

20th annual Congress of the
EUROPEAN COLLEGE OF SPORT SCIENCE
24th - 27th June 2015, Malmö – Sweden
BOOK OF ABSTRACTS

Edited by:
Radmann, A., Hedenborg, S., Tsolakidis, E.

Hosted by the:
Malmö University, Lund University & Copenhagen University

ISBN 978-91-7104-567-6

European College of Sport Science:

Book of Abstracts of the 20th Annual Congress of the
European College of Sport Science – 24th - 27th June 2015, Malmö – Sweden.
Edited by Radmann, A., Hedenborg, S., Tsolakidis, E.
ISBN 978-91-7104-567-6

Copyright by European College of Sport Science

Conception, DTP: SporTools GmbH – Data management in sports
Corrections: Patera, N., Tsolakidis, K.

supported by

SPORTTOOLS
Data management in sports

Feldblumenweg 26, 50858 Cologne, Germany
www.SporTools.de

DEVELOPMENT OF THE ATHLETES RECRUITING SYSTEM IN CYCLIC SPORTS BASED ON INDIVIDUAL MORPHOFUNCTIONAL AND GENETICS PARAMETERS

Yevdaliuk, S.V.1, Melnov, S.B.2, Kruchynsky, N.G.3, Davydov, V.Y.3, Lebed, T.L.3, Kozlova, A.S.4, Shepelevich, N.V.3

Brest regional center of sports medicine

INTRODUCTION Modern approaches to the sportsmen recruitment and individualization of the training process should take into account both genetic and environmental factors contribution to the making of the world-class athlete. The aim of this study was to develop a genetic monitoring program to determine the individual profile for athletes reserve in cyclic sports. **METHODS** The study group comprised 250 swimmers, both males and females, aged 10-19. We evaluated the morpho-functional state of swimmers using morphological and functional suitability scales (Davydov V.Y. et al.). Genotyping and frequency of 5HTT, ACE, AGT, PPARA, PPARD, PPARGC1A, and TFAM polymorphisms were obtained by site-specific PCR amplification that was performed on genomic DNA isolated from buccal epithelial

cells (Akhmetov I.I.). RESULTS The morphofunctional state evaluation showed that most of the athletes had 'average' (66.7% total; 62.2% in girls; 69.7% in boys) and 'above average' morphophysiological level (21.6% total; 24.4% in girls; 21.6% in boys). 9.0% of the study group had 'below the average' level (8.9% in girls; 9.1% in boys), and only 2.7% had 'high level' (4.5%; and 1.5%). The prevalence of the following genotypes was discovered: AGT CC (77.78%±5.66% in boys; 73.17%±6.92% in girls), PPARA GG (65.38%±6.60%; 70%±7.25%) TFAM GG (59.62%±6.80%; 53.66%±7.79%), PPARD TT (58.82%±6.90%; 70%±7.25%). These genotype frequencies were significantly higher than in controls. There was also significant difference of the distribution of the ACE ID in boys (24.53%±5.91%) and girls (46.34%±7.79%), and ACE II in study group (22.64%±6.15% in boys vs. 14.63%±5.52% in girls); the frequency of the TFAM GC was also significantly higher in girls (31.71%±7.27% vs. 13.46%±4.73%). We also observed the trend in PPARD TT genotype distribution (70%±7.25% in girls vs. 58.82%±6.90% in boys). DISCUSSION Conducted anthropological examination allowed to develop the model parameters of morphological and functional parameters of the athletes. We analyzed the morphophysiological developmental level based of these characteristics and evaluated maximum potential taking into account so called 'testosterone peak'. The most promising athletes were observed in groups of 14 and 15 years (girls) and 11 and 15 years (boys). On the basis of previous studies we selected 5 candidate genes and studied a common genetic profile of the swimmers. As a result, the basic polymorphic genes set for subsequent screening study was developed. Thus, AGT C, PPARA G, PPARD T and TFAM G alleles can be considered as relevant genetic markers for swimmers. After initial screening examination of these genetic markers further molecular genetic testing for the 13 gene polymorphism will be carried out. References Akhmetov II Molecular genetics of sports: a monograph. – M.: Soviet Sport, 2009. – 268 p. (RUS) Davydov VY Selection and orientation of swimmers in terms of physique in the long-term training (theoretical and practical aspects): monograph / Davydov VY, Avdienko VB. (2013). – M.: Soviet Sport, 2013. – 384 p. (RUS)

