affect (positive engagement, revitalization, tranquility and exhaustion) were obtained before and after each session and rated perceived effort was taken in the 40^{th} minute of the training along with manually measured pulse rate. The participants also rated the preference for the two - novel - music training sessions in contrast to the usual no-music training session.

The results indicated that there were no statistically significant differences in perceived effort and heart rate during the three training sessions. However, tranquility decreased during training that was accompanied by fast music, while no differences were seen between the control and the slow music training sessions. The preference for the sessions with music varied in an almost equal proportion. For example, 32% of the participants thought that training accompanied by fast music was better than training without music, 32% thought that it was the same, an 36% found it distractive or worse than training in the traditional way. The proportions in training preference were about the same in the slow music training session. For example 39% of the participants thought that it was better to train with slow music in the background, 32% thought it was the same as without music, and 29% thought it was worse than training without music.

The current results do not replicate the findings reported by Szabo and Hoban (2004) in volleyball. There are three possibe explanations for such findings. First, the movement dynamics in basketball are different from that in volleyball and, hence, the effects of music may be less synchronous or at times may be disruptive. Second, even though the type of music was similar to that used by Szabo and Hoban, in the latter work the music contained lyrics that could have influenced — independently of tempo — the appraisal of the physical effort. Finally, Hungarian *recreational* basketball players may have reacted differently to the music than the British *competitive* athletes. Cultural differences in music appreciation are also commonly reported in the literature. Complementing the work of Szabo and Hoban, the current research shows that individual preferences vary and that while about one third of the players thought that it was better to train with music in the background another third thought that it was worse. The take home message of this inquiry is that using music in team training may be distruptive. Further, music selection is a hard task due to personal preferences.

References

Szabo, A. & Hoban, L. (2004). Psychological Effects of Fast-and Slow-Tempo Music Played during Volleyball Training in a National League Team. *International Journal of Applied Sports Sciences*, 16(2), 39-48.

THE INFLUENCE OF PHYSIOTHERAPY ON HEALTH-RELATED QUALITY OF LIFE IN WOMEN WITH DEPRESSION

Rasa Šakalienė, Vilma Juožbalienė, Lina Lukošiūtė
Lithuanian Academy of Physical Education, Lithuania

Introduction. Depressive disorders are common illnesses associated with long duration of episodes, high rates of chronicity, relapse, and recurrence [1]. Physical activity is increasingly being cited as an alternative to more traditional drug treatments for treating depression [2].

The aim of this study was to evaluate the influence of physiotherapy on emotional state and the health related quality of life in women with depression.

Methods. 32 women (age 30—59 yr), having moderate (F32) and severe (F33) depression, have participated in the research. All subjects got medications and underwent psychotherapy. The subjects were divided into two groups: the experimental group - 16 patients (age 44.9±2.3 yr), for whom beside medication and psychotherapy, the 3 weeks duration physiotherapy program was additionally applied, and the control group was made of 16 patients (age 43.4±2.6 yr), for whom the physiotherapy was not applied. Physiotherapy program consisted of 40 minutes of vigorous and moderate intensity aerobic exercises 3 times a week and 40 minutes of low intensity muscle strengthening exercises with dumbbells, muscle stretching, relaxation breathing exercises twice a week. The type of exercises was changed every second day. At the beginning and at the end of the research subjects completed Hospital Anxiety and Depression Scale (HAD) [3]. The health-related quality of life was assessed using the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) — a self-administered questionnaire in which lower scores are indicative of greater impairment [4].

Results. After 3 weeks of treatment the anxiety and depression have significantly decreased in both groups (anxiety by 7.0±0.3 in the experimental group and 4.9±0.2 points in controls; depression by 7.6±0.1 and 4.5±0.3 point respectively). The health-related quality of life in women of the experimental group has significantly improved in all domains. The quality of life of the controls has significantly improved in almost all domains, except role limitations due to physical and emotional problems. The comparison of the results between groups showed that the symptoms of anxiety and depression in women for whom the physiotherapy was applied have decreased, and the quality of life have improved significantly more ($p<0.05$) than for patients, who were treated by medication and psychotherapy only.

Conclusion. Physiotherapy — 40 min. 5 times a week performed program of exercises — is effective in decreasing symptoms of depression and anxiety, and improving the quality of life in women with depression.

References

1. Ayuso-Mateos JL. et al. *British Journal of Psychiatry* 2001, 179:308-316.
2. Brosse AL et al. *Sports Medicine* 2002, 32(12):741-760.
3. Zigmond AS, Snaith RP. *Acta Psychiatr Scand* 1983, 67:361-370.
4. Ware JE, Kosinski M. *SF-36 Physical and Mental Health Summary Scales: A Manual for Users of Version 1* Second edition. Lincoln, RI: QualityMetric Incorporated; 2001.

ANALYSIS OF THE YOUNG TEENAGERS NON-FORMAL PHYSICAL EDUCATION IN SCHOOL

Asta Šarkauskienė
University of Klaipėda, Lithuania

Purpose of non-formal education is to prepare a child for successful life in the dynamic and constantly changing society, to nurture personal power, social activeness in order to become full-blooded creative person (Jankauskas, 2008, Clarijs, 2008). Though the majority of non-formal education programs could be regarded as useful and well effective nevertheless anxiety arises concerning content, structure and benefit of some of the programs.

Objectives — to perform analysis of non-formal physical education in school.

Methods: 1. Scientific literature analysis. 2. Questionnaires. 3. Statistical analysis.

Research was carried out in the month of May, 2007. Six schools providing general education situated in different regions of Lithuania and in towns different in size (Vilnius, Klaipėda, Alytus, Šilutė, Gargždai) took part in it. 672 students attending 5 and 6 forms were polled using method of anonymous questionnaires.

One of the main goals of this research was to ascertain what activities and what directions prevail in non-formal physical education (NPE) in school. ¾ (73.2%) of the young teenagers mentioned that they prepare for the competitions at the daily after school sport activities: they are being trained to perform various tasks accurately and correctly, 31.5% — learn to play basketball, volley-ball and other games, only 10.0% says that they play various games and have good time. These results affirm proposition of scientists and non-formal education (NE) specialists (Blauzdys, Šinkūnienė, 2005; Širiakovienė, 2005; Blauzdys, Bagdonienė, 2007, Jankauskas, 2008) that NE in general education schools is still aimed to achieving high results and victories in the competitions. The whole decade necessity of changes in non-formal physical education is being accentuated but the reforms are still on the theory level (Jankauskas, 2008).

Lithuania's non-formal children's education concept (2005; clause 7.4) reads that "schools providing general education offer equal opportunities to all children and youngsters for one of the forms of non-formal children's education i.e. after school education". This research had to clarify whether the principle of accessibility is ensured in this field. Though a vast majority (82.6%) mentioned that all the school students could participate in NPE acitivities, but 17.4% maintained that only the best could go in for it.

We tried to determine what is necessary to encourage teenagers to participate in non-formal physical education. 54.9% specified that they need more interesting activities, 18.7% mentioned that it was very important not to be mocked by the others engaged in sports and 15.1% required very good teacher or coach. 13.1% said they were not participating and would not participate without stating a reason.

This research revealed that NPE in school did not meet conceptual requirements of NE. Not all principles listed in non-formal children's education concepts (2005) were followed:

- *Democracy*: almost half of the responders (43.1%) mentioned that their NE needs had not been identified in the general education schools.
- *Topicality*: it is impossible to secure principle of topicality without disclosing needs of the students.
- *Accesibility:* 17.4% of the young teenagers maintained that only the best students can participate in the school NPE activities.
- *Voluntaring*: one tenth (10.5%) of 5—6 form students participate in the NPE activities because they were ordered by the coach.

Conclusion. Very small part of young teenagers participate in non-formal physical education because this kind of activity does not correspond to the needs of the children and to the requirements of NE.

References

1. Blauzdys, V., Bagdonienė, L. (2007). *Mokinių teigiamo požiūrio į kūno kultūrą kaip mokymosi dalyką ugdymas, didinant jos prasmingumą.* Vilnius: VPU leidykla.
2. Blauzdys, V., Šinkūnienė, D. (2005). *Mokinių papildomo fizinio ugdymo plėtra mokykloje*. Vilnius: VPU.
3. Clarijs, R. (2008). Unlimited talents and non — formal education. Netherlands: Hilvarenbeek.
4. *Dėl neformaliojo vaikų švietimo koncepcijos patvirtinimo. Nr. ISAK-2695* (2005). [žiūrėta: 2006-01-05]. Prieiga internetu: http://www.smm.lt/teisine_baze/isakymai.htm.
5. Jankauskas, V. (2008). Ar prieinamas neformalusis švietimas Lietuvoje? *Švietimo naujienos*, 5 (266), 9.

PECULIARITIES OF SPORTING JUVENILES' SOCIAL COMPETENCE: VALUE ORIENTATIONS AS A FACTOR INFLUENCING SOCIAL ABILITY

Dovilė Šertvytienė, Skaistė Laskienė
Lithuanian Academy of Physical Education, Lithuania

Aim is to find and estimate juveniles' value orientations as a factor influencing social ability by activity and gender aspects.

Research methodology and organization. Methods: 1) questionnaire interview; 2) mathematical analysis. Respondents' value orientations and peculiarities of social ability were identified by the method of questionnaire interview.

Pupils of two Kaunas secondary education schools took part in the research: 13—15-year-old girls and boys. Total 400: 186 girls and 214 boys.

Research results and their consideration. The fourth factor (ability to ask for favour) is significant ($p=0.035$; $p<0.05$) depending on gender. After analysis of the results of the research related to F4 factor (ability to ask for favour), which lets to evaluate respondent's ability to contact with known and not-familiar people, it can be stated that the answers to the propositions of this factor the great difference by gender aspect was as follows: two thirds of sporting girls (71.1 per cent) and above the half (52.6 per cent) of sporting boys state that they have a feeling of burdening people by asking for information. The positive valuations to the propositions of this factor are more common for girls than boys. Evaluating the thirty-eighth proposition boys only feel more frequently than girls embarrassed when others offer any help.

Analysing results of the research related to F5 factor by the activity factor, the greatest difference between the answers to propositions of this factor was observed: when there are differences of opinions sporting juveniles yield a point rare then not-sporting (77.2 per cent). Positive evaluations to propositions of this factor are more common for not-sporting respondents. Only evaluating answers of both respondent groups, both sporting and not-sporting juveniles often suppress own anger and yield a point than start arguing practically equally.

