

**17th annual Congress of the
EUROPEAN COLLEGE OF SPORT SCIENCE**

4-7th July ECSS Bruges 2012 – Belgium

BOOK OF ABSTRACTS

Edited by:

Meeusen, R., Duchateau, J., Roelands, B., Klass, M., De Geus, B., Baudry, S., Tsolakidis, E.

Hosted by:

Vrije Universiteit Brussel & Université Libre de Bruxelles

ISBN 978-90902686-8-2

European College of Sport Science:

Book of Abstracts of the 17th Annual Congress of the

European College of Sport Science – 4-7th July ECSS Bruges 2012 – Belgium.

Edited by Meeusen, R., Duchateau, J., Roelands, B., Klass, M., De Geus, B., Baudry, S., Tsolakidis, E.

ISBN 978-90902686-8-2

Copyright by European College of Sport Science

Conception & DTP: SporTools GmbH – Data management in sports

Cover: Stéphane Baudry

Corrections: Patera, N., Chassapis D., Tsolakidis, K.

Printed by: BlosoVlaamseoverheid

supported by

SPORTTOOLS

Data management in sports

Paul-Niessen-Str. 12, 50969 Cologne, Germany

www.SporTools.de

Organization

Congress President

Romain Meeusen (BEL)
Jacques Duchateau (BEL)

ECSS Executive Board

President: Sigmund Loland (NOR)
Past President: Hans Hoppeler (SUI)
President Elect: Marco Narici (GBR)
Exchanges and Affiliations: Romain Meeusen (BEL)
Journal and Media Relations: Gisela Sjøgaard (DNK)
Finances and Partners: Tim Cable (GBR)

ECSS Scientific Board

Anton Wagenmarkers, Chair (GBR)
Flemming Dela, Co-Chair (DEN)
Jan Cabri, Secretary (NOR)
Peter Bärtsch (GER)
Joan Duda (GBR)
Paul Greenhaff (GBR)
Martin Halle (GER)
Jose Antonio Lopez Calbet (ESP)
Erich Müller (AUT)
Gertrud Pfister (DEN)

ECSS Scientific Committee

Natalia Balague (ESP)
Wilhelm Bloch (GER)
Annalisa Cogo (ITA)
Nenad Dikic (SRB)
Taija Finni (FIN)
Daniel Green (GBR)
Michael Grey (GBR)
Markus Gruber (GER)
Jørn Wulff Helge (DEN)
Ylva Hellsten (DEN)
Luc van Loon (NED)
Mike McNamee (GBR)
Maria Francesca Piacentini (ITA)
Janice L. Thompson (GBR)
Nicole Wenderoth (BEL)

Local Scientific Committee

Jean-Pierre Baeyens (BEL)
Stéphane Baudry (BEL)
Luk Buyse (BEL)
Alain Carpentier (BEL)
Erik Cattrysse (BEL)
Peter Clarys (BEL)
Veerle De Bosscher (BEL)
Bas de Geus (BEL)
Kristine De Martelaer (BEL)
Benedicte Deforche (BEL)
Jacques Duchateau (BEL)

Véronique Feipel (BEL)
Malgorzata Klass (BEL)
Romain Meeusen (BEL)
Nathalie Pattyn (BEL)
Jacques Poortmans (BEL)
Steven Provyn (BEL)
Bart Roelands (BEL)
Mark Theeboom (BEL)
Peter Vaes (BEL)
Luc Van Loon (NLD)
Evert Verhagen (NLD)
Paul Wylleman (BEL)
Evert Zinzen (BEL)