TABLE OF CONTENTS

ORGANISATION.....	3
WELCOME.....	8
WEDNESDAY, JUNE 24TH, 2015.....	17
13:00 - 14:00.....	17
MO-PM01 TRAINING & TESTING	17
OP-PM76 GSSI NUTRITION AWARD.....	19
OP-PM77 ASPETAR EXCELLENCE IN FOOTBALL AWARD.....	22
OP-BN13 COACHING: TEAM SPORT I	23
MO-BN01 MOTOR LEARNING & BIOMECHANICS.....	25
MO-PM03 MUSCLE, MOLECULAR BIOLOGY AND BIOCHEMISTRY	28
MO-SH01 SOCIAL SCIENCES AND HUMANITIES IN SPORT.....	30
MO-SH04 PSYCHOLOGY I	32
MO-PM07 ADAPTED PHYSICAL ACTIVITY: CHALLENGES.....	35
MO-BN04 MIXED.....	37
MO-PM06 ADAPTED PHYSICAL ACTIVITY: SPORT & DISABILITY.....	38
MO-PM11 HEALTH & FITNESS: AGE.....	40
MO-BN06 COACHING: MIXED SESSION	44
MO-SH02 PHYSICAL EDUCATION AND PEDAGOGICS I.....	47
14:00 - 15:00.....	49
MO-PM02 NUTRITION, TRAINING ADAPTATION AND PERFORMANCE	49
MO-BN03 KINEMATICS	52
MO-PM05 OXYGEN TRANSPORT, VO2MAX AND ENERGY EXPENDITURE	55
MO-SH06 PHILOSOPHY & ETHICS	57
MO-SH05 PSYCHOLOGY II.....	59
MO-PM08 ADAPTED PHYSICAL ACTIVITY: DISABILITIES.....	61
MO-BN05 MOTOR LEARNING.....	63
MO-PM10 ADAPTED PHYSICAL ACTIVITY: NUTRITION.....	66
MO-PM12 HEALTH & FITNESS: AGEING, GENDER, STRENGTH	69
MO-BN07 COGNITIVE IMPAIRMENTS AND FATIGUE DURING EXERCISE	73
MO-SH03 PHYSICAL EDUCATION AND PEDAGOGICS II	77
15:00 - 16:30.....	79
IS-PM02 THE BENGT SALTIN TRIBUTE SYMPOSIUM.....	79
IS-PM10 THE ATHLETE'S BIOLOGICAL PASSPORT – WHAT'S THE STATUS? *	81
IS-PM06 SKELETAL MUSCLE ADAPTATIONS TO ENDURANCE TRAINING: IS TISSUE HYPOXIA THE MAIN SIGNAL?.....	82
OP-PM02 HEALTH, TRAINING & PERFORMANCE	82
IS-BN04 QUALITY OF MOVEMENTS – MORE THAN MEETS THE EYE?.....	85
IS-BN06 TENDON ADAPTATION.....	86
IS-SH01 FEPSAC SYMPOSIUM - THE DEVELOPMENT OF EXPERTISE AND COMPETENCIES OF APPLIED SPORT PSYCHOLOGISTS IN EUROPE.....	87
IS-SH02 ANIMALS, SPORT AND HEALTH - A SUSTAINABLE RELATIONSHIP?.....	88