In the context of value orientation after the research results were analysed, we found that orientation to communication differ by the activity aspect very much: not-sporting boys are much more minded to communicate with sporting boys. The expression results' difference of sporting and not-sporting boys' orientation to communication is significant statistically $p<0.02$. By gender aspect not-sporting boys are more minded to communicate than not-sporting girls, the result differences are significant statistically $p\leq0.05$. Gained data shows that sport has no big influence on expression of juveniles' orientation to oneself. By the research of activity aspect it was found that average of statistically significant results among sporting boys and sporting girls is ($p<0.013$), and among not-sporting boys and not-sporting girls is ($p<0.008$). Orientation to activities is incident to sporting teenagers. The result differences between these groups are statistically irrelevant $p>0.25$. Difference of average of answers results is statistically significant $p<0.02$ among sporting and not-sporting girls and not-sporting boys and girls $p<0.01$.

Conclusions. By gender aspect F4 is scientifically different (ability to ask for favour): it is much easier to ask for favour for sporting girls. Activity aspect scientifically influenced display of compliance. Given dissent, sporting juveniles much rarer submit first than not-sporting.

Different value orientations dominate among sporting and not-sporting teenagers: directional orientation to communication is more typical for sporting girls and not-sporting boys; directional orientation to activity is often characteristic for sporting girls and boys; direction orientation to oneself is typical for not-sporting girls and boys.

References

Lekavičienė R. (2004). Socialinės kompetencijos kriterijų problema: studentų socialinių įgūdžių ir socialinio prioriteto santykio tyrimas. *Ugdymas. Kūno kultūra. Sportas,* 1, 30-36.

Lekavičienė R. (2001). *Socialinės kompetencijos psichologiniai kriterijai ir vertinimai*. Kaunas: Vytautas Magnus University.

Šertvytienė D., Laskienė S. (2008). Sportuojančių paauglių asmenybės kryptingumo raiška. *Kūno kultūra ir sportas universitete-2008. Proceedings of the International conference,* 96-97.

MONITORING OF CARDIOVASCULAR AND PHYSICAL ACTIVITY CHANGES DURING WALLKING AND RUNNING TASKS

Viktoras Šilinskas, Edita Grigelionytė, Jonas Poderys, Rimtautas Ruseckas
Lithuanian Academy of Physical Education[1], Institute of Cardiology of Kaunas University of Medicine[2], Lithuania

An increasing interest for application of information technologies in sports training has noticed (Shultz et al., 2002; Glaros et al., 2002). **The general purpose of this study** was to test the new developed system "Heart Guard" designed for monitoring of cardiovascular and physical activity changes and to compare the results of monitoring of heart rate (HR) and physical activity (PA) during the walking and running tasks.

A new ECG system consisting of five electrodes and three ECG leads has been registered. Tri-axial accelerometers placed within the device attached on the chest as to measure the sum of integrated acceleration curves from the anteroposterior, mediolateral and vertical directions of the trunk. The integration period was set at 10 s and the final output was expressed as dynamics of integrated PA level. Participants of the study was 14 students and they performed 400 m walking and running bouts at speed of 7, 8, 9, and 10 km/h. Relative power (W/kg) and HR was monitored.

The results obtained during the study showed that the type of locomotors task has an influence on assessment of mobilization of cardiovascular system during the walking and running as well. The type of activity constitutes important information in itself and it was evident from the data obtained during the comparison of values of relative power assessed by accelerometers during the various locomotors task. In the present study, it is confirmed that the amplitude of the body's accelerometer signal is related mostly to vertical swings at each step, walking and running as well. The present investigation also confirmed the large inter-individual variation of acceleration while performing the same exercise.

Heart rate is one of the indices allowing making more precise in assessment intensity of PA and energy expenditure why a combined heart rate and motion sensors are used (Thompson *et al.,* 2006). The data obtained during the study showed that assessments by accelerometers overestimated intensity of PA during short-step walking and running, and underestimated it during performance the same locomotion by long-step. Monitoring of cardiovascular changes during the performance of training tasks and during others daily activities would provide more detailed information concerning the dynamics of cardiovascular changes. Results allowed to **conclude** that for more detailed analysis of performed physical activity both relative power and changes in HR must be taken into account. Accelerometers can overestimate level of physical activity. Walking at low speed is more economic than running and when the speed exceed 9 km/h running became more economic locomotion.

References

1. Glaros C., Fotiadis D.I., Likas A., Stafylopatis A. (2002). A wearable platform for the monitoring of the athlete's health condition and performance; in *Proc of the International Federation for Medical and Biological Engineering, EMBEC'02*, Vienna, Austria, Dec 4-8, 2002, 3(1), 348-349.
2. Schutz Y, Weinsier S, Terrier P, Durrer D (2002). A new accelerometric method to assess the daily walking practice. *International Journal of Obesity 26(1), 111-118.*
3. Thompson D., Batterham A.M., Bock S., Stoke C. R., Stoke K. (2006). Methodology and Mathematical Modeling. Assessment of Low-to-Moderate Intensity Physical Activity Thermogenesis in Young Adults Using Synchronized Heart Rate and Accelerometry with Branched-Equation Modeling*J. Nutr*. 136, 1037-1042.

INFLUENCE OF ELECTRICAL STIMULATION ON MUSCULAR STRENGTH AND THE SPEED OF THE RUNNING

Viktoras Šilinskas, Albinas Grūnovas, Arūnas Baltrušaitis
Lithuanian Academy of Physical Education, Lithuania

Various means are used for the development of strength. One of such means is a threshold electrical stimulation (Brocherie et al., 2005). Force of electrical irritation and time of reduction and relaxation is an important factor for effects of muscular adaptation. For increase of muscular strength often is accepted the mode of super threshold electrical stimulation, which can be even to a pain (Alon et al., 1999). To hipodynamic patients and unexercised persons applying of electrical stimulation of low intensity impacts an increase of the muscular strength, even a maximal voluntary contraction (Valli et al., 2002).

The aim of the study was to assess the influence of electrical stimulation on strength development of muscles (*flexors of the foot*) and on the maximal running speed.

Materials and methods. The study subjects were 7 healthy adult physically active men (*21±1.0 years and the body mass was 75±1.0 kg.*) who did not participate in any sports activity programs. All participants of the study were acquainted with process of research. Assessment of the muscular strength, blood flow and oxygen saturation (StO_2) was performed before course of electrical muscle stimulation procedures (EMS) and after it. Before the assessments participant sited still during 20 minutes for adaptation. Intensity of blood flow in the calf muscles was measured by venous occlusion plethysmography and StO_2 — by near-infrared spectroscopy. After recording of blood flow and StO_2, the maximal voluntary contraction of foot flexion was measured by dynamometry. Afterward were registered 10 metres run from start and 10 metres flying run time after the 20 minutes warm-up (*5 minutes slow run, 15 minutes stretching and intensive run of 10, 20 meters).* EMS of calves and foot muscles was performed at each second day, total — 10 trainings sessions was fulfilled. Duration of training was 10 minutes with a mode of 10 seconds contraction and 50 seconds rest. During each training session, 10 contractions were completed. After 10 trainings on EMS, the same parameters of blood circulation, StO_2 and functional parameters of muscles were registered.

Results and discussion. Before EMS training session the time of 10 meters run from start was 1.72±0.03 s and in 10 meters of flying run — 1.17±0.035 s. The improvement in running speed was an evidence of positive effects of applying of 10 sessions of EMS. The run time decrease to 1.69±0.025 ($p>0.05$) and 1.14±0.032 ($p>0.05$) accordingly. The strength of foot flexion muscles after 3 weeks EMS training session increased. Arterial blood flow volume before EMS training session was 2.2±0.3 mL/min/100mL and increase to 2.7±0.5 mL/min/100mL ($p>0.05$) after 10 training sessions. StO_2 before EMS training was 69.9±3.9% and after 3 weeks of training increased up to 71.2±3.8% ($p>0.05$). After applying EMS the muscle strength indices increased as well (Brocherie et al., 2005). The overall results of the study showed that EMS improves muscular strength of foot muscles and running speed. **In conclusion**, the EMS couldn't change traditional exercise training but as additional mean for training could be applied in training process and in cases for the solution of specific tasks of training or during the periods of rehabilitation.

References

1. Alon, G., Kantor, G., Smith, G. V., (1999). Peripheral nerve excitation and plantar flexion force elicited by electrical stimulation in males and females. *J Orthop Sports Phys Ther*, 29, 208—214; discussion 215—217.
2. Brocherie, F., Babault, N., Cometti, G., Maffiuletti, N., Chatard, J. C. (2005). Electrostimulation training effects on the physical performance of ice hockey players. *Med Sci Sports Exerc*, 37, 455—460.
3. Valli, P., Boldrini, L., Bianchedi, D., Brizzi, G., Miserocchi, G. (2002). Effect of low intensity electrical stimulation on quadriceps muscle voluntary maximal strength. *J Sports Med Phys Fitness*, 42, 425—430.

THE EFFECT OF SOCIAL ENVIRONMENT AND PHYSICAL FITNESS ON MOTIVATION ENGAGING PUPILS WITH INTELLECTUAL DISABILITIES IN SPORT ACTIVITIES

Vida Škimelienė[1], Daiva Mockevičienė[2], Jura Vladas Vaitkevičius[2]
Special School of Rusnė[1], Šiauliai University[2], Lithuania

Participation in physical activity has many benefits for children's well being and motor performance. However, the activity of children and youth is a world-wide problem. Physical activity helps to improve health and physical form, reduce risk of various diseases and its still underestimated factor of human well being. A lot of studies showed that majority of students are absent from physical education lessons, although physical education classes are the one possibility to be physically active (Zaborskis, Makari, 2001; Volbekienė, 2005). Volbekiene (2005) pointed out that 85.8% of students are physically inactive through lack of motivation for participation. A growing body of research has demonstrated that adapted physical activity is an important component of quality of life as well as of social integration for students with intellectual disabilities (Mikelkevičiutė, 2002; Rėklaitienė, 2003). Patricians indicate that purposeful and systematic education through adapted physical activity and sport during PE lessons and recreational sessions has an effect on development of students with intellectual disabilities as well as better self-esteem. Because of that we designed our study to following ***hypothesis —*** social environment and physical capacity influence the motivation to engage students with intellectual disabilities in sports activities.

The aim of the study is to evaluate effect of social environment and physical fitness on motivation engaging pupils with intellectual disabilities in sport activities

Methods and organization. Participants of this study were 72 pupils from Rusne, 20 pupils from Klaipeda 1st Special School for Intellectually Disabled and 145 pupils from Rusne Primary School. To measure effect of social environment and physical fitness on motivation engaging pupils with intellectual disabilities in sport activity were used questionnaire, test, pedagogical experiment. *Statistical* (frequency, average, standard error, Spearman Rank Correlation Coefficient, t-test) *data analysis* has been carried out.

Results of the study. Analysis of data showed that pupils participate in physical education lessons at school only because they are compulsory. 54% of pupils from Special School and 58% from primary school are not engaged in after school sport activities. Social environment of healthy children stimulates to exercise and engage in sports activities more, whereas intellectually disabled children are more encouraged by teachers to get engaged in physical activity.

