

Final Program of Oral Presentations (June 2, 2009)

Monday June 22

Oral Session I – 10,30 – 12,30

Sensory, Motor and Integrative Control Mechanisms [10,30 – 12,30]

Moderators: *Manuel Hulliger, Brian Day*

O.1-Which ankle muscle is the best proprioceptor during human upright standing?

Irene Di Giulio¹, Constantinos N. Maganaris¹, Vasilios Baltzopoulos¹, Ian D. Loram¹, ¹*MMU, Manchester, United Kingdom*

O.2-Plantar sensory degradation on motion perception and postural control

Yongwoo Yi¹, Sukyung Park¹, ¹*KAIST, Daejeon, Republic of Korea*

O.3-Investigating sensory interaction of cutaneous and vestibular systems during stance

Andrew Woolnough¹, Leah Bent¹, ¹*University of Guelph, Guelph, Canada*

O.4-Evidence for the contribution of sensory integration mechanisms to spinal stabilization

Adam Goodworth¹, Robert Peterka¹, ¹*Oregon Health & Science University, Beaverton, OR, United States*

O.5-Habituation of postural response to Galvanic vestibular stimulation

Valentina Dilda¹, Hamish MacDougall², Steven Moore¹, ¹*Mt Sinai School of Medicine, New York NY, United States*, ²*University of Sydney, Sydney NSW, Australia*

O.6-Auditory startle reveals possible brainstem involvement in triggering postural responses

Adam Campbell¹, Justin Davis¹, Mark Carpenter¹, ¹*School of Human Kinetics, University of British Columbia, Vancouver, British Columbia, Canada*

O.7-Effects of initial standing positions before transient floor translation on contingent negative variation of brain potential

Katsuo Fujiwara¹, Kaoru Maeda², Hidehito Tomita³, Naoe Kiyota¹, Chie Yaguchi¹, ¹*Kanazawa University, Kanazawa, Ishikawa, Japan*, ²*Morinomiya University of Health Sciences, Osaka, Japan*, ³*Toyohashi SOZO University, Toyohashi, Aichi, Japan*

O.8-Spatiotemporal organization of motoneuron activity in the human spinal cord during different gaits

Yuri Ivanenko¹, Germana Cappellini¹, Richard Poppele², Francesco Lacquaniti^{1,3}, ¹*IRCCS Fondazione Santa Lucia, Rome, Italy*, ²*University of Minnesota, Minneapolis, United States*, ³*University of Rome Tor Vergata, Rome, Italy*

Advanced Assessment Tools and Protocols [10,30 – 12,30]

Moderators: *Aurelio Cappozzo, Kamiar Aminian*

K.1- Keynote lecture: Aurelio Cappozzo, Università degli Studi di Roma "Foro Italico", Rome, Italy

O.9-Markerless Sit to Stand analysis to predict SPPB scores in elderly people

Michela Goffredo¹, Maurizio Schmid¹, Silvia Conforto¹, Luisa Lopez², Tommaso D'Alessio¹, ¹*Dept Applied Electronics University Roma Tre, Rome, Italy*, ²*Dept Neuroscience University Tor Vergata, Rome, Italy*

O.10-3D Gait Analysis using wearable 6D IMU on shoe

Benoit Mariani¹, Kamiar Aminian¹, ¹*EPFL, Laboratory of Movement Analysis and Measurement, Lausanne, Switzerland*

O.11-Automated biofeedback assistance for freezing of gait in patients with Parkinson's disease

Meir Plotnik^{1,2}, Marc Bächlin³, Inbal Meidan¹, Daniel Roggen³, Gerhard Tröster³, Nir Giladi^{1,4}, Jeffrey M Hausdorff^{1,4}, ¹*Tel Aviv Sourasky Medical Center, Tel Aviv, Israel*, ²*Bar Ilan University, Ramat Gan, Israel*, ³*Swiss Federal Institute of Technology, Zurich, Switzerland*, ⁴*Tel Aviv University, Tel Aviv, Israel*, ⁵*Harvard Medical School, Boston, United States*

O.12-Differentiating malingering patients from healthy controls, unilateral vestibular loss patients and whiplash patients

John HJ Allum¹, Jaap Vonk¹, Corinne GC Horlings¹, ¹*University Hospital Basel, Basel, Switzerland*

O.13-Differentiation of young and older adult stair climbing gait using principal component analysis

Samantha Reid¹, Ryan Graham¹, Patrick Costigan¹, ¹*Queen's University, Kingston, ON, Canada*

O.14-Validation of a new instrumented ramp to assess ambulation while ascending and descending a slope.