OP-PM05 MUSCLE METABOLISM & NITRATE INGESTION	89
OP-BN01 NEUROMUSCULAR CONTROL.....	91
OP-PM36 SPORTS MEDICINE & TECHNOLOGY.....	93
OP-PM35 SPORT TECHNOLOGY: MIXED SESSION.....	96
OP-SH05 PSYCHOLOGY (PHYSICAL EXERCISE, FOOTBALL PERFORMANCE).....	97
OP-SH01 SPORTS PEDAGOGY AND HISTORY.....	99
16:45 - 18:00.....	102
PS-PL01 CHANCES AND CHALLENGES FOR PHYSICAL ACTIVITY AND LEARNING - SUSTAINABLE MOVEMENTS AND MOVEMENT CULTURES.....	102
THURSDAY, JUNE 25TH, 2015	103
08:30 - 10:00	103
OP-PM63 NUTRITION: FAT, GLUCOSE AND METABOLISM.....	103
OP-PM06 TRAINING INDUCED ADAPTATION.....	104
OP-PM01 SPORTS MEDICINE.....	107
OP-PM03 EXERCISE METABOLISM, MITOCHONDRIAL FUNCTION AND BODY COMPOSITION.....	109
OP-PM61 HEALTH & FITNESS: AGE III.....	111
OP-BN14 COACHING: TEAM SPORT II.....	114
OP-SH02 SPORT PSYCHOLOGY AND MOTOR/COGNITIVE FUNCTION.....	116
OP-SH03 SPORT MANAGEMENT (SUSTAINABILITY AND SPORT EVENTS).....	118
OP-PM19 PHYSIOLOGY: FATIGUE, MUSCLE DAMAGE & REPAIR.....	120
OP-PM11 THERMOREGULATION I.....	122
OP-PM26 PHYSIOLOGY: BRAIN.....	124
OP-BN12 MUSCULOSKELETAL & FATIGUE.....	126
OP-SH04 PHYSICAL EDUCATION & PEDAGOGICS (CHILDREN IN SPORT).....	128
10:20 - 11:50.....	131
IS-PM12 THE IMPACT OF PHYSICAL ACTIVITY ON CARDIOVASCULAR FUNCTION IN LIFESTYLE RELATED DISEASE *.....	131
IS-PM01 SPORTS NUTRITION EXCHANGE: ADVANCES IN THE APPLICATION OF SCIENCE IN THE SPORTING ENVIRONMENT SPONSORED BY GSSI.....	132
OP-PM07 CARBOHYDRATE AND PERFORMANCE.....	133
OP-PM04 ADAPTATION AND MOVEMENT ANALYSIS.....	135
IS-BN10 LATERALITY IN LOCOMOTION AND SPORT SPONSORED BY ADIDAS.....	137
IS-BN09 RATE OF FORCE DEVELOPMENT: NEW IDEAS ON MEASUREMENT, MECHANISMS AND TRAINABILITY.....	138
IS-SH06 SPORT AND PHYSICAL ACTIVITY IN LATER LIFE.....	139
IS-SH05 GOOD GOVERNANCE IN SPORTS.....	140
OP-PM20 PHYSIOLOGY: MUSCLE METABOLISM, INTERVAL TRAINING.....	141
OP-BN02 MOTOR LEARNING.....	143
OP-PM12 THERMOREGULATION II.....	146
OP-PM49 TRAINING & TESTING: AGE & CLINICAL.....	148
OP-BN03 SWIMMING, JUMPING & SQUATTING, COORDINATION.....	150
OP-SH15 PHYSICAL EDUCATION & PEDAGOGICS I.....	152
12:00 - 13:15	154
PS-PL02 FROM THE CRADLE TO THE GRAVE - SPORT AND PHYSICAL ACTIVITY FOR A SUSTAINABLE BODY.....	154
14:00 - 15:00	155