Students from Special School evaluate their abilities inadequately: 22% of respondents claim that they care about their health a lot; 58% of intellectually disabled pupils state that they exercise enough to be healthy. 44% of intellectually disabled pupils do not like Lithuanian language, as they have language and communication disorders. 4% of intellectually disabled pupils do not have friends because of communication difficulties.

Physical capacity rate of experimental group of girls slightly improved due to aerobics exercise, also the sudden and waist power showed a great improvement. Experimental program of aerobics could be one of the forms of spending leisure time: this activity gives a lot of positive emotions, girls come by free will, and their physical capacities improve.

References

1. Mikelkevičiūtė, J. (2002). *Taikomosios fizinės veiklos poveikis nežymiai protiškai atsilikusių paauglių savęs vertinimui ir fizinės kompetencijos suvokimui.* Daktaro disertacija. Kaunas: Lietuvos Kūno kultūros akademija.
2. Rėklaitienė, D. (2003). *Vidutiniškai protiškai atsilikusių merginų psichosocialinio elgesio ir fizinio pajėgumo kaita dėl aerobikos pratybų poveikio.* Daktaro disertacija. Kaunas:Lietuvos kūno kultūros akademija.
3. Volbekienė, V. (2005). *Lietuvos didžiųjų miestų vidurinių mokyklų mokinių fizinio aktyvumo tyrimo (2005) išvados.* http://www.kksd.lt/index.php?-264723875 (žiūrėta 2006-05-27).
4. Zaborskis, A., Makari, J. (2001). *Lietuvos moksleivių gyvensena: raida 1994—1998 metais ir vertinimas tarptautiniu požiūriu.* Panevėžys: E. Vaičekausko leidykla.

RESEARCH ON HEALTHY LIFESTYLE OF BADMINTON PLAYERS

Laimutė Šližauskienė[1], Rasa Šulnienė[2], Daiva Bulotienė[1], Vilma Papievienė[1]
Lithuanian Academy of Physical Education[1], Kaunas University of Technology[2], Lithuania

Healthy lifestyle does not only consist of building a healthy nutrition and physical activity habits but it also means being aware of risky factors and ability to adjust them properly. Healthy lifestyle helps to maintain and strengthen health, quality of life and physical capacity (Ivaškienė, Čepelionienė, 2005). Human lifestyle depends on many social, economic and cultural factors (Grabauskas et al, 2004). The declining physical activity and spread of addictions (drug addiction, smoking) is becoming a relevant issue. Some questions arise: are the habits of healthy lifestyle characteristic to the people going in for sports? Don't these people take alcohol and any other drugs? Don't they smoke? Do they keep regular hours of rest and nutrition?

Aim of research is to study healthy lifestyle of badminton players.

Research methods: the analysis and generalization of literature, the survey, and mathematical statistics.

Organising of research. The survey was carried out in December (2007) and April (2008); 56 badminton players (34 males and 22 females) of high and average mastership were chosen as respondents: 25 Lithuanian badminton players, 12 Danish players from International badminton academy, and 19 badminton players from Russia (Moscow sports schools and clubs). All sportsmen were physically active and used to practice 6 times a week or more. The average age of respondents was 22.5±4.1. Their experience in sports varied from 5 years to more than 10.

Findings and generalization. After evaluating the findings of the survey, it has been identified that health is not considered to be the most valuable thing in the life of all badminton players. The Russian players appreciate being healthy and educated. For the Lithuanian badminton players, education is the most essential thing while the Danish players pay much attention to being healthy but at the same time they highlight other important things.

The findings show that the Danish badminton players have better nutrition habits. On regular basis, 91.7% of the Danish players had meals three times a day and only 36.8% of Russian and 28.0% of Lithuanian players ($p<0.05$) did the same. Danish badminton players combined food products regularly more often (58.3%) than Russian (26.3%) and Lithuanian (12.0%) players ($p<0.05$). Moreover, the Danish badminton players limited the amount of animal fats, salt and the use of sugar more frequently if to compare it with the Russian and Lithuanian players. More Danish and Russian sportsmen liken to the Lithuanian badminton players ate fruit and vegetables. The spread of addictions among the high and average mastership badminton players was low. After comparing the findings with the data of study on lifestyle of similar age students (Proškuvienė et al, 2006), it is possible to claim that badminton players distinguish for leading a healthier lifestyle, having better nutrition habits, and the health-damaging addictions are less prevailing among them.

Summary. The work aims at researching healthy lifestyle of badminton players. The findings show that all surveyed sportsmen were physically active and used to practice 6 times a week or more. The Danish badminton players had better nutrition habits. The spread of addictions among the high and average mastership players was low. The results show that badminton players lead a healthier lifestyle, have better nutrition habits, and are less addicted to health-damaging habits.

References

1. Grabauskas, V., Zaborskis, A., Klumbienė, J., Petkevičienė, J., Žemaitienė, N. (2004). Lietuvos paauglių ir suaugusių žmonių gyvensenos pokyčiai 1994—2002 metais. *Medicina, Visuomenės sveikata*, 40(9), 884—890.
2. Ivaškienė, V., Čepelionienė, J. (2005). *Studentų fizinis ugdymas ir saviugda.* Kaunas: LKKA.
3. Proškuvienė, R., Zlatkuvienė, V., Černiauskienė, M. (2006). Studentų — būsimų pedagogų gyvensena ir požiūris į sveikatą. *Visuomenės sveikata*, 2 (33), 73—78.

COACHES' ATTITUDES TOWARDS DECEPTION IN SPORTS ACTIVITIES

Saulius Šukys
Lithuanian Academy of Physical Education, Lithuania

Introduction. Deception in research literature is usually linked to deliberate actions when someone tries to gain advantage for oneself or one's team against the opponents (Fraleigh, 2003; Loland, 2005). Thus deception in sport can manifest in a wide variety of forms: using doping, simulating, compacting about the final result of the competition, etc (Preston, Szymanski, 2003).Though the problem of deception in sports activities has been widely researched, we still lack empirical studies about the evaluations of such actions by sports educators and sportspeople themselves. This issue induced the research the **aim** of which was to establish the attitudes of coaches towards the spread of deception and its justification in sports activities.

Method. We applied a self-compiled questionnaire with 19 statements to evaluate the coaches' attitudes towards deception in sport. The factor analysis of the scale distinguished five factors characterizing the forms of deception: manipulating the results of the competition, provocation against the opponents, manipulation the rules of sports contest, athletes' role-playing for their own benefit, and manipulation of referees and organizers of competitions with the final results. The respondents had to evaluate how often such behavior occurred in sports activities choosing one of five variants (from 1 — it never happens in sports, to 5 — it happens in sports quite often). Then they had to evaluate the same statements for the second time indicating what behavior could be justified choosing one variant out of five (from 1 — such behavior can never be justified, to 5 — such behavior can always be justified). The study took place in 2007—2008. The sample consisted of 95 coaches (10 women and 85 men).

Results and discussion. The coaches implied that the most common form of deception in sports activities was linked to the manipulation with the rules of the sports contest. This form of deception included such actions as delay of time waiting for the end of the competition, attempts to prevent the opponent form performing actions, attempts to dispute with the referee after breaking the rules (respectively 49.5%, 33.3%, and 26.9% of coaches indicated that such actions were quite often). All kinds of provocations against the opponents seeking for one's benefit were also common, as well as the attempts to make the opponents overbalanced and to compel them to perform illegal actions (29.0 and 17.2% of coaches respectively indicated that those actions were common). In the sports contests deceptive role-playing was not evaded, either. The findings of the study suggest that the most infrequent forms of deception in sports activities were the manipulation of the competition results by athletes and the judges and competition organizers' attempts to impact the final results.

The research data showed that the coaches tended to justify various manipulations with the rules of the sports contest. 20.4% of the coaches thought that athletes' efforts to delay the time when they were happy with the result could always be justified. 9.7% of the research participants would justify athlete's actions to stop the opponent even breaking the rules. Athletes' deceptive role-playing and provocations against the opponents were not so often justified. Athletes' attempts to put mental pressure on the opponents were justified by 11.8%, and provocations compelling the opponent to make illegal actions — by 8.6% of the respondents. It should be noted that only 2.2% of coaches would justify using illegal medications to improve sports performance. Least justified were various advance deals of sports organizers and referees.

References

1. Fraleigh, W. (2003). Intentional rules violations — one more time. *Journal of the Philosophy of Sport,* 30, 166-176.
2. Loland, S. (2005March). The varieties of cheating — comments on ethical analyses in sport. *Sport in Society,* 8(1), 11-26.
3. Preston, I., Szymanski, S. (2003). Cheating in contests. *Oxford Review of Economic Policy,* 19(4), 612-624.

PHENOMENON OF PHYSICAL EDUCATION IN THE CULTURAL CONTEXT

Povilas Tamošauskas
Vilnius Gediminas Technical University, Lithuania

The attitude towards human body and its training is the part of culture. This attitude is formed in certain cultural media. However, the approach to the body, which is in a particular way "created", enables to develop the culture itself. The purpose is to analyse the impact of physical education on the culture under changed social, economic conditions.

The assumption: physical education aims to create optimum conditions for human psychophysical maturity, realize one's potential, but the man needs to develop and foster the physical training. The theoretical analytical methods of philosophical principles have been used to analyse the phenomenon of physical education in the cultural context.

Recent research shows the increasing devaluation of spiritual moral values in sports, so the P. Coubertino's Olympic slogan "Elevated spirit in an athletic body" has been violated.

These facts can be related to the disagreement which occurs in the cultural sphere. Each activity without moral, ethical and aesthetical values loses touch with culture. It contradicts Husserl's phenomenology of the living world. Attention towards interaction between soul and body reminds us of Plato's striving to train body and soul. Plato's concern was a harmonious personality as part of the right community comprising the whole. Harmony is assosiated with justice — the main principle of the ideal community. According to Plato both arts and gymnastics are means of education. In other words, they are not self-aiming, but seek to develop a harmonious personality. In other words, the development of harmonious personality requires the support of arts and gymnastics.

Agreeing to the idea of the development of a harmonious personality we need to adjust, develop the concept of biological and moral, physical and spiritual coherence of the essence of physical education and its interaction system.

All things considered we can make up a thorough image of the personlity's physical education. Up-to-date the biological aspect has been considered by ignoring the humanitarian one. The consideration of the values and sociocultural aspects will enable to enrich the content of physical education by new phenomenological aspects and encourage the development of physical education. It is of great importance to educators who form the attitude towards physical education. The sociocultural aspects of physical body needs to be considered as specific characteristic of practical activity directed into the outer and inner world. Phenomenological attitude helps to suppose mind openness in the coherent world.

