

Detailed Daily Congress Program

Keynote Lectures, Symposia and Oral Sessions

DAY 1 Sunday, June 24

- 17:00-17:10 Welcome to the Congress and to Trondheim
Jorunn L. Helbostad, Congress Chair
Beatrix Vereijken, Co-chair
- 17:10-17:20 Welcome word on behalf of NTNU
Stig Slørdahl, Dean, Faculty of Medicine, NTNU
- 17:20-17:30 Announcement of 2013 Congress in Akita, Japan
Kazuo Ishikawa, Chair of the Akita Congress
- 17:30-17:40 David Winter Commemoration
Brad McFadyen and James Frank
- 17:40-17:45 Artistic Feature
Ådne Marlon Gulbrandsen
- 17:45-18:30 Welcome word from the ISPGR President
K.1 KEYNOTE LECTURE I, *Cosmos 2*
Opening lecture: The interplay between posture, gait, and mental function
Bastiaan R. Bloem
- 19:00 – 21:00 **WELCOME RECEPTION**
Rockheim Museum
-

DAY 2 Monday, June 25

- 8:30 – 9:30 **K.2 KEYNOTE LECTURE II, *Cosmos 2***
Moderator: Lisa Shulman
How does the brain create movement, and how can this be influenced with brain stimulation?
Speaker: Professor Mark Hallett
- 9:30 – 10:30 **O.1 TOOLS AND METHODS I, *Cosmos 3C***
Moderators: Rolf Moe-Nilssen, Stephen R. Lord
O.1.1 Motor imagery of balance: A quantitative approach
M.U. Ferraye, B.R. Bloem, L. Heil, B. Debû, I. Toni
O.1.2 The effects of virtual heights on static and dynamic postural control
T.W. Cleworth, M.G. Carpenter
O.1.4 Use of exploratory factor analysis to describe a model of gait
L. Rochester, S. Lord, B. Galna, D.J. Burn
O.2 DEVELOPMENT OF POSTURE AND GAIT I, *Living 4*
Moderators: Beverly Ulrich, Beatrix Vereijken
O.2.1 The construction of space for navigation: How children develop spatial memory and path planning for locomotion, in comparison with reaching movements
V. Belmonti, P. Brovedani, P. Leboucher, Y. Capuzzo, G. Cioni, A. Berthoz
O.2.2 Determinants for direction of obstacle avoidance in children
M. Cinelli, N. VanRuybeke, P. Bryden
O.2.3 Bimanual gait: The development of human brachiation
W.G. Cole, J.M. Lingeman, G. Chan, D. Bendicksen, B. Vereijken, K.E. Adolph
O.2.4 Postural Control in Children: The Influence of head movement propensity during natural gaze behaviour
A. Schärli, R. van de Langenberg, K. Murer, R. Müller
O.3 ACTIVITY MONITORING, *Cosmos 3A*
Moderators: Hans Bussmann, Sandra Brauer
O.3.1 Moving outdoor in older people: Assessment based on accelerometer data
A. Paraschiv-Ionescu, P. Bezinger, C. Becker, K. Aminian
O.3.2 Quantifying fall risk in daily life using 3-day long continuous accelerometer recordings
J.M. Hausdorff, A. Weiss, M. Brozgot, M. Dorfman, T. Herman, S. Shema, N. Giladi

O.3.3 Can the ActivPAL accurately measure walking under challenging conditions in people with PD?
R.M. Lamont, M.E. Morris, M.H. Woollacott, S.G. Brauer

O.3.4 Comparing activity levels between people with Charcot-Marie-Tooth disease and healthy controls:
An exploratory study
G. Ramdharry, A.J. Pollard, M. Sarah, K. Hallsworth, T. Ploetz, J.F. Marsden, M.M. Reilly

O.4 NEUROLOGICAL DISEASES I, Cosmos 2

Moderators: Klaus Hauer and Torunn Askim

O.4.1 Delayed postural responses are associated with gait and postural sway abnormalities
in multiple sclerosis

J. Huisinga, R. St. George, R. Spain, D. Bourdette, F. Horak

O.4.2 Effects of wearing an ankle orthosis while walking on fatigue and postural sway in people with
Multiple Sclerosis: A randomised crossover trial

J. McLoughlin, C. Barr, D. Sturnieks, S. Lord, M. Crotty

O.4.3 Effects of a standardised physical training on cognitive performance in patients with dementia
K. Hauer, M. Schwenk, T. Zieschang, P. Oster