Fany Chedevergne¹, Pierre Desjardins¹, Sylvie Nadeau¹, Rachid Aissaoui², ¹*Center for Interdisciplinary Research in Rehabilitation of Greater Montreal, Gingras Lindsay Rehabilitation Institut of Montreal, Pathokinesiology Laboratory, Faculty of Rehabilitation of the Universi, Montreal, Qc, Canada*, ²*Center for Interdisciplinary Research in Rehabilitation of Greater Montreal, Highest Technology School, Imagery and Orthopedics Research Laboratory, Quebec University, Montreal, Qc, Canada*

O.15-Portable system for the linear and non-linear re-calibration of force platforms

Andrea Cedraro¹, Fabio Bagalà¹, Lorenzo Chiari¹, Angelo Cappello¹, ¹*University of Bologna, Bologna, Italy*

Monday June 22

Oral Session II – 17,00 – 18,00

Learning, Plasticity and Compensation [17,00 – 18,00]

Moderators: Mark Latash, Joyce Fung

O.16-The development of adaptation: How infants and adults modify their walking steps

Beatrix Vereijken¹, Karen Adolph², Simone Gill², ¹*Norwegian University of Science and Technology, Trondheim, Norway*, ²*New York University, New York, United States*

O.17-Visual control of rapid limb movements evoked by unpredictable postural perturbation

Brian Maki^{1,2}, Kenneth Cheng^{1,2}, Emily King^{1,2}, Tracy Lee¹, Sandra McKay^{1,2}, Amy Peters¹, Carol Scovill¹, John Zettel³, ¹*Sunnybrook Health Sciences Centre, Toronto, Canada*, ²*University of Toronto, Toronto, Canada*, ³*University of Guelph, Guelph, Canada*

O.18-Learning postural adjustments as a skill in the context of a volitional task: evidence for a memory consolidation phase.

Orit Elion^{1,2}, Yotam Bahat¹, Itamar Sela², Itzhack Siev-Ner¹, Patrice (Tamar) Weiss², Avi Karni^{1,2}, ¹*The C Sheba Medical Centre, Ramat Gan, Israel*, ²*Haifa University, Haifa, Israel*

O.19-Impact of cognition on motor control and adaptation to a novel slip induced in walking

Tanvi Bhatt¹, Yi-Chung Pai¹, ¹*University of Illinois at Chicago, Physical Therapy Dept., Chicago, IL, United States*

Modelling and Biomechanics [17,00 – 18,00]

Moderators: *Angelo Cappello, John Jeka*

O.20-Analysis of power exertion for lifting the CoM during mobility related activities in daily life

Wiebren Zijlstra¹, Rob Bisseling¹, Stephan Schlumbohm², Heribert Baldus², ¹*University of Groningen, Groningen, Netherlands*, ²*Philips Research, Eindhoven, Netherlands*

O.21-Active Stiffness and Damping Increase with Age in Postural Control

Massimo Cenciari¹, Patrick J. Loughlin^{1,2}, Patrick J. Sparto^{1,4}, Mark S. Redfern^{1,3}, ¹*Bioengineering Dept., University of Pittsburgh, Pittsburgh, PA, United States*, ²*Electrical and Computer Engineering Dept., University of Pittsburgh, Pittsburgh, PA, United States*, ³*Otolaryngology Dept., University of Pittsburgh, Pittsburgh, PA, United States*, ⁴*Physical Therapy Dept., University of Pittsburgh, Pittsburgh, PA, United States*

O.22-What is the feedback time-delay and extent of linear time-invariant control when subjects manually control stable and unstable loads?

Ian Loram¹, Martin Lakie², Peter Gawthrop³, ¹*Manchester Metropolitan University, Manchester, United Kingdom*, ²*University of Birmingham, Birmingham, United Kingdom*, ³*University of Glasgow, Glasgow, United Kingdom*

O.23-The effect of long distance walking on plantar pressure distribution

Niki Stolwijk¹, Jaak Duysens^{1,2}, Noël Keijsers¹, ¹*St Maartenskliniek Research, Development & Education, Nijmegen, Netherlands*, ²*Department of Biomedical Kinesiology, Katholieke Universiteit Leuven, Leuven, Belgium*

Tuesday June 23

Oral Session III – 11,00 – 13,00

Cognitive, Attentional, and Emotional Influences [11,00 – 13,00]

Moderators: *Jim Frank, Anne Shumway-Cook*

K.2- Keynote lecture: Jim Frank, University of Windsor, Windsor, Ontario, Canada

O.24-Effects of concurrent spatial and categorical cognitive tasks on the performance of a continuous postural alignment task.

Suvobrata Mitra¹, Hayley Boulton¹, ¹*University of Warwick, Coventry, United Kingdom*

O.25-Nature of the kinematic cues underlying the perception of emotions during human gait

Hideki Kadone¹, Halim Hicheur², Alain Berthoz¹, ¹*LPPA, College de France, Paris, France*, ²*Hertie institute, University Clinic Tuebingen, Tuebingen, Germany*

O.26-Cognitive and motor mechanisms underlying ability to divide attention while walking

Courtney Hall^{1,2}, Katharina Echt^{1,2}, Steve Wolf^{1,2}, Wendy Rogers³, ¹*Atlanta VAMC, Decatur, GA, United States*, ²*Emory University, Atlanta, GA, United States*, ³*Georgia Institute of Technology, Atlanta, GA, United States*

O.27-Evidence for a relationship between anxiety, visual sampling behaviour and falls risk in older adults performing adaptive locomotor tasks

William Young¹, Alan Wing¹, Mark Hollands¹, ¹*University of Birmingham, Birmingham, United Kingdom*, ²*Queen's University Belfast, Belfast, United Kingdom*

O.28-Effects of instructed prioritization and task difficulty on concurrent walking and cognitive task performance in healthy young adults

Valerie Kelly¹, Anne Shumway-Cook¹, ¹*University of Washington, Seattle, WA, United States*