We need to distinguish two levels of phenomenological aspects of cultural education: pragmatic, instrumental, personality and value-related, existential evaluation levels of human physical body. If the damage is done to humans through social activities, their physical powers are weakened, the social but not the cultural aspect is revealed. Physical education activities acquire cultural qualities when they are incorporated into the system of cultural aspects, values, norms and aims.

If physical education enables to achieve physical maturity which conforms to the personality principles, spiritual needs, cultural norms, helps to harmonize biogenetical and social existance, such physical education acquires cultural qualities corresponding to its criteria and has some impact on culture development.

Culture is considered as human creativity, directed both into the inner and outer world: human body plays a major role in overcoming the dissociation between the man and the world. The person has the responsibility to develop physical powers and the ability to use them for both sociocultural and spiritual needs. Not only the body but also the soul is developed by physical education.

Phenomenological aspects enable to consider the human body as a constituent part of human creativity, which is fostered together with the whole culture. Body phenomenology may help the

coherent world, to reproduce open and directive consciousness and to develop the relationship of humans as social beings. The body is an important agent of human creativity, which determines both the harmonious personality and the environment.

References

1. Husserl, E. 1976. *Die Krisis der europäischen Wissenschaften und die transzendentale Phänomenologie*. Haag: Martinus Nijhoff.
2. Coubertin, P. 1908. "From L'Esprit Olimpique", *Revue Olympique* Jullet: 34-36.
3. Platonas. 1981. *Valstybė*. Vilnius: Mintis.
4. Быховская, И. М. 1993. "Бытъ телом — иметъ тело — творитъ тело: три уровня бытия homo somatis и проблемы физической кулътуры", *Теория и практика физической кулътуры* 7: 2—4.
5. Столяров, В. И. 1997. "Спорт и культура: методологический и теоретический аспекты проблемы", Спорт, духовные ценности, культура. Вып. 1: 84—209.

COMPARISON OF SOCIAL SKILLS OF VI—X CLASSES PUPILS WITH SLIGHT MENTAL DISORDERS IN THE ASPECT OF EDUCATIONAL INSTITUTION

Ilona Tilindienė[1], Saulius Kavaliauskas[1], Sandra Galvelienė[2]
Lithuanian Academy of Physical Education[1], The 1st Special School of Kaunas[2], Lithuania

The **key words**: mental disorders, social skills, integration, education.

Nowadays in Lithuania a lot of attention is paid to the integration of people with specific needs to the society and their socialization (Samsonienė, 2006; Vaicekauskienė, 2005). One of the groups of people with specific needs is the people who have mental disorders. During the process of integration it is discussed if in comprehensive schools children with specific needs receive a qualified, efficient help and if children from specialized schools are prepared sufficiently enough for independent life in the open society (James, 1999; Hallahan, Kauffman, 2003).

The **object of the research** — social skills of VI—X classes pupils who have slight mental disorders.

The **problem of research**: there a difference between social skills of pupils who have slight mental disorders in different educational institutions.

The **aim of this research** — to compare social skills of senior pupils who have slight mental disorders in different educational institutions. The theoretical part discusses psychosocial development of pupils who have slight mental disorders and the possibilities of education.

The **targets** raised:

1. Compare social skills of pupils who have slight mental disorders to the aspect of the educational institution.

2. Compare social skills of pupils who have slight mental disorders to the aspect of sex.

In the research, which method was a guestionnaire, 90 pupils who have slight mental disorders and studying in different educational institutions evaluated their own social skills.

Conclusions

1. Social skills of VI—X classes pupils who have slight mental disorders and are attending different educational institutions (comprehensive schools and specialized schools) are partly different. The first hypothesis approved. Social skills of pupils who have slight mental disorders and are studying in specialized schools are better than those who are studying comprehensive schools: social skills are mainly different in the area of the ability to communicate and they are in area of emphatic abilities. These skills are partly better. Social skills of VI—X classes pupils with slight mental disorders and who are studying in comprehensive schools are partly different in the area of understanding of their own possession and are better than the skills of pupils studying and specialized schools.

2. Differences of social skills of VI—X classes pupils with slight mental disorders are common to boys.

References

1. Hallahan, D. P., Kauffman, J. M. (2003). *Ypatingieji mokiniai. Specialiojo ugdymo įvadas.* Vilnius: Alma litera.
2. James, W. (1999). *Talks to Teachers on Psychology.* London.
3. Samsonienė, L. (2006). *Specialiųjų poreikių vaikai ir jų socialinė integracija*. Vilnius: Vilniaus universitetas.
4. Vaicekauskienė, V. (2006). Specialiųjų poreikių vaikų socializacijos modelis. *Pedagogika*, 83, 167—173.

CENTRAL AND PERIPHERAL CARDIOVASCULAR CHANGES WHILE PERFORMING A REPEATED AEROBIC WORKOUTS

Eugenijus Trinkūnas, Kristina Poderytė, Birutė Miseckaitė
Lithuanian Academy of Physical Education, Lithuania

At onset of exercise there a lot of immediate changes of various physiological functions occur as to provide the energy for muscular contractions. Coincident with the intramuscular processes a rapid response of cardiovascular system starts (Polle, Jones, 2007). The signals from motor cortex to muscles send parallel signals to the autonomic nervous system that cause rapid removal if parasympathetic activity to the heart. Thus heart rate accelerates within the next cardiac cycle after the onset of exercise (Hughson, 2006). On the other hand the ratio between central and peripheral changes and the synergy of these changes remain unclear and the understanding the synergy of these processes can be helpful for explanation of exercise tolerance and exercise performance.

The task of this study was to compare the central and peripheral reactions of cardiovascular system while performing the repeated aerobic workouts. Four groups of participants in each for 15 persons (*non-sportsman- males; non-sportsman females; well-trained endurance runners and well-trained sprinters*) were engaged in to the experiment. All participants performed three Roufier exercise tests, i.e. 30 squats per 45 s with two minutes of rest between each of exercising. Changes in systemic arterial blood pressure, oxygen saturation (StO_2) in a thigh muscle (*m. vastus leteralis*) — measured by near-infrared spectroscopy (Hutchinson Technology device, Model 325) and cardiac changes — 12 lead ECG indices were analyzed.

Results obtained during the study showed that during exercising StO_2 decreased and during the rest the recovery was observed. The further slow increase of StO_2 during the 2 min of rest continued and reached higher values as it was before exercising. Such type of changes in StO_2 was observed after each repetition of Roufier exercise load. The highest increase in StO_2 during each of three exercising was observed in a non-sportsman females group, the lower — in a sprint group and the lowest — in endurance group.

There were no statistically significant differences between the changes of ECG indices while performing first, second and third exercise test in endurance group, but the most of ECG indices showed that central cardiovascular reactions increased with each of exercise test in both of non-sportsman groups (males and females).

The kinetics of StO_2 in muscular tissue and the changes of ECG indices while performing a repeated aerobic exercise gave evidence that peripheral changes were more expressed than a central and depend on the adaptation to physical loads and on the type of adaptation. In conclusion, the peripheral muscular changes at onset of exercise are prior to central cardiovascular changes.

References

1. Hughson, R.L. (2007). Regulation of VO_2 on kinetics by O_2 delivery. *Oxygen uptake inetics in sport, exercise and medicine,* 185—211.
2. Polle, D.C., Jones, A.M. (2007). Towards an understanding of the mechanistic bases of VO_2 kinetics: summary of key points raised in chapters 2—11. *Oxygen uptake inetics in sport, exercise and medicine,* 294—328.

EXTRA-CURRICULAR PHYSICAL ACTIVITY INFLUENCE ON ADOLESCENT'S PHYSICAL DEVELOPMENT AND PHYSICAL FITNESS

Laima Trinkūnienė[1,2], Edita Maciulevičienė[1]
Lithuanian Academy of Physical Education[1], Kaunas Secondary School of Šilainiai[2], Lithuania

Physical activity and health level analyses have become increasingly important in last years. Due to physical inactivity a lot of people were at risk of being in poor health. Schools provide a range of opportunities for pupils to engage in physical activity, such as break-time, travel to and from school, physical education lessons and extra-curricular clubs (BHFNC — Physical Activity, Sport & Education, 2007). **The aim of research was** to evaluate the influence of extra-curricular physical activity on pupil's physical development and physical fitness.

Material and methods. Appropriate methods (meta-analysis, pedagogical experiment, testing of physical abilities, testing of anthropometric features, mathematical statistics) based upon the experimental design were applied. The obtained research results were processed using the statistical application of EXCEL 5.0 for Windows.

The research involved 67 pupils of the Kaunas Šilainiai Secondary School (25 boys of 13—14 years of age and 42 girls of 11—12 years of age). The schoolchildren were divided into two groups: an experimental group and a control group. The experimental group consisted of 26 pupils, and the control one consisted of 41 pupils. Twice a week the pupils of the experimental group had an extra curriculum physical training before lessons. An individual physical activity program was made for each pupil according to their physical fitness profiles. The pupils of the control group had no additional physical activity, i.e. attended only two compulsory weekly lessons of physical training.

Results. The applied extra-curricular physical activity had a positive ($p<0.05$) influence on the boys physical development during the one year training period. Statistically significant improved the results of pupil's skeleton muscles (trunk strength, flexibility, explosive strength and strength endurance) and motoric abilities (agility and frequency of movement). The applied extra curriculum physical activity had no statistically significant influence ($p>0.05$) on the girls physical development, however a tendency towards improvement of the results was established. The physical fitness results of skeleton muscles of experimental girls group did not improved. The changes of motoric abilities results was different: frequency of movement increased (93.75% of girls improved results) ($p<0.05$), and the results of girls' agility also improved but differences between control and experimental groups was not statistically significant ($p>0.05$).

Conclusions:

1. The influence of extra-curricular physical activity on different physical activity boys and girls groups' morphological component (physical development) was established.
2. The extra-curricular physical activity applied to the boys group had a positive influence on improvement of the results of skeleton muscles, aerobic and motoric abilities.
3. Extra-curricular physical activity on the experimental group of girls was controversial: the aerobic abilities and the frequency of movement increased ($p<0.05$). Although the individual results to be increased, but the differences of skeleton muscles fitness and agility abilities were not significant.

References

1. BHFNC — Physical Activity, Sport & Education (2007). Prieiga per internetą: http://www.bhfactive.org.uk/downloads/education&sportfactsheet2.pdf
2. Kviklienė, R., Vilkas, A. (2004). Fiziškai pasyvių paauglių fizinio parengtumo kaita. *Sporto mokslas*, 2 (36), 74—78.
3. Martišienė, N. (2006). Kauno apskrities šeštų aštuntų klasių mokinių dienos režimo ir gyvensenos tyrimai. Prieiga per internetą: http://www.sam.lt/sam/naujienos/?idi=3117
4. Puišienė, E., Volbekienė, V., Kavaliauskas, S., Čikotienė, I. (2005). Physical education in Lithuania. In U. Pühse, M. Gerber (Eds.), *International Comparison of Physical Education: Concepts, Problems, Prospects*. Oxford: Meyer & Meyer Sport. P. 441—459.