Additional reviewers

Dirk Aerenhouts
Constantino Balestra
Peter Bartsch
Nathalie Boisseau
Jan Cabri
Ariane Caplin
Laura Capranica
Marc Cloes
Wouter Cools
Cristina Cortis
Gael Deboeck
Benedicte Deforche
Roger Enoka
Vitalie Faoro
Veronique Feipel
Jean-Francois Grosset
Leen Haerens
Dominique Hansen
Floor Hettinga
Jo Van Hoecke
Kristel Knaepen
Jos De Koning
Michel Lamotte
Vesa Linnamo
Sigmund Loland
Mira Meeus
Erich Muller
Caroline Nicole
Jo Nijs
Jessica Van Oosterwijk
Frank Pauwels
Gertrud Pfister
Maria Francesca Piacentini
Steven Provyn
Jan Seghers
Filip Struyf
Heiko Strueder
Antonio Tessitore
Jo Verschueren
Philip Watson
Paul Wylleman

Organizing Committee

Stéphane Baudry (BEL)
Bas de Geus (BEL)
Kevin De Pauw (BEL)
Jacques Duchateau (BEL)
Malgorzata Klass (BEL)
Romain Meeusen (BEL)
Nathalie Pattyn (BEL)
Bart Roelands (BEL)
Werner Van Cleemputte (BEL)
Laurens Wets (BEL)

ECSS Office

Thomas Delaveaux (DE)
Sarah Köster (DE)
Juliane Melber (DE)
Steffen Neubert (DE)
Elias Tsolakidis (DE)
Tobias Vogt (DE)

Welcome

On behalf of the European College of Sport Science (ECSS) and the Free Universities of Brussels, we welcome you to Bruges for the 17th annual congress of the ECSS.

The two universities hosting ECSS 2012, Université Libre de Bruxelles and Vrije Universiteit Brussel, have for many years contributed to the development of sport science in Europe. This sustained commitment to sport-related research from Brussels, the site of the European Institutions, led us to choose **"Sport Science in the Heart of Europe"** as the theme of the 17th congress of the ECSS.

The Bruges congress comprises an outstanding scientific programme that emphasizes contemporary knowledge in sport science. The congress will feature 4 plenary sessions and 36 invited symposia on topical issues in the field, the vitality of which is underscored by the submission of close to 2000 abstracts from approximately 60 countries. After a thorough review and the withdrawal of some abstracts, ~85% of the submitted abstracts have been selected for the final programme. These free communications are distributed among 74 thematic oral and 115 e-poster sessions. A new feature this year is that all posters (1132 abstracts) will be presented in electronic format, which we anticipate will increase interactions among meeting participants.

Bruges was chosen as the host city for the congress due to its beauty and its historical role in the development of Europe. In these ancient times, Bruges was one of the European cities in which intellectual, artistic, and trading activities converged and then expanded into Europe and well beyond. This history captures the objective of the College to establish a strong foundation for sport science in Europe and into the world.

By combining the cultural heritage and beauty of Bruges with a high-quality scientific programme, we anticipate that the 17th annual congress of the ECSS will be an exceptional professional experience. On behalf of the ECSS and the local organisers, we wish you a productive and enjoyable stay in **Bruges**.

Prof. R. Meeusen (VUB)

Prof. J. Duchateau (ULB)