MO-PM13 HEALTH & FITNESS: LIFESTYLE.....	155
MO-PM15 HEALTH & FITNESS: MIXED SESSION	158
MO-PM17 PHYSIOLOGY: ENDURANCE	162
MO-PM19 PHYSIOLOGY: THERMOREGULATION, FATIGUE.....	165
MO-PM21 PHYSIOLOGY: ENERGY METABOLISM.....	168
MO-PM23 PHYSIOLOGY: MIXED SESSION.....	170
MO-SH12 SOCIAL SCIENCE AND SPORT	173
MO-SH07 SPORT MANAGEMENT	177
MO-PM25 REHABILITATION AND PHYSIOTHERAPY: PHYSIOTHERAPY/OSTEOPATHY	178
MO-PM27 SPORTS MEDICINE AND ORTHOPEDICS.....	181
MO-PM45 REAL LIFE THREATS TO SPORT PERFORMANCE	185
MO-PM31 MOLECULAR BIOLOGY AND BIOCHEMISTRY: MOLECULAR SIGNALING/RESPONSE.....	187
MO-PM33 NEUROMUSCULAR PHYSIOLOGY: FATIGUE.....	189
MO-SH10 SPORTS STATISTICS & ANALYSIS I.....	193
15:00 - 16:00.....	196
MO-PM14 HEALTH & FITNESS: CHILDREN, TEAM SPORTS	196
MO-PM16 PHYSIOLOGY: STRENGTH.....	198
MO-PM18 PHYSIOLOGY: MIXED SESSION I	202
MO-PM20 PHYSIOLOGY: MUSCLE DAMAGE, HYPOXIA	205
MO-PM22 PHYSIOLOGY: CARDIOVASULAR PHYSIOLOGY.....	207
MO-PM24 PHYSIOLOGY: MIXED SESSION.....	209
MO-SH13 SOCIOLOGY/SPORT MANAGEMENT II.....	213
MO-SH08 SOCIOLOGY/SPORT MANAGEMENT I	215
MO-PM26 REHABILITATION AND PHYSIOTHERAPY: ORTHOPEDIC REHABILITATION.....	217
MO-PM28 SPORTS MEDICINE AND ORTHOPEDICS: MIXED SESSION I.....	220
MO-PM30 SPORTS MEDICINE AND ORTHOPEDICS: GENDER.....	223
MO-PM32 SPORT TECHNOLOGY	226
MO-PM34 NEUROMUSCULAR PHYSIOLOGY: COORDINATION	228
MO-SH11 SPORTS STATISTICS & ANALYSIS II.....	232
16:20 - 17:50.....	235
IS-PM09 PERFORMANCE AND TRAINING OF THE TOP-ATHLETE *	235
IS-PM13 SKELETAL MUSCLE LIPOTOXICITY; SHOULD WE BE INTERESTED?.....	235
OP-BN16 COACHING: MIXED SESSION II.....	236
OP-PM13 PHYSIOLOGY: ENDURANCE	238
IS-BN05 PERFORMING WHEN GETTING OLDER: ALTERATIONS AND PLASTICITY OF THE AGEING NEUROMUSCULAR SYSTEM.....	240
IS-BN07 INTEGRATIVE APPROACH OF MUSCLE FATIGUE IN 2015 - SPONSORED BY THE PHYSIOLOGICAL SOCIETY	241
IS-SH10 URBAN SPORT LANDSCAPES	242
IS-SH08 CHILDRENS RIGHTS IN SPORT	243
OP-PM21 PHYSIOLOGY: RESPIRATION	243
OP-BN04 RUNNING.....	245
OP-PM40 TRAINING & TESTING: STRENGTH I	247
OP-PM54 HEALTH & FITNESS: LIFESTYLE III.....	249
OP-SH06 PSYCHOLOGY (SELF-DETERMINATION)	251
OP-SH22 SOCIOLOGY (SPORT SCIENCE IN ECSS)	253