O.29-Chronic stroke patients use a posture first strategy when avoiding obstacles under dual task conditions

Katrijn Smulders^{1,2}, Roos van Swigchem¹, Alexander C. Geurts^{1,3}, Vivian Weerdesteyn^{1,3}, ¹*Radboud University Medical Center, Department of Rehabilitation, Nijmegen, Netherlands*, ²*HAN University of Applied Sciences, Institute of Sport and Exercise, Nijmegen, Netherlands*, ³*Sint Maartenskliniek, Research, Development and Education, Nijmegen, Netherlands*

O.30-Task switching during dual task gait training is difficult for people with Parkinson Disease

Sandra Brauer¹, Meg Morris², Marjorie Woollacott³, Robyn Lamont¹, ¹*The University of Queensland, Brisbane, Qld, Australia*, ²*The University of Melbourne, Carlton, Vic, Australia*, ³*The University of Oregon, Eugene, OR, United States*

Development of Posture and Gait [11,00 – 13,00]

Moderators: *Francesco Lacquaniti, Zoi Kapoula*

K.3- Keynote lecture: Francesco Lacquaniti, IRCCS Fondazione Santa Lucia & University of Rome Tor Vergata, Rome, Italy

O.31- Development of spinal postural control: evidence of a four stage process.

Sandra Saavedra¹, Marjorie Woollacott¹, ¹*University of Oregon, Eugene, Oregon, United States*

O.32- Specific characteristics of balancing in children 7-11. Pivotal foot. Motor foot

Pascal Bourgeois¹, Maurice Ouaknine¹, ¹*ILEPS, Cergy Pontoise Val d'Oise, France*

O.33- The influence of body mass and physical activity on postural stability in children

Franciska Ulmer¹, Andrew Smith², ¹*The University of Auckland, Auckland, New Zealand*, ²*The Hong Kong Institute of Education, Tai Po, New Territories, Hong Kong (TBC)*

O.34- Normal postural performances in dyslexic teenagers during stroop or counting dual tasks

Zoi Kapoula¹, Eric Matheron¹, Maria-pia Bucci¹, ¹*Laboratoire IRIS, Physiopathologie de la Vision et Motricité Binoculaire, FRE3154, CNRS, Paris, France*

O.35- Limb kinematics and walking distance estimation after changing limb segment proportions. Evidence of a locomotor body schema.

Nadia Dominici^{1,2}, Elena Daprati^{1,2}, Daniele Nico^{1,3}, Germana Cappellini¹, Yuri Ivanenko¹, Francesco Lacquaniti^{1,2}, ¹*IRCCS Fondazione Santa Lucia, Rome, Italy*, ²*University of Rome Tor Vergata, Rome, Italy*, ³*University of Rome "La Sapienza", Rome, Italy*

O.36- Gender differences in the control of head accelerations during walking in children

Claudia Mazzà¹, Antonino Filocamo¹, Aurelio Cappozzo¹, ¹*Università degli Studi di Roma "Foro Italico", Rome, Italy*

O.37- Treadmill training and gait patterns in infants at moderate risk for neuromotor disabilities

Rosa Angulo-Barroso¹, Li-Chiou Chen^{1,2}, Chad Tiernan¹, Julia Looper¹, Dale Ulrich¹, ¹*University of Michigan, Ann Arbor, MI, United States*, ²*Department of Physical Therapy, Taipei, Taiwan*

Wednesday June 24
Oral Session IV – 10,30 – 12,30

Stroke [10,30 – 12,30]

Moderators: *Rolf Moe-Nilssen, Brad McFadyen*

O.38-Quantitative measures of sitting balance relate to measures of standing balance in individuals post-stroke.

Avril Mansfield^{1,2}, Cynthia Danells^{1,2}, Valerie Closson^{1,2}, Lisa Alexander^{1,2}, Stephanie Beadle^{1,5}, Ellen Cohen^{1,6}, Sandra Black^{2,4}, William McIlroy^{3,7}, ¹Heart and Stroke Foundation Centre for Stroke Recovery, Ontario, Canada, ²Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada, ³Toronto Rehabilitation Institute, Toronto, Ontario, Canada, ⁴University of Toronto, Toronto, Ontario, Canada, ⁵Grand River Hospital, Kitchener, Ontario, Canada, ⁶Baycrest, Toronto, Ontario, Canada, ⁷University of Waterloo, Waterloo, Ontario, Canada

O.39-Abnormal coactivation of knee and ankle extensors is related to transmission changes in spinal pathways and clinical scores of motor function in chronic hemiparesis after stroke

Joseph-Omer Dyer^{1,2}, Éric Maupas^{3,4}, Sibebe de Andrade Melo^{1,2}, Daniel Bourbonnais^{1,2}, Robert Forget^{1,2}, ¹Centre de recherche interdisciplinaire en réadaptation de Montréal (CRIR), Montreal, Québec, Canada, ²École de réadaptation, Faculté de Médecine, Université de Montréal, Montréal, Québec, Canada, ³Centre Mutualiste de Rééducation Fonctionnelle, Albi, France, ⁴Université Paul Sabatier, Toulouse III, Toulouse, France

O.40-An exploratory analysis of spatial and temporal characteristics of intersegmental head and shoulder rotation in people early after stroke

Geert Verheyden¹, Janet Littlewood¹, Malcolm Burnett¹, Denise Taylor², Neil Shepard³, Ann Ashburn¹, ¹University of Southampton, Southampton, United Kingdom, ²Auckland University of Technology, Auckland, New Zealand, ³Mayo Clinic, Rochester, United States

O.41-Postural behaviors to combined visual and base of support pitch disturbance in healthy adults and patients post-stroke.