EVALUATION ON THE IMPACT OF A SOCCER TRAINING PROGRAM ON THE BEHAVIORAL DEVELOPMENT OF TEENAGE PARTICIPANTS

Eric Cheuk Kuen Tsang[1], H.Y. Ng[2]
The Hong Kong Institute of Education[1], University of Hong Kong[2], China

This study examined the impact of a soccer training program organized by a district social service group on the behavioral development of 35 teenage participants. Interviews were conducted with program participants in order to find out their attitude towards the program by understanding their intention of participation, perceived benefits, attitude towards winning and losing, and the reason of adherence. The social behavior of the program participants were assessed by their parents and teachers by using the Strength and Difficulties Questionnaire (SDQ; Goodmam, 1997). Results suggested that health benefits, fulfillment of fun and social benefits of having more friends and support from family were the main reasons of their participation. They were intrinsically motivated in taking part in the program and adopted a positive attitude towards participation by demonstrating strong team cohesion. Feedback from parents and teachers also consolidated that program participants generally demonstrated a normal behavior towards society with low difficulty indexes and high prosocial behavior index. Base on findings from the study, recommendations were made for the launching of similar program. The effectiveness of such sport program on moral development should be examined in future longitudinal studies.

References

1. Cheng, C.H.K., Lo, T.W., & Wong, D.S.W. (2004). Deviant behaviour of adolescents and their psychological correlates in terms of the self and social influence. *Journal of Youth Studies*, 7(2), 169-183.
2. Fraser-Thomas, J.L., Cote, J., & Deakin, J. (2005). Youth sport programs: An avenue to foster positive youth development. *Physical Education and Sport Pedagogy,* 10(1), 19-40.
3. Goodman, R. (1997). The strength and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry,* 38(5), 581-586.
4. Hansen, D.M., Larson, R.W., & Dworkin, J.B. (2003). What adolescents learn in organized youth activities: A survey of self-reported developmental experiences. *Journal of Research on Adolescence*, 13(1), 25-55.
5. Larson, R.W. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55, 170-183.

PSYCHOSOCIAL HEALTH'S AND LEARNING MOTIVATION'S INDICATORS CONNECTION WITH PHYSICAL ACTIVITY AND THEY COMPARATIVE ANALYSIS

Edita Vainienė
Lithuanian Academy of Physical Education, Lithuania

The questions of the research. There are not so much researches considering the physical activity's links with learning motivation, but we can find much more researches which are dealing with physical activity's links with psychosocial health and it's indicators. Different authors (Strauss et al., 2001; Batutis, Kardelis, 2002, Bailey, 2006) indicates that social integration and self-esteem are associated with physical activity and with sport. In that case sport reduce: anxiety, negative emotions, appetency for depression, animosity to the others (Scully et al., 1998; Kardelis, Stakytė, 2003). There was established significant link between developed abilities and physical activity, health, self-esteem (Pollock et al., 1998 Laitsch et. al., 2005) taht is during physical activity positive and negative emotions are associated with self-esteem and involvement in physical activity. The significance of physical activity on a person's well being and general health was acknowledged in several reports (Dixon et al, 2003; Paige, 2004). Thus health and success in school are interrelated (Smith, 2003, VanLandegham, 2003). But still there is lack of researches about physical activity's links with learning motivation and psychosocial health.

The aim of our research is to reveal the links between physical activity and learning motivation and psychosocial health's indicators.

Methods and organisation. There were two independent incidental samples. One sample consisted of 15—17 year old pupils (97 boys and 26 girls) from all youth schools in Kaunas (n=123). The other group consisted of 612 pupils from ninth, tenth, eleventh grades (307 boys and 305 girls). They were randomly selected from Kaunas city schools. Pupils' social integration/isolation was estimated applying A. Eder's (1989) questionnaire which also included questions about their physical activity. Pupils' self-esteem was investigated using the methodology proposed by C. Curie (1987). For estimating learning motivation we took such methods: questionnaire inquiry (Zambacevičienė, Janulytė, 1998) and the interview (Pileckaitė-Markovienė, 2001).

Research results. Research data showed that pupils from the youth schools were motivated by such incentives as wish to continue learning, a sense of duty, efforts to avoid friends' criticism and wish to work well when they will be adults. The results showed the strong inner consistency of Learning motivation scale (Kaiser-Meyer-Olkin Measure of Sampling Adequacy — 0,757). Got data showed that structure of learning motivation of pupils from Kaunas schools consisted from motive of social recognition, inner motive, positive stimulation motive. It was found that inner motive was statistically significant with pupils' self-esteem from ninth grade. The relationship between gender and academic achievement showed that girls results are better in both groups (accordingly youth schools' girls — 53.8%, boys — 26.8%, $p<0.05$ and secondary schools' girls — 83.9%, boys — 56%, $p<0.05$). According to physical activity we found in both samples that boys were more physically active than girls (pupils from youth schools: boys — 89%, girls — 11%, accordingly from secondary schools: boys — 58%, girls — 42%). Boys are generally more fit than girls and thus the stimulus achieved during physical education may not be sufficient in boys to produce the same physiological effect experienced by girls. This difference may help explain why we observed a benefit of physical education on academic achievement in girls but not in boys (Bailey, 2006).

References

1. Bailey R. (2006). Physical education and sport in schools: a review of benefits and outcomes. J Sch Health. 76:397-401.
2. Batutis, O., Kardelis, K. (2002). Moksleivių socialinės izoliacijos, integracijos ir savigarbos sąsaja su fiziniu aktyvumu. *Ugdymas. Kūno kultūra. Sportas*, 2 (43), 10—16.

LINKS OF YOUTH SCHOOL PUPILS' PHYSICAL ACTIVITY WITH THEIR LEARNING MOTIVATION, SELF-ESTEEM AND SOCIAL INTEGRATION

Edita Vainienė, Kęstutis Kardelis
Lithuanian Academy of Physical Education, Lithuania

The questions of the research. Youth school is formed for those pupils who does not manage to cope with a system in general schools, and who lacks motivation for learning (due to psychological, training or social reasons) or whose determination is caused by social conditions. Teachers from youth schools often have difficulties when they want to stimulate pupils' learning motivation, which can also be related to physical activity and health. School cannot achieve their primary mission of education if students and teachers are not healthy and fit physically, mentally, and socially (Smith, 2003). There are no questions of the link between physical activity and the general health of a child (Vail, 2006). Many benefits are obtained through regular physical activity (Lambert, 2000). In addition there is a lack of empirical data on the effects of learning motivation, psychosocial health and their links with physical activity.

The aim of our research was to reveal the links between the physical activity of youth school pupils and their learning motivation, self-esteem and social integration.

Methods and organisation. The sample in the research, investigating the whole population, consisted of 15—17 year-old pupils (97 boys and 26 girls) from all youth schools in Kaunas (n=123). The questionnaire methods were applied to collect the data about pupils' psychosocial health's indicators — social integration/isolation and self-esteem. There were also included questions about their physical activity. We also investigated learning motivation and used methods: questionnaire inquiry and the interview.

Research results.

Research data showed that pupils from the youth schools academic achievement is at an avarage (satisfactory) and it is related with pupils' assumed responsibility for their learning, abilities, gender. Pupils from the youth schools were motivated by such incentives as wish to continue learning, a sense of duty, efforts to avoid friends' criticism and wish to work well when they will be adults. The relationship between gender and academic achievement showed that girls' results are better (accordingly girls — 53.8%, boys — 26.8%, $p<0.05$).

We observed the interrelation between the psychosocial health indicators (social integration and self-esteem), i.e. those pupils who manifested higher levels of social integration also demonstrated higher self-esteem ($\chi^2=9.255$, $p<0.\ 05$). The obtained results showed that there were no statistically significant gender differences in social integration and self-esteem, but the girls' learning motivation indicates were lower than the boys (accordingly 14.0±2.9, 14.5±3.3, $p>0.05$). Self- esteem and social integration of physically active pupils were higher than those who were physically passive. According to physical activity we found that boys were more physically active than girls (boys — 89%, girls — 11%).

Comparative analysis of pupils' learning motivation, psychosocial health indicators and their physical activity revealed their interrelation: more physically active pupils manifested higher levels of self-esteem and were better socially integrated. Higher self-esteem indices were typical of those pupils who were motivated by their wish to know something new, desire to learn to work well when they became adults and respectful communication with parents, teachers and friends.

References

1. Lambert, L. (2000). The new physical education. Educational Leadership, 57(6), 34-38.
2. Smith, J. (2003). Education and public health. Alexandria, VA: Association for Supervision and Curriculum Development.

ECG SIGNAL FOR ASSESSMENT OF INTERPERSONAL OR INTER PARAMETER INFLUENCES

Alfonsas Vainoras, Zenonas Navickas, Jonas Poderys, Kristina Berškienė, Liepa Bikulčienė
Kaunas University of Medicine, Kaunas University of Technology,
Lithuanian Academy of Physical Education, Lithuania

This study presents the results of analysis of 12-leads ECG of two persons during the exercising with the purpose to assess the interpersonal influences. The interpersonal influence of several athletes is important factor for winning or loss in sportive contests. The methods for investigation of interpersonal influence are not widely developed and this estimation is problem of today in science and practice. The results show that for investigation of this influence the most usable are processes of the heart action. Assessment of inter parameter concatenation permitted to reveal some new features of heart functionality when ECG monitoring was performed during physical stress examination. The aim of research was to create mathematical instrument for describing and estimating of interpersonal and inter parameter influence features. The new method for assessment of concatenation during monitoring of vital signals has been developed. The methodology of two numeric time series investigation is presented when values of elements are determined. Using this method for investigation of interpersonal or inter parameter influences it is necessary to form two synchronous numerical time series $(x_n; n = 0,1,2,...)$ and $(y_n; n = 0,1,2,...)$ which represent exploratory object. Here x_n and y_n are real numbers and its present results of some measurements. Usually it is electrocardiogram signals of two associated persons or some parameters of signals. Then the matrix time series $(A_n; n = 0,1,2,...)$ can be formed. Here $A_n := \begin{bmatrix} a_n & b_n \\ c_n & d_n \end{bmatrix}$ and coefficients $a_n := x_n,\ b_n := \alpha(x_{n-1} - y_{n-1}),\ c_n := \beta(x_{n+1} - y_{n+1}),\ d_n := y_n,$ when parameters α, β are at choice. For investigation of matrix time series the numerical characteristics of second order matrices were used:

$\mathrm{dfr}A_n := a_n - d_n,\ \mathrm{cdp}\,A_n := b_n \cdot c_n$ and $\mathrm{dsk}\,A_n = (\mathrm{dfr}A_n)^2 + 4\,\mathrm{cdp}\,A_n$ (difference, co-diagonal product and discriminat of matrix A_n). Also, two important types of matrices in matrix analysis are important. The matrix $\boldsymbol{I}$ is called idempotent (matrix of stable power), if $I^2 = I$ and the $\boldsymbol{N}$ — nilpotent (matrix losing power), if $N^2 = \mathbf{0}$. For numerical investigation, if discriminants of matrices A_n become to zero then matrices A_n from idempotent become to nilpotent. It shows that chosen time series $(x_n; n = 0,1,2,...)$ and $(y_n; n = 0,1,2,...)$ become similar and it describe more associated interpersonal or inter parameter system. Proposed method and values of concatenation between various processes could serve as indicators of human functional state and also could be applied for assessment of interpersonal functional concatenation. The results obtained during the analysis confirmed the preposition of the Institute of HeartMath that the ECG signals can disclose some interpersonal influences. The futures of idempotance or nilpotent were more expressed during the competitive situations or during the tasks requiring the efforts with one accord.