O.4.4 Self-selected walking speed predicts ability to run following traumatic brain injury
G. Williams, A. Schache, M.E. Morris

10:30 – 11:00

BREAK

11:00 – 12:30

S.1 UPDATE ON NEUROLOGICAL GAIT DISORDERS: A STEP INTO THE FUTURE, Cosmos 2

Speakers: B.R. Bloem (organizer), F.B. Horak, J. Close, E. Moro

S.2 ARM MOVEMENTS AND GAIT, Living 4

Speakers: J. Duysens (organizer), Y. Ivanenko, M. Pijnappels, J. van Dieën,
A. Nieuwboer, S. Vercruyse, P. Meyns

O.5 MODELING, ROBOTICS AND BIOMECHANICS I, Cosmos 3C

Moderators: Thomas Mergner, Gertjan Ettema

O.5.1 Individual recognition from motion data using 2 IMU sensors
G. Venture, T. Zhang

O.5.2 UPMOVE: A system for automatic classification of gait patterns
R. Kaptein, A. Daffertshofer

O.5.3 Modifying human balancing response to support surface tilt by stroboscopic illumination
L. Assländer, G. Hettich, A. Gollhofer, T. Mergner

O.5.4 Neuromechanics: Understanding neural and muscular interaction determining physical performance in specific
pathology and aging
C. Meskers, J.H. De Groot, A.B. Maier, E. De Vlugt

O.5.5 Enhanced locomotor adaptation in the "broken escalator" after-effect using anodal tDCS
D. Kaski, S. Qadir, M. Patel, N. Yousif, A.M. Bronstein

O.6 AGING I - COGNITIVE FACTORS, Cosmos 3A

Moderators: Vivian Weerdesteyn, Yocheved Laufer

O.6.1 Aging of ankle proprioceptive control
M.P. Boisgontier, I. Olivier, V. Nougier

O.6.2 Age, but not sit or stance, affects rapid reaching movement time to virtual objects in response to a simple
or choice cue
Y. Laufer, H. Sugarman, A. Burstin, R. Brown

O.6.3 Gait variability: The role of physical and cognitive functioning
E. Smulders, Y. Schoon, V. Weerdesteyn, M.O. Rikkert

O.6.4 Thinking, gripping and standing: Multitasking in young and older adults depends on
ecological validity of the performed tasks
M. Doumas, R.T. Krampe

O.6.5 Poor trail making test performance is directly associated with altered dual task
prioritization in 686 elderly
W. Maetzler, M.A. Hobert, R. Niebler, S.I. Meyer, C. Becker, J. Godau, G.W. Eschweiler, D. Berg

O.6.6 Are you paying attention? What walking and counting can tell us about aging.
L. Maclean, A.J. Astell

12:30 – 14:30

LUNCH & POSTER SESSION

Detailed Daily Congress Program

DAY 2

Monday, June 25 *continued*

14:30 – 16:00

S.3 AXIAL DISABILITY AND COMPENSATORY STRATEGIES IN PARKINSON'S DISEASE, *Cosmos 3A*

Speakers: E. Ruzicka (organizer), B.R. Bloem, A. Nieuwboer

S.4 PHYSICAL AND NEUROPSYCHOLOGICAL RISK FACTORS FOR FALLS IN OLDER PEOPLE WITH NO, MILD AND MODERATE COGNITIVE IMPAIRMENT, *Cosmos 2*

Speakers: S.R. Lord (organizer), K. Delbaere, M.E. Taylor, J.C.T. Close

14:30 – 16:00

S.5 AMBULATORY ASSESSMENT OF POSTURE AND GAIT IN PARKINSON'S: WHY AND HOW? *Cosmos 3C*

Speakers: W. Maetzler (organizer), A. Snijders, J.M. Hausdorff, A. Salarian

O.7 COORDINATION OF POSTURE AND GAIT, *Living 4*

Moderators: Mark Carpenter, Ann-Katrin Stensdotter

O.7.1 Coordination of the head with respect to the trunk and pelvis in the roll and pitch planes during quiet stance
J. Allum, F. Honegger, GJ. van Spijker

O.7.2 Are postural responses to backward and forward perturbations processed by different neural circuits?
J. Nonnekes, A. Scotti, L.O. Nijhuis, K. Smulders, A. Queralt, B.R. Bloem, S. Geurts, V. Weerdesteyn

O.7.3 Posture during relaxed standing is controlled intermittently rather than continuously
E.A.F. Ihlen, S. Lund, B. Vereijken