Emily Keshner¹, Jill Slaboda¹, ¹Temple University, Philadelphia, PA, United States

O.42-The effect of additional hand contact on postural stability perturbed by moving environment in patients after stroke

Emily van de Water¹, Ksenia Ustinova¹, ¹Central Michigan University, Mount Pleasant, MI, United States

O.43-Visually-triggered step adjustments are substantially impaired in mildly affected stroke subjects

Vivian Weerdesteyn^{1,2}, Jorik Nonnekens^{1,3}, Penelope Talelli³, Mark De Niet¹, Raymond Reynolds⁴, Brian Day³, ¹Radboud University Nijmegen Medical Centre, Department of Rehabilitation, Nijmegen, Netherlands, ²Sint Maartenskliniek Research, Development & Education, Nijmegen, Netherlands, ³Sobell Department of Motor Neuroscience and Movement Disorders, UCL Institute of Neurology, London, United Kingdom, ⁴School of Sports and Exercise Science, University of Birmingham, Birmingham, United Kingdom

O.44-Change in gait variables during modulation of speed in patients post-stroke and healthy subjects

Mona Kristin Aaslund¹, Rolf Moe-Nilssen¹, ¹University of Bergen, Bergen, Norway

O.45-Kinematics of turning during the Timed Up and Go in chronic stroke survivors with and without a falls history

Kristen Hollands¹, Paulette Van Vliet², Alan Wing¹, Doerte Zietz¹, Mark Hollands¹, ¹University of Birmingham, Birmingham, United Kingdom, ²University of Nottingham, Nottingham, United Kingdom

Coordination of Posture and Movement [10,30 – 12,30]

Moderators: *Marco Schieppati, Mark Redfern*

K.4- Keynote lecture: Marco Schieppati, Department of Experimental Medicine, University of Pavia and IRCCS Fondazione Salvatore Maugeri, Pavia, Italy

O.46-Factors affecting body balance control during interpersonal light touch

Leif Johannsen¹, Alan Wing¹, Vassilia Hatzitaki², ¹*University of Birmingham, Birmingham, West Midlands, United Kingdom*, ²*Aristotle University of Thessaloniki, Thessaloniki, Greece*

O.47-Trunk activity in human, from posture to locomotion.

Jean-Charles Ceccato^{1,2}, Mathieu De Sèze^{3,4}, Christine Azevedo², Jean-René Cazalets¹, ¹*Univesité de Bordeaux; CNRS UMR 5227, Bordeaux, France*, ²*INRIA/LIRMM; DEMAR, Montpellier, France*, ³*CHU Pellegrin, service MPR, Bordeaux, France*, ⁴*Université d Bordeaux 2, EA 4136, Bordeaux, France*

O.48-On the relationship between body orientation and direction of motion during human locomotion.

Tan Viet Anh Truong^{1,2}, Katja Mombaur^{1,2}, Jean-Paul Laumond^{1,2}, ¹*CNRS; LAAS; 7 avenue du colonel Roche, F-31077, Toulouse, France*, ²*Université de Toulouse; UPS, INSA, INP, ISAE; LAAS; F-31077, Toulouse, France*

O.49-How vision influences postural stability during locomotion

John Jeka¹, David Logan¹, Yuri Ivanenko², Tim Kiemel¹, Nadia Dominici², Germana Cappellini², Francesco Lacquaniti², ¹*University of Maryland, College Park, MD, United States*, ²*Santa Lucia Foundation, Rome, Italy*

O.50-Eyes or head: Which has the greatest effect on steering control?

Michael E. Cinelli^{1,2}, William H. Warren², ¹*Wilfrid Laurier University, Waterloo, ON, Canada*, ²*Brown University, Providence, RI, United States*

O.51-Coordination of turning while walking in individuals with Parkinson's disease "off" and "on" medication

Sakineh Akram¹, Jim Frank², Julia Fraser¹, Mandar Jog³, ¹*University of Waterloo, Waterloo, Ontario, Canada*, ²*University of Windsor, Windsor, Ontario, Canada*, ³*London Health Sciences Centre, London, Ontario, Canada*

O.52-Foot cutaneous stimulation during motor preparation enhances posture and locomotion components of step initiation in people with parkinson's disease

Mark Rogers², Prem Batchu¹, Lindsay Cahill¹, Kathy Martinez¹, Ashley Pezza¹, Andrea Remick¹, Colum MacKinnon¹, ¹*Northwestern University, Chicago, IL, United States*, ²*University of Maryland, Baltimore, MD, United States*

Wednesday June 24

Oral Session V – 16,00 – 18,00

Falls and Fall Prevention [16,00 – 18,00]

Moderators: *Clemens Becker, Clive Pai*

K.5- Keynote lecture: Clemens Becker, Robert-Bosch-Hospital, Stuttgart, Germany

O.53-Video recording of real-life falls in long term care provides new insight on the cause and circumstances of falls in older adults.