Table of Contents

ORGANIZATION.....	3
WELCOME.....	7
TABLE OF CONTENTS	9
WEDNESDAY, JULY 4TH, 2012	18
15:00 - 16:30.....	18
IS-PM05 Exercise in Extreme Environments: From Space to Antarctica	18
OP-SH01 Sport Management	19
OP-BN01 Sports Biomechanics 1	21
OP-PM01 Muscle signaling and adaptation.....	23
OP-PM02 Health and Lifestyle Interventions.....	25
IS-SH10 A Cost-Benefit Analysis of Exercise for Health (*)	27
IS-BN01 Importance of Feedback in Motor Control and Learning	29
IS-PM01 JSPFSM Exchange Symposium: Physiological and environmental factors influencing sports performance	30
OP-PM03 Neuromuscular Physiology 1	31
OP-PM04 Brain and Exercise Performance	34
17:00 - 18:30.....	36
PS-PL01 Cycling Economy: From Performance to Business	36
THURSDAY, JULY 5TH, 2012.....	38
08:00 - 09:30	38
IS-PM11 Skeletal Muscle Stem Cells	38
OP-SH02 Sport and Exercise Psychology	39
OP-BN02 Gait and running patterns	41
OP-PM05 Training and Testing 1.....	43
OP-PM06 Skeletal Muscle Physiology	45
IS-SH03 Winning the Gold Medal War: The Production of Elite Sporting Success	48
IS-BN02 The Motor Control of Human Locomotion: the Role of Stretch Reflex in Natural Human Movement.....	49
IS-PM04 Exercise and Testing in Patient Populations (*) sponsored by Xlab.dk	50
OP-PM07 Exercise and Cardiac Physiology.....	51
OP-PM08 High Intensity Training	53
09:50 - 11:20.....	55
IS-PM06 Nutritional Supplementation and Sports: Hopes and Disappointments	55
OP-BN03 Motor Learning	56
OP-PM09 Measurement and analysis techniques	58
OP-PM10 Sports Medicine/Exercise Therapy	61
OP-PM11 Nutrition 1.....	63
IS-SH04 Martial Arts from a Multidisciplinary Perspective: Historical, Sociological and Psychological	65
IS-BN03 Neuroplasticity: From Basic Sciences to Sport Performance.....	66

OP-BN04 Muscle/Tendon/Bone.....	68
OP-PM12 Training & Tapering.....	70
OP-PM13 Pacing and Perception.....	73
11:30 - 12:45.....	75
PS-PL02 Performance in the Heat: What Happens in your Head?.....	75
13:45 - 14:45.....	76
PP-BN01 Sport Biomechanics 1.....	76
PP-BN02 Motor Learning and Coaching 1.....	80
PP-PM01 Sports Medicine 1.....	84
PP-PM02 Nutrition 1.....	88
PP-PM03 Physical Activity.....	92
PP-PM04 Physiology and Biochemistry.....	97
PP-PM05 Neuromuscular Physiology 1.....	100
PP-PM06 Rehabilitation, Physiotherapy, Health and Fitness.....	105
PP-PM07 Training & Testing 1.....	109
PP-SH01 Psychology 1.....	114
PP-PM08 Sports Medicine 2.....	118
PP-BN05 Coaching 1.....	122
PP-SH03 Sport Management.....	125
PP-SH04 Sport Statistics and Analysis 1.....	129
PP-PM16 Rehabilitation 1.....	132
PP-PM17 Physiotherapy.....	134
PP-PM18 Nutrition 2.....	137
PP-PM19 Adapted Physical Activity 1.....	140
PP-PM20 Health & Fitness 1.....	144
PP-PM21 Training & Testing 3.....	148
14:45 - 15:45.....	151
PP-BN03 Sport Biomechanics 2.....	151
PP-BN04 Sport Biomechanics 3.....	156
PP-PM09 Physiology 1.....	160
PP-PM10 Physiology 2.....	165
PP-PM11 Physiology 3.....	169
PP-PM12 Physiology 4.....	174
PP-PM13 Physiology 5.....	177
PP-PM14 Training & Testing 2.....	181
PP-PM15 Physiology 6.....	185
PP-SH02 Social Sciences and Humanities 1.....	189
PP-BN06 Sport Biomechanics 4 : Neuromuscular Aspects.....	193
PP-BN07 Coaching 2.....	196
PP-SH05 Management & Ethics.....	200
PP-SH06 Physical Education and Pedagogics 1.....	203
PP-SH07 Sport Psychology.....	207
PP-PM22 Sports Medicine 3.....	210
PP-PM23 Training & Testing 4.....	214