STRUCTURE OF THE FACTORS OF PSYCHOLOGICAL AND PHYSICAL CONDITION IN YOUTH BASKETBALL

Zermena Vazne
Latvian Academy of Sport Education, Latvia

Introduction. In sport, including basketball, along with players' physical, technical and tactical preparation psychological preparation is of major importance in the training and competition process (Moran, 2004; Murphy, 2005, Malinaukas, 2008), and in sports it is based on players' physical condition (Родионов, 2004). The realization of the content of the structure components of psychological preparation and its basis — physical condition is important not only in professional sport, but also in youth national picked teams. This question becomes especially topical when the state national teams are preparing for top level competitions, for example, the European Championships (Vazne, Larins, Rudzitis, 2007). So, **the aim** of the research — determination of young basketball players' psychological and physical condition factor structure.

Methods. Twelve different (6 +6) Latvian national youth basketball teams, both girls and boys (U−16, U−18, U−20) participated in the research during their preparation period before the European Championship games in 2007 and 2008 (n=144).

The research methods: Testing (GEQ test to state team cohesion), general physical condition tests; inquiry (STAY — to state alertness), V. Milman's questionnaire (to state psychological stability); the analysis of game score sheets; mathematical statistics (result procession with SPSS programme).

Results. To state young basketball players' components of psychological preparation (psychological stability, team cohesion) the players' testing has been done during their preparation period before the European Championship. Alongside with stating of psychological components, general physical condition was also tested. The average indices of each team, as well as young player individual indices were analyzed, and the analysis of the statistically significant correlative values was made. As a result, a distinct dispersion of individual indices in all sub-structures was stated for all respondents.

The analysis of the obtained data shows that when working with young players additional attention should be paid to the development of players' self-regulation skills (SR), understanding about the importance of emotions and emotional conditions (EC) in sport should be facilitated, as well as the content of the scales characterizing team cohesion structures (ATG−T, ATG−S, GI−T, GI−S) should be developed.

To evaluate the present situation in Latvia youth basketball the components of young basketball players' prevalent psychological and physical condition factors were stated. First the correspondence of the respondent groups 2007 and 2008 to make factor analysis by sex and age was evaluated (for the sample of 16 and 18—20 years old respondents). To evaluate the sample adequacy the Independent Samples Test to compare independent samples and ANOVA test were used. It was stated that there are statistically significant differences according to age (16 years old and 18—20 years old respondents) GI−T (Sig.=0.01); ATG−S (Sig.=0.04), general physical condition (Sig.=0.000). Therefore for further analysis the sample joining the indices of 2007 and 2008 by 18—20 years old respondents was used.

The group's correspondence to the factor analysis was tested stating Kaiser-Maijer-Olkin and Bartlet criteria. The value of the KMO (Kaiser-Meyer-Olkin) criterion for the research sample shows satisfactory correspondence to make factor analysis as the Kaiser-Meyer-Olkin criterion is bigger than the value 0.6 (0.629>0.6). The significance level of the obtained results is less than 0.05, thus the research sample data are adequate to make factor analysis (Sig.=0.000<0.05).

To state the prevailing factors of young basketball players' psychological and physical condition the following methods were used — Extraction Method: Principal Component Analysis and Rotation Method: Varimax with Kaiser Normalization. While analyzing the indices of Latvia youth national basketball team players' components of psychological and physical condition, three factor structure has been advanced including the first factor — "team cohesion", the second

factor — "physical condition and emotional stability", and the third factor — "motivation and self-regulation". In the course of the research the criteria to evaluate the content of the factor structure elements were made and the recommendations to improve the content were developed.

Discussion. What are most important factors determining a team's success and failure? As players' of different countries proficiency is growing higher, such structural parts of psychological preparation as team cohesion (Carron, Brawley, 2000) and players' psychological stability which depends on players' personality qualities, physical condition and others, are becoming more and more important. While researching the content of the team cohesion, the cohesion component called "the collective efficacy" was found out. It is concluded in the research that "the collective efficacy" influences the team cohesion to do the tasks, as well as it increases the team performance in competitions (Dorsch, Paskevish, Brawley, Widmeyer, 1999). In another research it is said that "the collective efficacy is only a hypothetic assumption (Maddux, 1999). In the research carried out in Latvia it is proved that the components that form the content of "the collective efficacy", called "the collective force" are higher for those teams which have won top places in the European Championship and final tournaments of the Latvia Basketball League (Vazne, Rudzitis, 2007). The players whose performance is usually high in the decisive competitions have such characteristic features as achievement motives, good understanding of one's emotional condition, developed self-regulation skills, the ability to maintain for long time the concentration ability, confidence about the correctness of the coach's and his own actions. The Latvia team which got the highest 3rd place in 2007 European Championship (U-18 youth) differed from five other teams with high indices in all cohesion structures and low dispersion indices what is characteristic for well-balanced teams. Analyzing the inter-correlations in this team, a tight relation in the scales GI−S and GI−T was stated (r=0.956, the significance level 0.01). In the connection with the average results in the scales this connection shows a distinct team unity "as the whole", "the collective force". The Latvia U-18 junior female team which won the 1st place in B division in 2008 also differed from the others.

Conclusions

1. As a result of the factor analysis of the young basketball players' psychological and physical condition indices three factors have been obtained — "team cohesion", "physical condition and emotional stability", and "motivation and self-regulation". The structure of the first factor "team cohesion" — is made by four components with the factor weight above 0.5 (GI−T=0.839; GI−S=0.853; ATG−T=0.577; ATG−S=0.726). The structure of the second factor "physical condition and emotional stability" is made by two components: general physical condition (Ph_gen=0.701) and emotional stability (ES=0.652). The structure of the third factor "motivation and self-regulation" is made by two components: self-regulation skills (SR=0.787) and motivation component (MK=0.823).

2. The highest 3rd place in the 2007 European Basketball Championship in A division was won by Latvia U-18 junior picked team having high indices in all "team cohesion" structures (ATG−T=30.5$\pm$2.5; ATG−S=36.75$\pm$4.55; GI−T=43.63$\pm$1.76; GI−S=33.87$\pm$2.16); their indices of "motivation and self-regulation" structure were above the average level: self-regulation skills (SR =0.37$\pm$2.92), the indices of the motivation component (MK=1.75$\pm$2.6). The 1st place in 2008 European Basketball Championship in B division was won by Latvia U-18 young females, their average indices in all structures were higher than the ones of the other five teams.

References:

1. Carron, A.V.& Brawley, L.R. (2000). Cohesion:Conceptual and measurment issues. *Small Group Research*, 31, p. 89-106
2. Dorsch, K., Paskevich, D., Brawley, L., Widmeyer,W. (1999). Relationship Between Collective Efficacy and Team Cohesion Conceptual and Measurement Issues. *Group Dynamics: Theory, Research, and Practice*. September 1999 Vol. 3., p. 210-222
3. Malinauskas, R. (2008). The influence of psychological training program on the psychological skills in elite basketball players//*Sport science: Journal of Lithuanian sports science council, Lithuanian olimpic academy, Lithuanian academy of physical education and Vilnius pedagogical university.* Nr.2(52).p.6-11
4. Moran, A.P. (2004). *Sport and Exercise Psychology: a critical introduction.* Routledge: Taylor&Francis group, 346 p.
5. Murphy, S. (2005). *The sport psychology.* Human Kinetics Publishers, Inc., 349 p.
6. Vazne, Z., Rudzitis, A. (2007). Team game sport cohesiveness study in Latvia. *ATEE Spring University. Changing Education in Changing Society* (1*):* Klaipeda University, Lithuania, p. 192 − 204.
7. Родионов А.В. (2004). *Психология физического воспитания и спорта.* М:Фонд "Мир" с. 570

THE PECULARITIES OF NUTRITION AND PHYSICAL ACTIVITY OF 1—4 GRADE SCHOOLCHILDREN

Kristina Visagurskienė, Sandrija Čapkauskienė
Lithuanian Academy of Physical Education, Lithuania

Children's patterns of nutrition and physical activity have been assessed widely in the scientific literature. Researchers have found that physical activity and nutrition among primary school children has declined. There is a tendency to increase the illness associated to inactivity and irrational nutrition among the primary schoolchildren in Lithuania too. So, it is important to research the lifestyle peculiarities among young age children.

The aim of this study was to assess the nutrition and physical activity among the primary schoolchildren. **Methods and organization.** Children, aged 7—10 years, participated in this research. Patterns of nutrition and physical activity have been assessed by questionnaire. Their parents were asked to answer a questionnaire with a set of questions on nutrition and physical activity during two working days and one day of weekend. Primary schoolchildren's patterns of nutrition have been assessed by accounting amount of kcal per day. Physical activity has been assessed using physical activity spreadsheet by accounting the energetic value of physical activity.

Results and conclusions. Results indicate, that nutrition of most primary schoolchildren do not accord with the WHO recommendations of day energy rate for the 7—10 years children — 2030 kcal. Girls, aged 7—10 years, consume 67% and primary schoolboys consume 75% of recommended day energy rate.

Physical activity among the primary schoolchildren was low and moderate. Girls, aged 7—10 years old, were more active during working days, whereas boys were more active on weekend days. Only 33% of primary schoolboys and 23% of schoolgirls go for some kind of sports, 11% of boys and 9% of girls play with musical instruments, 33% of boys and 73% of girls, aged 7—10 years, are the dancers, 61% of boys and 81% of girls go to school on foot.