Stephen Robinovitch¹, Fabio Feldman^{1,2}, Darwin Wan¹, Omar Aziz¹, Thiago Sarraf¹, ¹*Simon Fraser University, Vancouver, Canada*, ²*Fraser Health Authority, British Columbia, Canada*

O.54-Determinants of disparities between perceived and actual fall risk in older people

Kim Delbaere^{1,2}, Stephen Lord¹, Jacqueline Close¹, ¹Prince of Wales Medical Research Institute, Randwick, NSW, Australia, ²Ghent University, Ghent, Belgium

O.55-Force-thresholds for stepping in young and older adults

Daina Sturnieks¹, Mirjam Pijnappels², Jasmine Menant¹, Stephen Lord¹, Mark Rogers³, Richard Fitzpatrick¹, ¹Prince of Wales Medical Research Institute, Sydney, Australia, ²Vrije Universiteit, Amsterdam, Netherlands, ³University of Maryland, Baltimore, United States

O.56-Recurrent Falls and Dual-task Related Decrease in Walking Speed: Is There a Relationship?

Cedric Annweiler¹, Gilles Allali², Veronique Dubost³, Francois Herrmann³, Olivier Beauchet¹, ¹Angers University Hospital, ANGERS, France, ²Geneva University Hospital, GENEVA, Switzerland, ³KORIAN, PARIS, France

O.57-Predictors of recurrent falling in healthy older adults: the importance of both executive function and gait

Talia Herman¹, Anat Mirelman^{1,4}, Marina Brozgol¹, Inbal Maidan¹, Avinoam Jacobs¹, Nir Giladi², Jeffrey Hausdorff^{1,3}, ¹Laboratory for Gait and Neurodynamics, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, ²Dept of Neurology, Sackler School of Medicine, Tel-Aviv University, Israel, ³Dept of Physical Therapy, Tel-Aviv University, Israel, ⁴Harvard Medical School, MA, United States

O.58-Fall risk: prediction and prevention. Balance impairments in indian subjects.

Nandu Chhabria¹, Poonam Bajaj¹, ¹Sir Hurkisondas Nurrotumdas Hospital & Research Center, Physiotherapy, Mumbai, India

O.59-Avoid alcohol, avoid falling?

Judith Hegeman^{1,2}, Vivian Weerdesteijn^{1,3}, Bart van den Bemt⁴, Bart Nienhuis¹, Jacques van Limbeek¹, Jacques Duysens^{1,5}, ¹Department of Research, Development & Education, St. Maartenskliniek, Nijmegen, Netherlands, ²Institute for Fundamental and Clinical Human Movement Sciences (IFKB), Amsterdam, Netherlands, ³Department of Rehabilitation, University Medical Centre St. Radboud, Nijmegen, Netherlands, ⁴Department of Pharmacy, St. Maartenskliniek, Nijmegen, Netherlands, ⁵Department of Biomedical Kinesiology, (FaBeR) K.U., Leuven, Belgium

Cerebral Palsy [16,00 – 17,00]

Moderators: *Marjorie Woollacott, Alexander Geurts*

O.60-Perception-action integration strategies for visually-guided locomotion in healthy vs. spastic diplegic children, as revealed by kinematic data and trajectory analysis

Vittorio Belmonti¹, Michele Coluccini^{2,3}, Silvia Perazza³, Giovanni Cioni^{2,3}, Alain Berthoz^{4,5}, ¹Dipartimento di Fisiologia Umana, Università di Pisa, Pisa, Italy, ²Dipartimento di Medicina della Procreazione e dell'Età Evolutiva, Università di Pisa, Pisa, Italy, ³IRCCS Stella Maris, Pisa, Italy, ⁴Laboratoire de Physiologie de la Perception et de l'Action, Collège de France, Paris, France, ⁵CNRS, Paris, France

O.61-Anticipatory postural control in the diplegic forms of cerebral palsy: influence of the perceptive impairment

Luca Tersi¹, Alberto Ferrari¹, Adriano Ferrari^{2,3}, Alice Sghedoni³, Lorenzo Chiari¹, ¹University of Bologna, Bologna, Italy, ²University of Modena e Reggio, Modena, Italy, ³ASMN Hospital, Reggio Emilia, Italy

O.62-Relationship of dynamic standing balance and functional and temporal-spatial measures of gait in children with and without cerebral palsy

James Moore¹, Rose Marie Rine², ¹University of Miami, Coral Gables, Florida, United States, ²University of North Florida, Jacksonville, Florida, United States

O.63-Physical activity patterns in children with cerebral palsy

Karin Sonderegger^{1,2}, Francisca Eugster Buesch^{1,3}, Roland Müller¹, Nicole Ruch², Andreas Meyer-Heim³,
¹ETH Zurich, Institute of Human Movement Sciences and Sport, Zurich, Switzerland, ²Swiss Federal Office of Sport, Institute of Sport Sciences, Magglingen, Switzerland, ³University Children's Hospital Zurich, Rehabilitation Centre, Affoltern, Switzerland

Sport, Exercise and Ergonomics [17,00 – 18,00]

Moderators: *Alberto Leardini, Eling de Bruin*

O.64-Bilateral deficit and EMG activity during explosive lower limb contractions with different overloads.