PP-PM24 Training & Testing 5	218
PP-PM25 Health & Fitness: Elderly	222
PP-PM26 Physiology 7	225
16:05 - 17:35	230
IS-PM02 ACSM Exchange Symposium/Pacing : Who Got the Turtle's Running Shoes?	230
OP-SH03 Management and economics in sports	230
OP-PM14 Sports Medicine 2	232
OP-PM15 Health and Fitness 2	234
OP-PM16 Nutrition 2	236
IS-SH02 It's Natural to Play: Promoting Psychomotor Development in Challenging Environments	239
IS-BN05 Musculoskeletal Modelling for Problem Solving in Rehabilitation (*)	240
OP-BN05 Sports Biomechanics 2	241
OP-PM17 Training and Testing 2	243
OP-PM18 The Elite Athlete	245
17:45 - 19:15	246
IS-PM08 Towards an Integrative Approach of Exercise-Induced Fatigue	246
OP-SH04 Sport Psychology 2	247
OP-PM19 Training and Testing 3	250
OP-PM20 Health and Fitness: Elderly population	251
OP-PM21 Molecular Biology 2	254
IS-SH01 Intervention Development Using Social, Environmental and Psychological Approaches	256
OP-PM22 Training and Testing: Youth population	257
IS-PM07 Exercise to Reduce Musculoskeletal Pain (*)	259
OP-PM23 Cardiovascular Physiology	260
OP-PM24 Exercise Physiology 2	263
FRIDAY, JULY 6TH, 2012	266
08:00 - 09:30	266
IS-PM13 Evidence Based Physiotherapy (Cardiac Rehabilitation) (*)	266
OP-SH05 Experimental Psychology	267
OP-PM25 Sport Science	269
OP-PM26 Sport Medicine: Experimental Interventions	271
OP-PM27 Physiotherapy and Sports Medicine	273
IS-SH06 Psychological and Sociological Perspectives on Prevention and Rehabilitation of Sport Injuries	275
IS-BN10 Tendon Plasticity: Neuromechanics and Motor Output	276
OP-BN06 Biomechanics	277
OP-PM28 Training and Testing: Elite Athletes	279
OP-PM29 Molecular Physiology	281
09:50 - 11:20	283
IS-PM03 Sports Nutrition Symposium: Sports Nutrition offered by Mother Earth sponsored by GSSI	283
OP-SH06 Sociology	284
OP-PM30 Health and Fitness: Female population	286
OP-PM31 Training and Testing 4	288

OP-PM32 Neuromuscular Physiology: Fatigue	290
IS-SH05 Social-Psychological Issues in Team Sports	292
IS-BN04 Balance Control in Elderly: Fall Risk and Prevention	293
OP-BN07 Coaching	295
OP-PM33 Training and Testing: Pacing Strategies	297
OP-PM34 Metabolic Physiology.....	299
11:30 - 12:45	301
PS-PL03 Olympism & Sport (*).....	301
13:45 - 14:45	301
PP-PM27 Training & Testing 6: Swimming.....	301
PP-PM28 Physiology 8	306
PP-PM29 Physiology 9	310
PP-PM30 Health & Fitness: Children	314
PP-PM31 Health & Fitness: Disease.....	317
PP-PM32 Molecular Biology 1	320
PP-PM33 Neuromuscular Physiology 2	323
PP-PM34 Training & Testing 7.....	326
PP-PM35 Physiology 10.....	330
PP-PM36 Biochemistry.....	334
PP-BN08 Sport Biomechanics 5	338
PP-BN09 Motor Learning and Coaching 2.....	342
PP-SH08 Physical Education and Pedagogics 2	345
PP-SH09 Sociology	349
PP-SH10 Psychology 2	352
PP-PM37 Sports Medicine 4	356
PP-PM38 Nutrition 3	359
PP-PM39 Adapted Physical Activity 2.....	362
PP-PM40 Nutrition 4	366
PP-PM41 Health & Fitness: Sport and supplements.....	370
14:45 - 15:45	374
PP-PM42 Training & Testing 8.....	374
PP-PM43 Physiology 11	377
PP-PM44 Biochemistry, Training & Testing	381
PP-PM45 Health & Fitness: Physical Activity 1	385
PP-PM46 Health & Fitness: Exercise	389
PP-PM47 Molecular Biology 2	392
PP-PM48 Neuromuscular Physiology 3	395
PP-PM49 Training & Testing 9.....	399
PP-PM50 Physiology 12.....	404
PP-PM51 Physiology 13	408
PP-BN10 Sport Biomechanics 6	412
PP-BN11 Motor Learning 1	415
PP-SH11 Psychology 3.....	420
PP-SH12 Sport Statistics and Analysis 2	424