18:00 - 19:30	254
OP-PM64 NUTRITION: AMINO ACIDS AND PROTEINS	254
OP-PM30 SPORTS MEDICINE & ORTHOPEDICS: PHYSIOTHERAPY I.....	256
OP-PM10 PHYSIOLOGY: AGE II	258
OP-PM14 PHYSIOLOGY: INTERVAL TRAINING.....	261
OP-PM68 ADAPTED PHYSICAL ACTIVITY: PHYSICAL DISABILITIES	263
OP-PM56 HEALTH & FITNESS: ENDURANCE	264
OP-SH23 SOCIOLOGY/SPORT MANAGEMENT	266
OP-SH16 PHYSICAL EDUCATION & PEDAGOGICS II.....	268
OP-PM22 PHYSIOLOGY: VASCULAR BIOLOGY.....	271
OP-PM41 TRAINING & TESTING: STRENGTH II	273
OP-PM24 PHYSIOLOGY: HORMONAL BIOLOGY & GENDER	275
OP-BN11 SKILL ACQUISITION	277
OP-SH12 SPORTS HISTORY.....	279
 FRIDAY, JUNE 26TH, 2015	 283
08:30 - 10:00	283
OP-PM65 NUTRITION: HYDRATION	283
OP-PM31 SPORTS MEDICINE & ORTHOPEDICS: PHYSIOTHERAPY II.....	284
OP-PM27 SPORTS MEDICINE & ORTHOPEDICS: ORTHOPEDICS I	286
OP-PM15 PHYSIOLOGY: HYPOXIA	289
OP-PM69 ADAPTED PHYSICAL ACTIVITY: MENTAL DISABILITIES	290
OP-PM74 MOLECULAR BIOLOGY AND BIOCHEMISTRY: FATIGUE	291
OP-SH13 SOCIOLOGY/PSYCHOLOGY (TALENT IDENTIFICATION).....	293
OP-SH14 SOCIOLOGY: SPORT MEDIA	295
OP-PM37 TRAINING & TESTING: ENDURANCE I.....	297
OP-BN05 KINEMATICS.....	299
OP-BN08 BALANCE & STABILITY, COORDINATION	301
OP-SH17 PHYSICAL EDUCATION & PEDAGOGICS III.....	303
 10:20 - 11:50	 305
IS-PM11 ECSS - ACSM EXCHANGE SYMPOSIUM : THE MARATHON AND THE HEART - THE GOOD, THE BAD, AND THE UNKNOWN	305
IS-PM04 EFFECTS OF EXERCISE ON BRAIN FUNCTION, LEARNING AND MEMORY.....	306
IS-PM03 FEMALE SEX HORMONES AND SKELETAL MUSCLE *	307
OP-PM16 PHYSIOLOGY: FATIGUE.....	308
IS-BN02 SPORT EXPERTISE: PUTTING BRAIN, BODY, AND ENVIRONMENT TOGETHER AGAIN	309
IS-BN03 THE WORKPLACE AS ARENA FOR HEALTH ENHANCING PHYSICAL ACTIVITY INTERVENTIONS. QUANTIFICATION AND HOW TO REACH THOSE MOST IN NEED	310
IS-SH04 RELATIVE AGE EFFECTS IN YOUTH SPORT: INSIGHTS FROM PHYSIOLOGICAL, PSYCHOLOGICAL, AND SOCIOLOGICAL PERSPECTIVES	311
IS-SH09 SPORTS LABOUR MOBILITY AND THE POLITICS OF PRECARIY	312
OP-PM38 TRAINING & TESTING: ENDURANCE II	313
OP-PM70 MOLECULAR BIOLOGY AND BIOCHEMISTRY: EPIGENETICS.....	315
OP-PM42 TRAINING & TESTING: STRENGTH III.....	317
OP-PM23 PHYSIOLOGY: ENERGY METABOLISM	319
OP-BN10 MOTOR LEARNING, COORDINATION.....	321