Enrico Rejc¹, Stefano Lazzer¹, Guglielmo Antonutto¹, Pietro di Prampero¹, ¹University of Udine, Udine, Italy

O.65-Spinal posture in sitting: How do we sit and how should we sit?

Andrew Claus¹, Julie Hides¹, Lorimer Moseley^{2,3}, Paul Hodges¹, ¹The University of Queensland, NHMRC Centre of Clinical Research Excellence in Spinal Pain, Injury and Health, School of Health and Rehabilitation Sciences, Brisbane, Australia, ²University of Oxford, Department of Physiology, Anatomy & Genetics, Oxford, United Kingdom, ³Prince of Wales Medical Research Institute, Sydney, Australia

O.66-3D surgeons postural analyses during standard and robotic laparoscopic procedures

Martine Gilles¹, Nicolas Hubert², Kevin Desbrosses¹, Jean Pierre Meyer¹, Jacques Felbinger³, Jacques Hubert², ¹INRS, Vandoeuvre les Nancy, France, ²Urology dpt CHU Brabois, Vandoeuvre les Nancy, France, ³IADI-UHP Inserm, Vandoeuvre les Nancy, France

O.67-The effects of a load on balance during lateral load transfers

Robert Catena^{1,2}, Angela DiDomenico², Jacob Banks², Jack Dennerlein¹, ¹Harvard School of Public Health, Boston, MA, United States, ²Liberty Mutual Research Institute for Safety, Hopkinton, MA, United States

Thursday June 25

Oral Session VI – 10,30 – 12,30

Basal Ganglia Disorders [10,30 – 12,30]

Moderators: *Jeff Hausdorff, Bastiaan Bloem*

K.6- Keynote lecture: Jeff Hausdorff, Tel-Aviv Sourasky Medical Center & Harvard Medical School, Israel

O.68-Sway jerk is a good biomarker of early Parkinson's disease and its progression

Martina Mancini^{1,2}, Fay B Horak², Lorenzo Chiari¹, ¹DEIS, University of Bologna, Bologna, Italy, ²Department of Neurology, OHSU, Beaverton, Oregon, United States

O.69-Lower limb kinematics during obstacle crossing in people with Parkinson's disease

Brook Galna^{1,2}, Anna T Murphy^{1,2}, Meg E Morris¹, ¹1. School of Physiotherapy, The University of Melbourne, Victoria, Australia, ²2. Clinical Research Centre for Movement Disorders and Gait, Kingston Aged Care and Rehabilitation Centre, Victoria, Australia

O.70-Walking cadence and velocity is improved by rhythmic vibration of postural muscles in Parkinson's disease

Margherita Grasso¹, Alessandro Marco De Nunzio², Marco Godi¹, Antonio Nardone^{1,4}, Marco Schieppati^{2,3}, ¹Posture and Movement Laboratory, Division of Physical Therapy and Rehabilitation, Scientific Institute of Veruno, Salvatore Maugeri Foundation (IRCCS), Veruno (NO), Italy, ²Centro Studi Attività Motorie, Scientific Institute of Pavia, Salvatore Maugeri Foundation (IRCCS), Pavia, Italy, ³Department of Experimental Medicine, University of Pavia, Pavia, Italy, ⁴Department of Clinical and Experimental Medicine, University of Eastern Piedmont, Novara, Italy

O.71-Auditory cueing and obstacle avoidance in Parkinson's disease patients

Wandana Mahabier¹, Arnaud Delval², Sebastiaan Overeem¹, Vivian Weerdesteijn¹, Bastiaan Bloem¹,
¹Radboud University Medical Center, Nijmegen, Netherlands, ²Lille Regional University Hospital, Lille, France

O.72-Autonomic Nervous System in Parkinson's disease: New evidence on the relationship to freezing of gait

Inbal Maidan¹, Anat Mirelman^{1,3}, Aner Weiss¹, Meir Plotnik¹, Noit Inbar¹, Nir Giladi^{1,2}, Jeffrey Hausdorff^{1,2},
¹Movement Disorders Unit, Dept of Neurology, Tel-Aviv Sourasky Medical Center, Tel Aviv, Israel, ²Sackler Faculty of Medicine, Tel-Aviv University, Tel Aviv, Israel, ³Harvard Medical School, Boston, MA, Boston MA, United States

O.73-Modulation of gait symmetry by subthalamic stimulation improves intractable freezing of gait

Alfonso Fasano¹, Henning Stolze², Jens Volkmann³, Gunther Deuschl³, Jan Herzog³, ¹Istituto di Neurologia Università Cattolica del Sacro Cuore, Rome, Italy, ²Diakonissenanstalt Flensburg, Klinik für Neurologie, Flensburg, Germany, ³Department of Neurology, Christian-Albrechts-University, Kiel, Germany

O.74-Monoaminergic and cholinergic correlates of falling in Parkinson disease

Martijn Muller¹, Roger Albin^{1,2}, Robert Koeppe¹, Kirk Frey¹, Nico Bohnen^{1,2}, ¹University of Michigan, Ann Arbor, MI, United States, ²VA Health System, Ann Arbor, MI, United States