Low physical activity is due to TV, computers games, various transports, lack of reliability of self-report to change lifestyle. Schoolchildren select the passive rest — TV, computer games, reading and so on (Pavilonyte, 2007). Physical activity rate for primary schoolchildren is 3—4 hours per day. Lithuanian schoolchildren lifestyle data have been indicated, that physical activity among the schoolchildren was low, and they prepared passive rest more than to be active. Comparing these results with the results of schoolchildren lifestyle data in the other countries (29 countries took part in the study) Lithuanian schoolchildren indicated that they watching TV 4 hours per day. Only Slovakian schoolchildren overtake us (Zaborskis and Makari, 2001). Declined physical activity, irrational nutrition — using more chemical semimanufactures, genetically modified and preserving food, fat, sweets, — may cause disarray of metabolic rate and hormonal balance in growing organism.

References

1. Kohl HW III, Fulton JE, Caspersen CJ (2000) Assessment of physical activity among children and adolescents: a review and synthesis. *Preventive Medicine.* 2000;31:S54–S76.
2. Zaborskis, A., Makari, J. (2001) Lietuvos moksleivių gyvensena: raida 1994–1998 metais ir vertinimas tarptautiniu požiūriu. Panevėžys.
3. Young people's health in context. (2004) Health Behaviour in Schoolaged Children (HBSC) study: International Report from the 2001/2002 survey. WHO.

EXPRESION OF HEALTHINESS OF PEOPLE ATTENDING FITNESS CLUBS IN THEIR FREETIME

Daiva Vizbaraitė, Andrius Jankauskas
Lithuanian Academy of Physical Education, Lithuania

The increasing number of fitness clubs and people‘s attendance should make the individuals take care of themselves and their health in various aspects (Booth, 2000). The biggest health resources are: physical activity, nutrition, absence of addictions (Hilberg, 2008). A problematic question arises: are people attending fitness clubs in their freetime lead by criteria of healthiness?

The aim of the research is to define the expression of healthiness in people‘s who attend fitness clubs life.

200 people (99 men and 101 women) attending fitness clubs in their freetime were the objects of the research. They were selected from various fitness clubs accidentally. The average age of the subjects was 28±8 years old. Questionnaires were given to people attending fitness clubs to investigate their lifestyle. We estimated the physical activity of people attending fitness clubs in their freetime. The objects of the research were inquired about nutrition habits and spread of addictions among people exercising in their freetime.

The research showed that people attending fitness clubs are physically active: more than a half of the objects (81% of men and women) exercise 3—6 times per week;

16% of men and 7% of women spend their freetime watching TV. People attending fitness clubs in their freetime are partly concerned about their nutrition: both men and women (72% of men and 83% of women) use vegetable oil for cooking more often than any other. Only 18% of men and 21% of women follow the nutrition routine. Both men and women tend to have a snack between the main meals of the day.

Smoking and usage of alcoholic drinks are common among people who attend fitness clubs in their freetime: the spread of smoking among men and women is similar, but mainly men are the ones who smoke more than 20 cigarettes a day. Only 9% of men and 15% of women do not use alcoholic drinks at all. Men tend to use more alcoholic drinks, including beer and wine, than women. Younger people (18—35 years old) use stronger alcoholic drinks and beer more often than other drinks while middle-aged people (36—50 years old) choose wine instead.

References

1. Hilberg T. Hamostaseologie. (2008). Physical activity in the prevention of cardiovascular diseases. *Epidemiology and mechanisms*, 28(1):9-15.
2. Booth, FW., Gordon, SE., Carlson, CJ. (2000). Hamilton MTWaging war on modern chronic diseases: primary prevention through exercise biology. *J Appl Physiol*, Feb, 88(2):774-87.

RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY AND PHYSICAL FITNESS IN SCHOOLBOYS

Vida Volbekienė, Arūnas Emeljanovas, Renata Rutkauskaitė, Rita Gruodytė, Laima Trinkūnienė
Lithuanian Academy of Physical Education, Lithuania

Although the relationships between physical activity (PA), physical fitness (PF) and health are justified by scientific research, further studies of health-enhancing physical activity are on the priority list. The most important studies are focusing on the dose-response relationship between physical activity and various health components (Hardman, 2001; Oja, 2001; Oja, Borms, 2004).

Purpose: the study aims to examine the relationships between PA and PF in schoolboys.

Methods. The study was undertaken in March — April 2008 in randomly selected secondary schools of Kaunas. 118 schoolboys of 9^{th} grade have fulfilled all the required tasks of this study. Their physical activity (PA) was measured by modified short form of international PA questionaire (IPAQ, Ainsworth, Levy, 2004). According to the modified recomendations of the *Guidelines for Data Processing and Analysis of the International Physical Activity Quostionnaire (IPAQ) Short and Long Forms* (2005), all respondents were devided in three groups: vigorous PA (n=34), moderate PA (n=52) and low PA (n=32). Participants have performed physical fitness tests to measure their flexibility (sit and reach test, Eurofit, 1993), power (vertical jump was obtained using jump parameter gauge (SBM-1)), cardiovascular endurance (Roufier exercise test), muscular strength and endurance (modified push-up, Test Manual for the Assessment of Health Related fitness, 1994).

Results and conclusions. The differences in physical fitness tests among the groups were identified in vertical jump ($p<0.001$), sit and reach ($p<0.001$), and modified push-up ($p<0.05$). There were no differences in the results of Roufier test among the groups ($p>0.05$). The significant positive correlation was between the physical activity and: power ($r=0.32$; $p<0.001$); flexibility ($r=0.3$; $p<0.001$); muscular strength and endurance ($r=0.3$; $p<0.001$) in 9^{th} grade schoolboys.

Although the preliminar results of this study shows that the relationships between PA and PF in schoolboys exists, deeper and broader investigations are the object of future research.

References

1. Ainsworth, B.E., Levy, S.S. (2004). Assessment of health-enhancing physical activity: methodological issues. In P.Oja, J.Borms, (Eds.), *Health Enhancing Physical Activity. Perspectives — the Multidisciplinary Series of Physical Education and Sport Science, 6 (pp. 239-270).* Oxford (UK): Meyer & Meyer Sport Ltd.
2. Hardman AE. (2001). Physical activity and health: current issues and research needs. *International Journal of Epidemiology.* 30 (5), 1193-1197.
3. Oja P. (2001). Review Dose response between total volume of physical activity and health and fitness. *Med Sci Sports Exerc*. 33(6 Suppl): S428-37.
4. Oja, P, Borms J, (2004). Health enhancing physical activity, vol. 6. Oxford (UK): Meyer &Meyr Sport Ltd.; Perspectives — the multidisciplinary series of Physical education and sport science, 465p.
5. Suni J., Oja P., Laukkanen R., Miilunpalo, Vartiainen M. (1994). Test Manual for the Assessment of Health Related fitness. President Urko Kaleva Kekkonen Institute for Health Promotion Research. Tampere, Finland.

SECULAR TRENDS IN HEALTH-RELATED PHYSICAL FITNESS AMONG SCHOOLCHILDREN IN LITHUANIA

Vida Volbekienė, Aušra Griciūtė
Lithuanian Academy of Physical Education, Lithuania

Health-related fitness components are affected by habitual physical activity and related to health status (1). Low physical fitness increases the risk of chronic health conditions (2, 3). Many of the risk factors for coronary artery disease, hypertension, abnormal plasma lipoprotein profile, noninsulin-dependent diabetes, and osteoporosis in adult years can begin to develop in childhood and worsen in adult years (4). Better understanding of the secular trends of physical fitness may make fitness promotion interventions more effective and, thus, improve the present and future health of children. This study hypothesized that the socioeconomic transformation that has taken place in Lithuania during the previous decade may have brought about a less active lifestyle among children and, consequently, a decline in fitness.

The aim of this study was to analyze the secular trends in health related fitness among 12-, 14- and 16-year-old Lithuanian boys and girls from 1992 to 2002.

Methods. The five biggest cities in Lithuania in 1992 and 2002 according to the size of population were included in the study. Fourteen schools of general education were randomly selected. The selection of classes was not random. We selected classes which were convenient to test, i.e., classes which had physical education (PE) lessons on the day of the survey (according to the school schedule of PE lessons and after attaining permission from the school authorities). The schoolchildren who took part in the study attended 2 obligatory lessons of physical education (PE) per week. The research was carried out in March and April of the years 1992 and 2002. In 1992, the test group comprised of 830 subjects (395 boys and 435 girls), in 2002 — 1179 subjects (577 boys and 602 girls). The height and weight of the children were measured and the Eurofit test battery was used to analyze the children's fitness. Secular trends and differences in physical fitness of each gender and age group were evaluated statistically by the ANOVA variance analysis. The covariance analysis (ANCOVA) was performed to control body dimensions. Relative differences in physical fitness, as recorded in 1992 and 2002, were calculated separately for boys and girls in each age group as well as between boys and girls. The significance level was set at P=0.005.

Results. Boys and girls of all three age groups performed better in the sit and reach test (12.4—19.8%) and in the 20 m shuttle run test (30.0—46.0%, P=0.000) but did less sit-ups (3.5—7.3%, P=0.000—0.018) in 1992 compared to the results in 2002. The girls' performance was better in the long broad jump test (4.9—5.5%) (P=0.000) in 1992 than in 2002.

Conclusions. There was a marked decrease in aerobic fitness and flexibility and a slight increase in abdominal muscular endurance. Leg muscular power decreased slightly in girls but remained unchanged in boys. These trends were not significantly influenced by weight, body mass index (BMI) and height+BMI. A decrease in daily physical activity cannot be excluded as a contributing factor for the decrease in aerobic fitness and flexibility.

References

1. Malina RM, Bouchard C, Bar-Or O. Growth, maturation, and physical activity. 2nd ed. Champaign (IL): Human Kinetic Books; 2004.
2. Kesaniemi YK, Danforth E Jr, Jensen MD, Kopelman PG, Lefebvre P, Reeder BA. Dose-response issues concerning physical activity and health: an evidence-based symposium. Med Sci Sports Exerc 2001; 33 (6 Suppl): S351—S358.
3. Oja P. Frequency, duration, intensity and total volume of physical activity as determinants of health outcomes. In: Oja P, Borms J, editors. Health enhancing physical activity, vol 6. Oxford (UK): Meyer&Meyer Sport Ltd, 2004. Perspectives - the multidisciplinary series of physical education and sport science, p 169-207.
4. Hoffman C, Rice D, Sung HY. Persons with chronic conditions: their prevalence and costs. JAMA 1996; 276: 1473—1479.

AEROBIC CAPACITY IN LITHUANIAN YOUNG CYCLISTS OF DIFFERENT AGE AND PERFORMANCE LEVEL

Gintautas Volungevičius, Arvydas Stasiulis, Pranas Mockus
Lithuanian Academy of Physical Education, Lithuania

The aim of the study was to compare aerobic capacity of young Lithuanian cyclists of different age and performance level by means of increasing cycling exercise with cadence of 90 rpm.

Methods. Eight 15-16 year old (training experience — 2—3 years) and eight 19—23 year old (training experience — 5—8 years) cyclists participated in the study. They performed increasing ramp cycling exercise until voluntary eqaustion on the cycle ergometer "Ergoline". Gas exchange parameters and heart rate were continuously recorded using portable analyser "Oxycon Mobile" (Jaeger, Germany) and aerobic capacity parameters were later determined.