O.7.4 Abdominal muscle weakness is the key determinant of postural instability in patients with Facioscapulohumeral muscular dystrophy
N. Rijken, N.H. Rijken, V. Weerdesteyn, B. van Engelen, A. Geurts

O.7.5 Proximal lower limb muscle energetics and the adaptation of segment elevation angle phasing for obstacle avoidance
M.J. MacLellan, B.J. McFadyen

O.7.6 Intra- and inter-personal postural coordination during rhythmic sway: Effects of haptic contact and dance expertise
G. Sofianidis, V. Hatzitaki, G. Grouios, L. Johansen, A. Wing

16:00 – 16:30

BREAK

16:30 – 18:00

S.6 HOW MODELING CONTRIBUTES TO UNDERSTANDING POSTURAL CONTROL, *Cosmos 3C*

Speakers: R.J. Peterka (organizer), I.D. Loram, T. Mergner, S. Park, H. van der Kooij

S.7 PHYSICAL ACTIVITY MONITORING IN DAILY LIFE: VALIDITY AND VALIDATION ISSUES, *Living 4*

Speakers: K. Aminian (organizer), U. Lindemann, H. Bussmann, W. Zijlstra

O.8 FALLS & FALLS PREVENTION I – PREDICTION, *Cosmos 2*

Moderator: Meg Morris, Jorunn L. Helbostad

O.8.1 Association of executive function impairment, history of falls and physical performance: A cross-sectional elderly population-based study in Eastern France
S. Muir, O. Beauchet, M.M. Odasso, C. Annweiler, M. Speechley

O.8.2 Poor executive function predicts future falls among healthy older adults: Findings from a 5 year prospective study
A. Mirelman, T. Herman, M. Brozgol, M. Dorfman, E. Sprecher, A. Schweiger, N. Giladi, J.M. Hausdorff

O.8.3 Response to unexpected balance perturbations under dual-task conditions is predictive of falls in older people
D. Sturnieks, J. Menant, R.C. Fitzpatrick, K. Delbaere, S.R. Lord

O.8.4 How to prevent falling in an unstable environment? Gait adaptations in response to balance perturbations
L. Hak, H. Houdijk, F. Steenbrink, A. Mert, P. Van der Wurff, P. J. Beek, J. Van Dieën

O.8.5 Falls in Australians living with Parkinson's disease: When, where and how?
J. McGinley, H.B. Menz, F. Huxham, R. Iansek, J. Watts, A.T. Murphy, M. Danoudis, M.E. Morris

O.8.6 The descent phase of falls: Neuromuscular and mechanical factors
M. Le Goic, J. Lecompte, B. Sandoz, S. Laporte, P.P. Vidal

O.9 NEUROLOGICAL DISEASES II – STROKE, *Cosmos 3A*

Moderators: Roos van Swigchem, Torunn Askim

O.9.1 Assessing the interaction of respiratory and locomotor systems post-stroke: From physiology to rehabilitation
P. Smallhorn, J. Spahija, C. Otfinowski, C. Perez, J. Fung

O.9.2 The influence of balance support on the metabolic cost of walking in stroke patients during overground and treadmill walking
T. Ijmker, A. Jarbandhan, R. Daniëlle, C. Lamothe, H. Houdijk

O.9.3 Persons post stroke are faced with a reduced ability to incorporate step modifications in an ongoing gait pattern

R. van Swigchem, M. Roerdink, V. Weerdesteyn, A. Geurts, A. Daffertshofer

O.9.4 Functional analysis of supraspinal locomotor control in patients with progressive supranuclear palsy by PET

A. Zwergal, C. la Fougere, G. Xiong, T. Brandt, M. Dieterich, K. Jahn

O.9.5 The contribution of executive function and brain volume to gait speed in older adults with and without cerebral infarction

B. Manor, V. Novak

O.9.6 How does Functional Electrical Stimulation work? An fMRI study of cortical activations during ankle dorsiflexion

F. Molteni, M. Gandolla, S. Ferrante, E. Guanziroli, A. Martegani, G. Ferrigno, A. Pedrocchi, N.S. Ward

DAY 3

Tuesday, June 26

8:30 – 9:30

K.3 KEYNOTE LECTURE III, *Cosmos 2*

Gait stability: To fall or not to fall, that is the question

Speaker: Professor Jaap van Dieën

9:30 – 10:30

O.10 EXERCISE I, *Cosmos 3A*

Moderators: Eling de Bruin, Meg Morris

O.10.1 Training conditions influence walking kinematics and self selected walking speed in patients with neurologically impairments