Gait and Posture in Older Adults [10,30 – 11,30]

Moderators: *Stephen Lord, Wiebren Zijlstra*

O.75-Sensory integration for stance control involves perceptual inhibition in older adults

Mark Redfern¹, J. Richard Jennings¹, ¹University of Pittsburgh, Pittsburgh, PA, United States

O.76-Evidence for a link between inappropriate compensatory pitch head movement and increased obstacle contacts in older people wearing multifocal glasses

Jasmine Menant¹, Rebecca St George¹, Blake Sandery¹, Richard Fitzpatrick¹, Stephen Lord¹, ¹Prince of Wales Medical Research Institute, Randwick, New South Wales, Australia

O.77-Sensorimotor correlates of gait variability in older people. A population-based study

Michele Callisaya¹, Jennifer McGinley³, Leigh Blizzard¹, Michael Schmidt¹, Velandai Srikanth^{1,2}, ¹Menzies Research Institute, Hobart, Tasmania, Australia, ²Monash Medical Centre, Melbourne, Victoria, Australia, ³Murdoch Children's Research Institute, Melbourne, Victoria, Australia

O.78-The effects of footwear anterior/posterior stiffness on dynamic balance control in older adults

Stephen Perry^{1,2}, Kristen McFall¹, Craig Tschirhart¹, ¹Wilfrid Laurier University, Waterloo, Ontario, Canada, ²Toronto Rehabilitation Institute, Toronto, Ontario, Canada

Activity Monitoring during Daily Living [11,30 – 12,30]

Moderators: *Hans Bussmann, Laura Rocchi*

O.79-Added value of activity monitoring in rehabilitation medicine

Hans Bussmann¹, Rita van den Berg-Emons¹, Henk Stam¹, ¹Dept. of Rehabilitation Medicine, Erasmus MC University Medical Center, Rotterdam, Netherlands

O.80-Day-to-day variability of physical activity of older persons living in the community.

Simone Nicolai¹, Petra Benzinger¹, Dawn Skelton², Kamiar Aminian³, Clemens Becker¹, Ulrich Lindemann¹,
¹Robert-Bosch-Hospital, Stuttgart, Germany, ²Glasgow Caledonian University, Glasgow, United Kingdom, ³Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

O.81-Activity level and functioning three months after a hip fracture

Kristin Taraldsen¹, Pernille Thingstad¹, Olav Sletvold^{1,2}, Jorunn Helbostad^{1,2}, ¹*Department of Neuroscience, Norwegian University of Technology and Science, Trondheim, Norway,* ²*Department of Geriatrics, St.Olav University Hospital, Trondheim, Norway*

O.82-Quantification of physical activity and behaviour change: developing a novel method for analysing objective measures of physical activity.

Sebastien Chastin¹, Malcolm Granat¹, Lynn Rochester², ¹*Glasgow Caledonian University, Glasgow Scotland, United Kingdom,* ²*Newcastle University, Newcastle, United Kingdom*

Thursday June 25

Oral Session VII – 16,00 – 18,00

Sensory Training and Rehabilitation [16,00 – 18,00]

Moderators: Fay B. Horak, Sandra Brauer

K.7- Keynote lecture: Fay B. Horak, Oregon Health and Science University, Portland, Oregon, United States

O.83- Development of a Clinical Balance Evaluation Systems test (BESTest) for Differentiating Balance Deficits

Fay Horak¹, James Frank¹, Diane Wrisley¹, Antonio Nardone^{2,3}, Marco Godi², Franco Franchignoni², ¹*Oregon Health and Science University, Portland, Oregon, United States,* ²*Scientific Institute of Veruno, Salvatore Maugeri Foundation (IRCCS), Veruno (NO), Italy,* ³*Department of Clinical and Experimental Medicine, University of Eastern Piedmont, Novara, Italy*

O.84- Effect of a physiotherapy treatment on the sagittal plane gait biomechanics of knee osteoarthritis patients: preliminary results

Nathaly Gaudreault^{1,2}, Katia Turcot³, Karine Boivin^{1,4}, Nicola Hagemester^{1,5}, Jacques A. deGuisse^{1,5}, ¹*Laboratoire de recherche en imagerie et orthopédie (LIO), Centre de recherche du Centre hospitalier de l'Université de Montréal, Montréal, Québec, Canada,* ²*École de réadaptation, Faculté de Médecine et de Sciences de la Santé de l'Université de Sherbrooke, Sherbrooke, Québec, Canada,* ³*Laboratoire de Cinésiologie Willy Taillard, Hôpitaux Universitaires de Genève, Genève, Switzerland,* ⁴*Département des Sciences de l'activité physique, Université de Trois-Rivières, Trois-Rivières, Québec, Canada,* ⁵*Département de génie de la production automatisée, École de technologie supérieure, Montréal, Québec, Canada*

O.85-Approach for rehabilitation treatment of cerebellar patients presenting with postural ataxia

Dieter Kutz¹, Dagmar Timmann², Florian Kolb¹, ¹*Institute of Physiology, Munich, Germany,* ²*Department of Neurology, Essen, Germany*

O.86-Intensive coordinative training improves motor performance in degenerative cerebellar disease