PP-PM52 Rehabilitation and Sports Medicine.....	428
PP-PM53 Sports Medicine 5.....	432
PP-PM54 Training & Testing 10.....	434
PP-PM55 Health & Fitness: Physical Activity 2.....	438
PP-PM56 Training & Testing 11.....	441
PP-PM57 Training & Testing 12.....	445
16:05 - 17:35.....	449
IS-PM12 Benefits of High Intensity Intermittent Training (HIIT) in Untrained and Diseased People (*).....	449
OP-SH07 Sport Psychology 3.....	450
OP-PM35 Rehabilitation 1.....	452
OP-PM36 Reliability and Validity of testing procedures.....	455
OP-PM37 Muscle Physiology.....	457
IS-SH07 Role and Competences of PE Teacher and Coaches.....	459
IS-BN08 Biomechanics and Optimizing Performance in Elite Sports.....	460
OP-BN08 Sports Biomechanics 3.....	461
OP-PM38 Health and Fitness: Obese population.....	464
OP-PM39 Neuromuscular Physiology 2.....	466
17:45 - 19:15.....	468
IS-PM09 Mechanism in Sarcopenia.....	468
OP-SH08 Sport Statistics & Analysis.....	469
OP-PM40 Rehabilitation 2.....	471
OP-PM41 Biochemistry.....	473
OP-PM42 Training and Testing 5.....	475
IS-SH08 Life-Style Sports and Youth Development.....	478
IS-BN06 Biomechanics and Injury Prevention in Elite Sports (*).....	479
OP-SH09 Psychology.....	480
OP-PM43 Health and Fitness: Youth population.....	481
OP-PM44 Exercise Physiology 3.....	483
SATURDAY, JULY 7TH, 2012.....	486
08:00 - 09:30.....	486
IS-PM10 Protein Turnover and Inactivity.....	486
OP-SH10 Physical Education and pedagogics 1.....	487
OP-PM45 Sports Medicine: Game Injuries.....	489
OP-PM46 Neuromuscular Physiology 3.....	491
OP-PM47 Neuroscience.....	493
IS-SH09 The Integrative Role of Sport in Multicultural Societies: From Research to Practice.....	496
IS-BN07 Core Stability and Injury in Sports (*).....	497
OP-BN09 Sports Biomechanics 4.....	497
OP-PM48 Health and Fitness 3.....	500
OP-PM49 VO2max and O2 Kinetics.....	502
09:50 - 11:20.....	504
IS-PM14 The Athletes Paradox Revisited: Athletic Lessons for Diabetic People (*).....	504