OP-SH18 SPORT PARTICIPATION, DEVELOPMENT AND EXERCISE	323
12:00 - 13:15	325
PS-PL03 EXERCISE, ENERGY INTAKE, BRAIN HEALTH AND WELL BEING	325
15:00 - 16:00.....	326
MO-PM37 TRAINING AND TESTING: FATIGUE AND NEUROMUSCULAR PHYSIOLOGY	326
MO-PM35 TRAINING AND TESTING: STRENGTH.....	329
MO-PM38 TRAINING AND TESTING: TEAM SPORTS I	332
MO-PM39 TRAINING AND TESTING: TEAM SPORTS II	336
MO-PM40 TRAINING AND TESTING: ENDURANCE.....	338
MO-PM41 TRAINING AND TESTING: ENDURANCE & CLINICAL.....	341
MO-PM42 TRAINING AND TESTING: INTERVAL TRAINING, TIME TRIAL	345
MO-SH09 PSYCHOLOGY III.....	348
MO-PM43 TRAINING AND TESTING: COORDINATION & AGILITY	351
MO-PM44 TRAINING AND TESTING: MIXED	354
MO-PM29 SPORTS MEDICINE AND ORTHOPEDICS: MIXED SESSION II.....	356
MO-PM36 TRAINING AND TESTING: STRENGTH AND NEUROMUSCULAR PHYSIOLOGY	359
MO-BN02 COACHING.....	362
MO-SH14 SPORTS STATISTICS & ANALYSIS III	365
16:20 - 17:50.....	369
IS-PM08 TEAM SPORT & HEALTH *	369
OP-PM17 PHYSIOLOGY: CARDIOVASCULAR II.....	370
IS-PM16 JSPFSM-RISK FACTORS AND BIOMARKERS OF REDUCED SKELETAL MUSCLE FUNCTION IN OLDER AGE – JAPANESE & EUROPEAN EXPERIENCE.....	372
OP-PM43 TRAINING & TESTING: TEAMSPORT I.....	373
OP-PM59 HEALTH & FITNESS: AGE I	375
IS-PM17 CSSS-ECSS EXCHANGE SYMPOSIUM: PHYSICAL ACTIVITY AND HEALTH PROMOTIO	377
IS-SH03 INTERNET OF SPORTS: AUGMENTING SPORTS TECHNOLOGY FOR PERFORMANCE AND PLEASURE.....	379
IS-SH11 SPORT FOR DEVELOPMENT AND PEACE: CRITICAL PERSPECTIVES	380
OP-PM39 TRAINING & TESTING: ENDURANCE III.....	381
OP-PM71 MOLECULAR BIOLOGY AND BIOCHEMISTRY: METABOLISM.....	383
OP-PM33 SPORTS MEDICINE & ORTHOPEDICS: INJURY PREVENTION I	384
OP-PM48 TRAINING & TESTING: AGILITY.....	386
OP-SH07 PSYCHOLOGY (MENTAL HEALTH AND STRESS)	388
OP-SH19 PHILOSOPHY & ETHICS I.....	389
18:00 - 19:30.....	390
OP-PM66 NUTRITION: CLINICAL	390
OP-PM18 PHYSIOLOGY: CARDIOVASCULAR I + ESSA-ECSS EXCHANGE	392
OP-PM28 SPORTS MEDICINE & ORTHOPEDICS: ORTHOPEDICS II	394
OP-PM44 TRAINING & TESTING: TEAMSPORT II.....	396
OP-PM60 HEALTH & FITNESS: AGE II	398
OP-PM57 HEALTH & FITNESS: CHILDREN I	400
OP-SH08 PSYCHOLOGY (CHALLENGES WITHIN SPORT PSYCHOLOGY I)	403
OP-SH21 SOCIOLOGY.....	405
OP-PM62 HEALTH & FITNESS: MIXED.....	406