G. Williams, R. Clark, A. Schache, N. Fini, E. Moore, M.E. Morris, P. McCrory

O.10.2 Video-game based intensive coordinative training improves motor performance of children with degenerative ataxia

W. Ilg, C. Schatton, M.A. Giese, L. Schöls, M. Synofzik

O.10.3 Movement strategy training in Parkinson's disease: Results from a community based sample

M. Danoudis, J.L. McGinley, H.B. Menz, F. Huxham, R. Iansek, J. Watts, A.T. Murphy, M.E. Morris

O.10.4 Is strength training associated with improved activity in Parkinson's disease?

M.E. Morris, J.L. McGinley, H. Menz, F. Huxham, R. Iansek, M. Danoudis, W. Jennifer, A. Murphy

O.11 TOOLS AND METHODS II - SENSOR-BASED ASSESSMENT, *Cosmos 3C*

Moderators: Kamiar Aminian, Lorenzo Chiari

O.11.1 Sensor based assessment of standardized and daily-life gait in independent-living older adults

A. Zijlstra, W. Zijlstra

O.11.2 Can accelerometer-based evaluation of postural function identify individuals with Enlarged Substantia Nigra Hyperechogenicity?

L. Chiari, I. Liepelt, L. Palmerini, J. Streffer, D. Berg, W. Maetzler

O.11.3 Sensor based assessment of resistance and balance training effects on peak power during the sit-to-stand transfer in older persons

R. Regterschot, M. Folkersma, W. Zhang, W. Zijlstra

O.11.4 Screening for balance disorders in mildly affected multiple sclerosis patients

J. Allum, M.H. Fanchamps, H. Gensicke, J. Kuhle, L. Kappos, Ö. Yaldizli

O.12 NEUROLOGICAL DISEASES III - PARKINSON'S DISEASE, *Cosmos 2*

Moderators: Sandra Brauer, B.R. Bloem

O.12.1 Freezing of gait in Parkinson's disease is related to impaired set-shifting during stepping

K. Smulders, R. Cools, B.R. Bloem, R.A. Esselink

O.12.2 Using ecological event-based acoustic guides to cue gait in Parkinson's disease patients

W. Young, M. Rodger, C. Craig

O.12.3 Attention modulation in parkinsonian freezers: Consequences for step initiation postural adjustments

A. Delval, C. Tard, J. Bourriez, A. Destée, P. Derambure, K. Dujardin, L. Defebvre

O.12.4 The impact of environment on difficulty walking in the community in people with Parkinson's disease

N. Mahendran, R. Lamont, A. Kwok, S. Brauer

O.13 SENSORIMOTOR CONTROL I, *Living 4*

Moderators: Dan Marigold, Christine Assaiante

O.13.1 Brain network of posture control during sensory modulation in fMRI

K. Jahn, V. Brümmer, A. Zwergal, T. Stephan

Detailed Daily Congress Program

DAY 3 **Tuesday, June 26** *continued*

- O.13.2 Sensory integration during human locomotion and its influence on temporal gait variability
K. Jahn, M. Kamenova, M. Wühr, R. Schniepp
- O.13.3 Gaze anticipation during locomotion
D. Tranvoue, D. Bernardin, H. Kadone, D. Bennequin, T. Sugar, M. Zaoui, A. Berthoz
- O.13.4 The effect of visual transitions on perception and action coupling
R. Moraes, M. Razuk, P.B. Freitas Junior, J.A. Barela
- 10:30 – 11:00 **BREAK**
- 11:00 – 12:30 **S.8 EXERGAMING TO INFLUENCE WALKING**, *Cosmos 3A*
Speakers: E. de Bruin (organizer), J. Fung, A. Mirelman
- S.9 WHAT CAN WE DETECT BY VESTIBULAR FUNCTION TEST?** *Living 4*
Speakers: K. Ishikawa (organizer), K.S. Kim, S.H. Kim, T. Murofushi, A. Mitsuhiro, M. Yin
- S.10 NEUROIMAGING OF GAIT**, *Cosmos 2*
Speakers: J. Klaus, M. Muller (co-organizers), S. Vercruyse
- 11:00 – 12:30 **O.14 TOOLS AND METHODS III**, *Cosmos 3C*
Moderators: Arash Salarian, Wiebren Zijlstra
- O.14.1 Using biped robots to simulate human stance control
T. Mergner, G. Hettich, L. Fennell
- O.14.2 Gait Analysis With Cane For Robot Assisted Locomotion
H. Kadone, M. Hassan, K. Suzuki, Y. Sankai
- O.14.3 Foam surfaces and standing balance testing: The balance perturbation and the contribution from rapidly adapting mechanoreceptive sensation on the plantar soles
M. Patel, P. Fransson, R. Johansson, M. Magnusson
- O.14.4 Development and validation of a questionnaire for analyzing real falls captured by video in Long-Term Care (LTC) facilities
Y. Yang, R. Schonnop, F. Feldman, S.N. Robinovitch
- O.14.5 A comparison of the cognitive demands of standing, cycling and walking: The contribution of bilateral coordination and postural control to the dual decrement
G. Yogev-Seligmann, N. Giladi, L. Gruendlinger, J.M. Hausdorff
- 12:30 – 14:30 **LUNCH & POSTER SESSION**
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DAY 4 **Wednesday, June 27**