OP-SH11 Physical Education and pedagogics 2	505
OP-PM50 Sports Medicine 3	507
OP-PM51 Training, testing and health	509
OP-PM52 Cardiovascular physiology 2	512
IS-SH11 European Sports Tradition: Towards Unified Concepts and Policies.....	514
IS-BN09 Neuromechanics of Stretch Shortening Cycle: Application to Sports.....	515
IS-PM15 Exercise in cancer patients (*)	516
OP-PM53 Training and Testing: Fatigue	517
OP-PM54 Physiology: Performance / Hypoxia.....	520
11:30 - 12:45	522
PS-PL04 Sport Science in the Heart of Europe (*)	522
13:45 - 14:45	522
PP-PM58 Physiology 14.....	522
PP-PM59 Physiology 15.....	526
PP-PM60 Training & Testing 13	531
PP-PM61 Health & Fitness: BMI 1.....	534
PP-PM62 Health & Fitness: BMI 2	538
PP-PM63 Neuromuscular physiology 4	540
PP-PM64 Training & Testing 14	544
PP-PM65 Physiology 16.....	548
PP-PM66 Physiology 17	551
PP-PM67 Physiology 18	555
PP-BN12 Sport Biomechanics 7 : Gait & Balance	558
PP-BN13 Motor Learning 2.....	562
PP-SH13 Psychology 4.....	565
PP-SH14 Physical Education and Pedagogics 3	569
PP-SH15 Social Sciences and Humanities 2.....	572
PP-PM68 Sports Medicine 6	575
PP-PM69 Sports Medicine 7	578
PP-PM70 Nutrition 5	582
PP-PM71 Training & Testing 15	586
PP-PM72 Training & Testing 16	589
14:45 - 15:45	593
PP-PM73 Physiology 19	593
PP-PM74 Physiology 20	597
PP-PM75 Training & Testing 17.....	601
PP-PM76 Health & Fitness 2	605
PP-PM77 Health & Fitness 3	608
PP-PM78 Training & Testing 18	612
PP-PM79 Training & Testing 19	616
PP-PM80 Physiology 21.....	620
PP-PM81 Physiology 22.....	623
PP-PM82 Physiology 23	627
PP-BN14 Sport Biomechanics 8.....	631

PP-PM83 Nutrition 5	636
PP-SH16 Sport Psychology: Team sports	638
PP-PM84 Physiology 24	642
PP-PM85 Sports Medicine 8	646
AUTHORS INDEX	651

THE CREATION AND TRANSFORMATION OF ASIAN MARTIAL ARTS IMAGINARY IN THE WEST

Gutiérrez-García, C.

University of León

This presentation aims at analyzing the historical evolution of Asian Martial Arts (AMA) in the West from the perspective of their imaginary. Imaginary – or social imaginary – is considered here as cognitive schemas widely shared by ordinary people which legitimate and make possible common practices (Taylor, 2004). Although some Asian martial traditions were known many centuries ago in Western countries, modern AMA imaginary started to be created since the mid 19th century after the opening of Japan to the outside world. Japan became an internationally recognized military power in a few decades after defeating China (1894-95) and Russia (1904-95), thus rising the interest in the West about Japanese martial culture. Japanese MA – particularly jujutsu/judo – soon built a strong imaginary as ancient, bushido inspired, complex self-defense systems “that would allow a weak person to be capable of defeating a stronger opponent with minimal effort” (Gutiérrez et al., 2010: 26). Also, they were perceived as sports and physical and moral education means. This first, powerful imaginary, has irregularly evolved until present day. Foreign policies between Japan and Western countries, Japanese emigration, the inclusion of MA in military training, MA sportification processes or MA films have defined different historical and regional rhythms. Also, it is noteworthy that new MA imported in the West such as Karate or Taekwondo embraced this imaginary although trying to enhance their peculiarities (Green & Svinth, 2010). Since the middle of the 20th century, countercultural movements added a new set of images to AMA. Examples include New Age, Human Potential Movement or Holistic Health Movement (Campbell, 2007). AMA were seen as means for achieving holistic health and harmony with the self, nature and the universe. Many of these ideas came in fact from Asian religious-philosophical systems, but were soon westernized. While many AMA have usually incorporated countercultural imaginary to some degree, such as Zen meditation, some Chinese MA have adhered quite closely to this imaginary so that they are considered as countercultural typical practices. That is the case of the so-called “inner martial arts” such as Taijiquan (a.k.a. Tai Chi). Nowadays the social imaginary of AMA in the West is mainly refreshed by their practice as sports/health activities and by mass media, particularly films and TV series. This imaginary makes possible that AMA are so widely spread as social practice among population of different regions, ages and sex. REFERENCES Campbell C. 2007. *The Easternization of the West...* Boulder, CO: Paradigm Publishers. Green, T.A. & Svinth, J.R. (eds.). 2010. *Martial Arts of the World...* Santa Barbara, CA: ABC-CLIO. Gutiérrez C, Pérez M, Acevedo W, Cheung M (2010). IDO Ruch dla Kultury-Movement for Culture, X, 24-30. Taylor C (2004). *Modern Social Imaginaries*. Durham: Duke University Press.