Winfried Ilg¹, Matthis Synofzik², Doris Brötz⁴, Susanne Burkard³, Martin Giese¹, Ludger Schöls², ¹*Hertie Institute of Clinical Brain Research, Dep. Cognitive Neurology, Tübingen, Germany,* ²*Hertie Institute of Clinical Brain Research, Dep. Neurodegeneration, Tübingen, Germany,* ³*University Clinic, Centre for Neurology, Therapy Centre, Tübingen, Germany,* ⁴*University Tübingen, Institute of medical Psychology and behavioral Neurobiology, Tübingen, Germany*

O.87-Balance training with visual feedback can improve balance abilities in people with spinal cord injury

Dimitry Sayenko¹, Maria Alekhina², Albert Vette³, Kimitaka Nakazawa⁴, Milos Popovic^{1,3}, ¹*Rehabilitation Engineering Laboratory, Toronto Rehabilitation Institute, Toronto, Ontario, Canada,* ²*Perceptual-Motor Behaviour Laboratory, Faculty of Physical Education and Health, University of Toronto, Toronto, Ontario, Canada,* ³*Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Ontario,*

Canada, ⁴Department of Rehabilitation for Movement Functions, Research Institute of National Rehabilitation Center for Persons with Disabilities, Tokorozawa, Saitama, Japan

O.88-Circuit-based rehabilitation improves gait endurance but not usual walking activity in chronic stroke: a randomised clinical trial

Suzie Mudge¹, Alan Barber¹, Susan Stott¹, ¹University of Auckland, Auckland, New Zealand

O.89-Advances in vestibular rehabilitation: high-tech vs. low-tech optokinetic stimulation and the role of supervision

Marousa Pavlou¹, Adolfo Bronstein², Rosalyn Davies³, ¹King's College London, London, United Kingdom, ²Imperial College London, London, United Kingdom, ³National Hospital for Neurology and Neurosurgery, Queen Square, London, United Kingdom

Vestibular Pathophysiology [16,00 – 17,00]

Moderators: *Kazuo Ishikawa, Liliane Borel*

O.90-Visual vertigo and vestibulopathy: I. Balance functions and posturography findings

Oz Zur^{1,2}, Elizabeth Dannenbaum², Ruthy Dickstein¹, Joyce Fung^{2,3}, ¹University of Haifa, Haifa, Mt Carmel, Israel, ²Feil & Oberfeld /CRIR Research Center Jewish Rehabilitation Hospital, Laval, Quebec, Canada, ³School of Physical and Occupational Therapy McGill University, Montreal, Quebec, Canada

O.91-The relationship between positional vertigo and visual dependency

Kiran Agarwal¹, Adolfo Bronstein¹, Mary Faldon¹, Marco Mandala^{2,1}, Yvonne Silove¹, ¹Neuro-otology Unit, Imperial College London, London, United Kingdom, ²University Department of ORL, Siena, Italy

O.92-Classification of idiopathic bilateral vestibulopathy and relations of the subtypes to stabilometric findings

Toshihisa Murofushi¹, Chisato Fujimoto², Munetaka Ushio², Masaki Matsuzaki³, ¹Teikyo University Mizonokuchi Hospital, Kawasaki, Japan, ²Tokyo University, Tokyo, Japan, ³Toshiba Hospital, Tokyo, Japan

O.93-Gait phase instability in cases with small acoustic neuroma: analysis by the use of tactile sensor

Kazuo Ishikawa¹, Min Yin¹, Weng Hoe Wong¹, Takashi Saitoh¹, Yutaka Shibata¹, ¹Akita University School of Medicine, Akita, Japan

Orthopedic Diseases and Treatment [17,00 – 18,00]

Moderators: *Sharon Henry, Carlo Frigo*

O.94-Trunk postural control in subjects with low-back pain or a recent history of low-back pain

Jaap van Dieen¹, Lando Koppes², Jos Twisk², ¹Research Institute MOVE, Faculty of Human Movement Sciences, VU University Amsterdam, Amsterdam, Netherlands, ²EMGO Institute, VU University Medical Center, Amsterdam, Netherlands

O.95-Outcome evaluation of ankle osteoarthritis treatments using spatio-temporal gait parameters and plantar pressure during unconstrained long distance walking

Hossein Rouhani¹, Julien Favre¹, Xavier Crevoisier², Brigitte M Jolles^{1,2}, Omid Zobeiri¹, Kamiar Aminian¹, ¹EPFL, Laboratory of Movement Analysis and Measurement, Lausanne, Switzerland, ²CHUV, Département de l'Appareil Locomoteur, Lausanne, Switzerland

O.96-Relationship between physical function and stiffened pattern of movement during gait in patients with knee osteoarthritis

Alexandra Gil¹, Patrick Sparto¹, April Chambers¹, Raki Cham¹, G. Kelley Fitzgerald¹, ¹University of Pittsburgh, Pittsburgh, PA, United States

O.97-Kinematics of the three components of a novel ligament-compatible total ankle prosthesis: in-vivo fluoroscopic analysis at three consecutive follow-ups

Francesco Cenni¹, Sandro Giannini¹, Matteo Romagnoli¹, Teresa Sforza¹, Claudio Belvedere¹, Alberto Leardini¹, ¹*Istituto Ortopedico Rizzoli, Bologna, Italy*