- 8:30 – 9:30 **K.4 KEYNOTE LECTURE IV**, *Cosmos 2*
Cognition: Motoric perspectives
Speaker: Professor Joe Verghese
- 9:30 – 10:30 **O.15 ORTHOPEDIC DISEASES & INJURIES**, *Cosmos 3A*
Moderators: Jasmine Menant, Jorunn L Helbostad
- O.15.1 The Trondheim hip fracture trial - Impact on mobility
A. Prestmo, O. Sletvold, J.L. Helbostad, P. Thingstad, K. Taraldsen, I. Saltvedt
- O.15.2 Gait characteristics in hip fracture patients 4 and 12 months post fracture
P. Thingstad, K. Taraldsen, R. Moe-Nilssen, B. Vereijken, O. Sletvold, J.L. Helbostad
- O.15.3 Do patients with vertebral fractures and/or increased thoracic kyphosis fall more often? Preliminary results of a study among geriatric patients about the relation between falling and gait variability and stability
M. de Groot, H.C. van der Jagt-Willems, J.P. van Campen, W.F. Lems, J.H. Beijnen, C.J. Lamoth
- O.15.4 Introducing a new variable to quantify decoupling of the centre of mass and centre of pressure during gait initiation.
E. Prinsen, M.J. Nederhand, J.S. Rietman
- O.16 NEUROLOGICAL DISEASES IV - PARKINSON'S DISEASE**, *Cosmos 2*
Moderators: Lisa Shulman, Meir Plotnik
- O.16.1 Extrastriatal non-dopaminergic neuropathology is a significant modulator of gait functions in mild-to-moderate Parkinson disease
M. Muller, R. Albin, K. Frey, N. Bohnen

O.16.2 Effect of Vibrotactile Feedback on Protective Stepping Response in Parkinson's Disease Patients
P. Lee, K. Gadareh, M.J. Naushahi, M.A. Gresty, A.M. Bronstein

O.16.3 Can freezing of gait in patients with Parkinson's disease be alleviated using a motor learning based physiotherapy intervention?

M. Plotnik, M. Dorfman, E. Gazit, M. Brozgol, A. Nesterov, T. Gurevitch, N. Giladi, J.M. Hausdorff

O.16.4 Increased Gait variability of Patients with Parkinson's Disease who are carriers of the LRRK2 G2019s mutation
A. Mirelman, T. Gurevich, A. Weiss, A.B. Shira, A. Orr-Urtreger, N. Giladi, J.M. Hausdorff

O.17 TOOLS AND METHODS IV, *Cosmos 3C*

Moderator: Arash Salarian

O.17.1 A review of physical performance-related risk factors for falling among community-dwelling older adults: Potential clinical applications of wireless sensor technology

V. Power, A.M. Clifford, P. Van De Ven, J. Nelson, A. Bourke

O.17.2 The use of the Gait Profile Score to quantify kinematic gait deviations after stroke

J. McGinley, A.T. Murphy, R. Baker

O.17.3 Methodologies to Combine Objective Measures of Mobility in PD

A. Salarian, M. Mancini, F.B. Horak

O.17.4 Calibration and sensitivity control in the human vestibular system

R. Fitzpatrick, A. Butler, B. Luu, D. Sturnieks, L. Bent, J. Blouin

O.18 SENSORIMOTOR CONTROL II, *Living 4*

Moderator: Ann-Katrin Stensdotter

O.18.1 Sensory reweighting of the left and right leg during human balance control