OP-PM72 MOLECULAR BIOLOGY AND BIOCHEMISTRY: GENE EXPRESSION & SIGNALING	408
OP-PM34 SPORTS MEDICINE & ORTHOPEDICS: INJURY PREVENTION II	410
OP-PM51 TRAINING & TESTING: COORDINATION	412
OP-BN06 MUSCLE FUNCTION.....	414
OP-SH20 PHILOSOPHY & ETHICS II.....	416
SATURDAY, JUNE 27TH, 2015.....	419
08:30 - 10:00	419
OP-PM32 SPORTS MEDICINE & ORTHOPEDICS: PHYSIOTHERAPY III.....	419
OP-PM29 SPORTS MEDICINE & ORTHOPEDICS: EXERCISE THERAPY, EPIDEMIOLOGY.....	420
OP-PM45 TRAINING & TESTING: TEAMSPORT III.....	422
OP-PM58 HEALTH & FITNESS: CHILDREN II	425
OP-SH11 SPORT STATISTICS & ANALYSIS.....	427
OP-SH09 PSYCHOLOGY (CHALLENGES WITHIN SPORT PSYCHOLOGY II)	429
OP-PM46 TRAINING & TESTING: FATIGUE I.....	430
OP-PM73 MOLECULAR BIOLOGY AND BIOCHEMISTRY: AGE.....	432
OP-PM52 HEALTH & FITNESS: LIFESTYLE I	433
OP-PM25 PHYSIOLOGY: MIXED SESSION.....	435
OP-BN07 GENDER II.....	437
OP-SH24 SOCIOLOGY (SPORT AND GENDER)	439
10:20 - 11:50.....	441
IS-PM05 ROLE OF GLYCOGEN IN SKELETAL MUSCLE REGULATION AND FUNCTION	441
IS-PM14 EFFECT OF SCHOOL BASED PHYSICAL ACTIVITY INTERVENTIONS.....	442
IS-PM07 LIFELONG ENDURANCE TRAINING: MAINTENANCE OF HIGH CARDIOVASCULAR AND OXIDATIVE METABOLIC PERFORMANCE WITH AGING: IN HONOUR OF BENGT SALTIN *	443
IS-PM15 RECENT DEVELOPMENTS IN ALTITUDE AND HYPOXIC TRAINING SPONSORED BY ASPETAR	444
IS-BN08 MENTAL AND COGNITIVE TRAINING: IMPORTANCE FOR SKILL LEARNING, REHABILITATION AND SPORTS ACTIVITIES– MECHANISMS AND APPLICATIONS	445
IS-BN01 DIGITAL SUPPORT SYSTEMS IN RECREATIONAL AND ELITE SPORTS	446
IS-SH07 LARS MAGNUS ENGSTRÖM MEMORIAL SESSION	447
OP-SH10 PSYCHOLOGY (TRAINING AND EXERCISE).....	448
OP-PM47 TRAINING & TESTING: FATIGUE II.....	450
OP-PM75 MOLECULAR BIOLOGY AND BIOCHEMISTRY.....	452
OP-PM53 HEALTH & FITNESS: LIFESTYLE II	454
OP-PM55 HEALTH & FITNESS: OBESITY.....	456
OP-BN09 BIOMECHANICS MIXED SESSION	457
OP-SH25 SOCIOLOGY (SPORT AND GENDER)	459
12:00 - 13:15	461
PS-PL04 INACTIVITY AND THE AGEING POPULATION	461
E-POSTER	464
PP-UD01.....	464
ADAPTED PHYSICAL ACTIVITY.....	464
BIOMECHANICS.....	468

COACHING	477
HEALTH AND FITNESS.....	481
MOLECULAR BIOLOGY AND BIOCHEMISTRY	499
MOTOR LEARNING	502
NEUROMUSCULAR PHYSIOLOGY.....	504
NUTRITION	510
PHILOSOPHY AND ETHICS	517
PHYSICAL EDUCATION AND PEDAGOGICS	518
PHYSIOLOGY	525
PSYCHOLOGY	546
REHABILITATION AND PHYSIOTHERAPY	554
SOCIOLOGY	564
SPORT MANAGEMENT AND LAW	566
SPORT STATISTICS AND ANALYSES.....	567
SPORT TECHNOLOGY	570
SPORTS MEDICINE AND ORTHOPEDICS.....	571
TRAINING AND TESTING	580
AUTHORS INDEX	606