Results. Absolute values of maximum oxygen uptake (VO_2max), ventilatory thresholds, peak test power, pulmonary ventilation were significantly higher in older group. Howerver, relative VO_2max and ventilatory threshold values (expressed per kg of body mass) as well as work efficiency and HR values were not significantly different between groups investigated.

Conclusion. The results showed that only advantage of older and better performance group during increasing cycling has been associated with higher absolute aerobic capacity parameters.

THE EFFECT OF PRECEDING STEP EXERCISE ON EMG OF LEG MUSCLES DURING INCREASING RUNNING TEST

Kristina Zaičenkovienė, Arvydas Stasiulis, Roma Aleksandravičienė
Lithuanian Academy of Physical Education, Lithuania

Eccentric exercise affects muscles differentially according to intensity, duration, and previous exposure to the specific exercise activity (Larsen, et al., 2005). Stepping differs from most exercise tests in that it involves eccentric contractions (negative work) in which the active muscle is lengthened (Newhman et al, 1986). Step exercises can to delay muscle damage and pain (Scharf — Olson et al., 1996). But it is unknown how does it effect aerobic capacity and aerobic work effectiveness. Analysis of EMG helps to understand metabolic changes and their mechanisms (Matsumoto et al., 1991).

The aim of this study was to evaluate the effect of prior step exercise on the EMG parameters of leg muscles during increasing ramp running test in female students.

Methods. Eight healthy moderately trained female students performed increasing ramp running test (IRT) on treadmill (LE 200 CE, HP Cosmos) under three different conditions (control, one hour and 24 hours after prior exercise (24 min of interval step exercise). Pulmonary gas exchange parameters (Oxycon Mobile , Germany) and EMG (Biometrics Ltd, USA) of right leg m. vastus lateralis, m. vastus medialis, lateral and medial heads of m. gastrocnemius were continuously recorded. The subjects were asked to evaluate perceived exertions at the end of each minute of IRT. Blood creatine kinase was dertermined before and 24 hours after step exercise (Spotchem EZ SP-4430, Japan).

Results. The average values of root mean square amplitude (RMS), integrated EMG (iEMG), median of EMG power spectrum (MED) during IRT did change significantly one and 24 hours after prior step exercise. ANOVA showed significant changes in RMS and MED dynamics during IRT in m. gastrocnemius medialis

Conclusion. The preceding step exercise seem to have residual effect (within 1—24 hours of recovery) on EMG dynamics during IRT in female students.

References

1. Larsen R. G.Ringaard S., Overgaard (2007). Localization and quantification of muscle damage by magnetic resonance imaging following step exercise in young .women. *Scand J Med Sci Sports*: 17, 76 — 83;
2. Scharff-Olson M, Williford HN, Blessing DL, Brown JA (1996). *The physiological effects of bench/step exercise*. ACSM sports Med; 21(3):164 — 75.
3. Newhman D J, J ones DA, Edwards RH (1986). Plasma creatine kinase changes after eccentric and concentric contractions. *Muscle Nerve*; 9(1):59-63.
4. Matsumolo T. Ito K, Moritani T (1991). The relationship between Anaerobic threshold and electromyographic fatique threshold in college women. *Eur J Appl Physiol:* 63:1-5

THE INTERACTION BETWEEN START PHASE PERFORMANCE, ANTHROPOMETRIC AND PHYSICAL FITNESS INDICATORS IN SWIMMING

Ilona Judita Zuozienė, Valentina Skyrienė
Lithuanian Academy of Physical Education, Lithuania

The swim start performance plays an important role in the structure of the overall race. It was determined that athlete's total race performance is influenced by the speed of his/her start, turn(s), distance and finish. Start time in swimming has strong correlation with athlete's final race time (Thompson et al., 2000). Maglischo (1982) notes that by improving swim start technique athletes can improve their race time by at least 0.10 s. A number of studies show that the most important element in swimming is not what type of start technique is chosen by an athlete but how well it is performed (Arellano et al., 1994; Roffer & Nelson, 1972), therefore, training and improvement of the swim start become critical in swimming race performance.

The aim of the research is to analyse and determine the interaction between swimmers' start phase performance, anthropometric and physical fitness indicators.

Research methods and organisation. The subjects of the study were qualified 14—20 aged swimmers (12 female and 17 male). Body composition parameters of the subjects were measured using the standard measurement procedure. These parameters included swimmer's body height, weight, chest girth, abdominal sagittal diameter, shoulder and pelvic width, length and width of a hand and a foot. To determine temporary characteristics of swimmers' start performance the subjects had to perform the take-off jump and to swim 15 m at maximal velocity. The swim start was filmed from the side above the water with a 25 Hz digital camera CANON. From the filmed images the durations of following phases were calculated: the push phase, the flight phase and the 15 m swim phase. Swimmers' hydrodynamic characteristics were judged according to the distance of gliding along the water surface without movements, the swim time in 5 m gliding with movements and velocity. Athletes' special physical fitness was illustrated by time shown in the 25 m swim at maximal velocity, drawing force on the surface and in water swimming with legs, hands and fully combining these movements were recorded. Pearson Correlation Coefficient was applied for the analysis of the interaction between swimmers' start phase performance, anthropometric and physical fitness indicators.

Results. Research results show that time shown by female athletes in swimming the 15 m start phase has strong correlation with their reaction time (r=–0.910), flight time (r=–0.790) and drawing force in water fully combining movements (r=–0.780). The mean relation was determined through anthropometric indicators: foot width (r=–0.610) and shoulder width (r=–0.580) and hydrodynamic indicator: gliding velocity (r=–0.520). Time shown by male athletes in swimming the 15 m start phase correlates with drawing force on the surface (r=–0.680), take off time (r=–0.615), shoulder width (r=–0.530) and chest girth (r=–0.500).

Correlational data analysis indicated that the performance in the 15 m start phase makes significant influence on swim time and velocity in the short (25 m) course race (in the group of female athletes r=0.875 and –0.870; in the group of male athletes r=0.957 and –0.950).

Conclusions. The swim start phase is very important for the final result, especially in short course races. Swimmers' anthropometric, hydrodynamic and physical fitness indicators influence their performance efficiency and, therefore, in the training of qualified swimmers there is a necessity to have proper selection and specific training of movement skills.

References

1. Arellano, R., Brown, P., Cappaert, J & Nelson R.C. Analysis of 50 m, 100 m and 200 m freestyle swimmers at the 1992 Olympic Games. // Journal of Applied Biomechanics. 1994. №10. P. 189-199.
2. Maglischo, E.W. (1982). Swimming faster. Toronto, Canada: Mayfield Publishing Company.
3. Roffer, B.J. and Nelson, R.C. The grab start is faster. // Swimming Technique. 1972. V.31. № 4. P.14-18.
4. Thompson, K.G., Haljand, R. & MacLaren, D.P. An analysis of selected kinematics variables in national and elite male and female 100-m and 200-m breaststroke swimmers. // Journal of Sport Science. 2000. №18. P. 421-431.

THE ATTITUDE TOWARDS PHYSICAL EDUCATION AS A SUBJECT — IS THERE A PROBLEM?

Kristina Visagurskienė[1], Nijolė Sakalauskienė[2], Stepas Margevičius[2]
Lithuanian Academy of Physical Education[1], Gymnasium of Ugnė Karvelis[2], Lithuania

While developing a positive attitude towards physical education it is essential to introduce healthy regime from early childhood, and it should help not only to perfect the physical status, but it could be as a tool for developing the soul, creativity and strengthen will-power. The biggest responsibility of pre-school and school children is given to closest people — parents and teachers. Unfortunately parents and teachers do not motivate children to be physically active. That is why children usually enjoy more attractive, needful, but passive activity.

It is useful to know if school children's attitude change towards the organization of physical education (PE) classes and teacher's work. The obtained kowledge could help teachers to organize, plan and adjust a plan of the lesson.

The aim of the research is to know the opinion of school children about the lessons of physical education in general school and to compare it with the research past data.

The method and organization of the research. The research of the change of the attitude towards physical education has been carried out among the school children of 6-9 classes. During the interview we come to know about the school children's attitude towards physical education lessons and subject itself, what is their opinion about physical education teacher. The obtained results were compared with the research results, which were already done in Lithuania.

Results and discussion. Boys and girls like mostly those PE practical lessons, where they can learn techniques of different kinds of sports, composite lessons and lessons, where they are physically developed. It was noticed, that school children are not interested in lessons taught in healthy lifestyle. Negative approach to PE lessons is because of a lack of sports equipment and elementary hygiene conditions, which are very low at every school. They want more games during their PE classes. The obtained data showed that only few of them are not satisfied with their PE teachers, girls are more dissatisfied, but this is because they don't like PE lessons at all. School children defined that PE teachers do not evaluate their efforts and achievements and teachers are too strict to them.

Half of all interviewed boys answered that PE lessons are mostly liked, but only one fifth of the interviewed girls like PE lessons.

While comparing 2001-2006 research data, the best rate of PE classes was in 2001 and attendance of school children was the highest as well as the most active participation in them and most of the school children took up sports. The 2006 results showed that school children's motivation to take up sports is decreasing as well as interest in sport. This is a general problem, which must be solved by correcting school programs and raising teachers' qualification.

References

1. Bailey, R. (2006). Physical Education and Sport in Schools: A Review of Benefits and Outcomes. *Journal of School Health*, 76(8): 397–401.
2. Kardelis, K., Kavaliauskas, S., Balzeris, V. (2001). Mokyklinė kūno kultūra: realijos ir perspektyvos: monografija. Kaunas.

LIETUVOS KŪNO KULTŪROS AKADEMIJA

LITHUANIAN ACADEMY OF PHYSICAL EDUCATION

KŪNO KULTŪROS IR SPORTO DEPARTAMENTAS
PRIE LIETUVOS RESPUBLIKOS VYRIAUSYBĖS

DEPARTMENT OF PHYSICAL EDUCATION AND SPORT
UNDER THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA

LIETUVOS TAUTINIS OLIMPINIS KOMITETAS

LITHUANIAN NATIONAL OLYMPIC COMMITTEE

SPORTO MOKSLO DABARTIS IR NAUJOSIOS IDĖJOS

CURRENT ISSUES AND NEW IDEAS IN SPORT SCIENCE

II tarptautinė mokslinė konferencija

Pranešimų tezės

2008 m. spalio 16—17 d.
Kaunas, Lietuva

2-nd International
Scientific Conference

Abstracts

16—17 October 2008
Kaunas, Lithuania

Pranešimų tezių kalba netaisyta
Leido Lietuvos kūno kultūros akademija, Sporto g. 6, LT-44221 Kaunas