SPORT PSYCHOLOGY DELIVERY SERVICES TO OLYMPIC TAEKWONDO

Sanchez, X.

University of Groningen

Taekwondo, an Olympic combat sport since Sydney 2000, is a discipline in which opponents are directly, deliberately and systematically confronted against each other in a dynamic environment (Pieter & Heijmans, 1997). Based on previous experience, the present communication illustrates how Taekwondo questions had been answered through sport psychology and how these answers had been applied in the sporting arena. We focus on the work we developed around the tactical component of competitive Taekwondo. We adopt Bishop's (2008) three-phase, eight-stage applied research model for the sport sciences (ARMSS) as a framework that is of particular interest when identifying performance predictors in such new disciplines. Sanchez and Wautier (2003) developed the Taekwondo Combat Assessment System (TCAS), a tool to study Taekwondo combatants' interactions during combats. By video-analysing the combats with TCAS, combatants' technical-tactical changes are detected and specific patterns of fighting are identified. First, by profiling the performance of the athletes, their temporal evolution in a competition is monitored (round by round, combat by combat) as well as their combat-learning development (throughout competitions). Second, by profiling the performance of the adversaries, the self-confidence of the athletes increases (self-reports), and the causal attributions of their performances become adaptive and modifiable (i.e. rather internal and controllable). In addition, by considering these causal attributions players and coaches provide to explain performance during a competition, the sport psychologist is able to assess the factors that are believed influence performance (Sanchez et al., 2003). Finally, athletes' emotional states are individually assessed to (1) build up 'optimal profiles' from which athletes have, in theory, the greatest chances to perform at their best, and (2) train those athletes how best manage these optimal levels. The presentation is supported with specific case-examples for both in-between-rounds, such as active recovering (rehydrating, attentional focus, effective communication) and in-between-combats, such as active recovering (skipping), competition modes (pre-, post-, no-fight), and optimal emotional-arousal regulation (use of music). REFERENCES: Bishop, D. (2008). An applied research model for the sport sciences. *Sports Medicine*, 38, 253-263. Pieter, W., & Heijmans, J. (1997). *Scientific Coaching for Olympic Taekwondo*. Meyer & Meyer Verlag: Aachen. Sanchez, X., et al. (2003). How do players and coaches account for their success and failure when competing in Taekwondo Olympic sparring matches? In: 2nd World Congress of Physical Activities and Sport Sciences (pp. 235-238). Granada, Spain. Sanchez, X., & Wautier, P. (2003). The Taekwondo Combat Assessment System-TCAS: A notational analysis tool. In: Proceedings of the XI FEPSAC European Congress of Sport and Exercise Psychology (p150). Copenhagen, Denmark.

09:50 - 11:20**Invited symposia****IS-BN03 Neuroplasticity: From Basic Sciences to Sport Performance****BRAIN-DERIVED NEUROTROPHIC FACTOR AND EXERCISE, AN UPDATE**

Knaepen, K., Goekint, M., Meeusen, R.

Vrije Universiteit Brussel

Introduction: Neurotrophins are important regulators of neuronal survival, development, function, and plasticity. They are capable of signaling neurons to survive, differentiate or grow. Neurotrophic factors are also important in processes of central and peripheral energy metabolism. Their effect on synaptic plasticity in the central nervous system involves elements of cellular energy metabolism and in the periphery they take part in metabolic processes. Physical activity, and in particular, acute exercise and training play a key role in process-