T. Boonstra, J.H. Pasma, S.F. Campfens, A.C. Schouten, H. van der Kooij

O.18.2 Proprioceptive Gain in a Balance Control Task

T.M. Osborne, M. Lakie

O.18.3 The short-term effects of added mass on plantar sole sensitivity during upright standing

G. Handrigan, M. Simoneau, N. Teasdale, P. Corbeil

O.18.4 Adaptation during postural lean aftereffects differs in young, healthy elderly and Parkinson's Disease

W. Wright, R. Buddharaju

10:30 – 11:00

BREAK

11:00 – 12:30

S.11 COGNITIVE THERAPY AS A COMPLEMENTARY WAY TO IMPROVE GAIT AND REDUCE FALL RISK, *Cosmos 2*

Speakers: M.M. Odasso (organizer), A.F. Ambrose, J.M. Hausdorff

S.12 THE USE OF WEARABLE INERTIAL SENSORS TO IDENTIFY FALLS AND ESTIMATE THE RISK OF FUTURE FALL EVENTS, *Living 4*

Speakers: M. Pijnappels (organizer), S. Rispens, S. Redmond, A. Bourke, J. Nelson, V. Cionca, A. Weiss

O.19 EXERCISE II – AGING, *Cosmos 3C*

Moderators: Thorlene Egerton, Olav Sletvold

O.19.1 The effect of lower limb muscle fatigue on obstacle negotiation during walking in older adults

A. Hatton, J.C. Menant, D. Sturnieks, J. Lo, S.R. Lord

O.19.2 Perturbation-training can lower daily living fall-risk in community dwelling older adults

T. Bhatt, F. Yang, Y. Pai

O.19.3 Association between endurance walk capacity and integrity of brain regions important for processing speed and memory in very old adults

Q. Tian, K. Erickson, E.M. Simonsick, H. Aizenstein, N. Glynn, S.B. Kritchevsky, K. Yaffe, T. Harris, A.B. Newman, C. Rosano

O.19.4 Free-living physical activity and brain structures in older adults

Q. Tian, E. M Simonsick, N.W. Glynn, H.J. Aizenstein, S.B. Kritchevsky, K. Yaffe, T.B. Harris, A.B. Newman, C. Rosano

O.19.5 tDCS improves gait in small vessel disease: A double-blind sham controlled study

D. Kaski, R.O. Dominguez, J.H. Allum, A.M. Bronstein

O.19.6 Integrated motor imagery improves walking and self-efficacy of individuals post-stroke

R. Dickstein, A. Dunsky, Y. Yoel, M. Kafri, F. Falash, A. Eshed, J. Deutsch

O.20 AGING II – GAIT, *Cosmos 3A*

Moderators: Jennifer Brach, Rolf Moe-Nilssen

O.20.1 Supraspinal locomotor control during the lifespan

K. Jahn, S. Schröder, G. Xiong, T. Brandt, F. Heinen, A. Zwergal

Detailed Daily Congress Program

DAY 4 **Wednesday, June 27** *continued*

O.20.2 Impact of age-related brain changes on gait decline - A longitudinal study of older people
M. Callisaya, R. Beare, T. Phan, L. Blizzard, M. Thrift, J. Chen, V.i Srikanth

O.20.3 Incident mobility disability in middle-aged and older persons: Its predictors and its relationship with adaptive locomotor performance
N. Deshpande, E.J. Metter, J. Guralnik, L. Ferrucci

O.20.4 Gait characteristics partially explain the underestimation of walking intensity in older but not young adults
J. Brach, J.M. VanSwearingen, S. Perera, D. Wert, K. Lowry, S. Studenski

O.20.5 Effect of age and vocal reaction time on the kinematics of the first recovery step following single unexpected medial or lateral underfoot perturbations during gait
H. Kim, J.O. Nnodim, J.K. Richardson, J.A. Ashton-Miller, L. Allet

O.20.6 Dynamic visual acuity (DVA) during locomotion for targets at near and far distances: Effects of aging, head-trunk coupling and walking speed
N. Deshpande, B. Tourtillott, B. Peters, J. Bloomberg, A. Bani-Ahmed

12:30 – 14:30

LUNCH AND POSTER SESSION

14:30 – 16:00

S.13 WHY INSTRUMENT THE TUG TEST?, *Cosmos 3A*

Speakers: F.B. Horak, L. Chiari (co-organizers), B. Greene, B. Mariani

S.14 FALLS AFTER STROKE – UNDERLYING MECHANISMS AND NOVEL OPTIONS FOR INTERVENTION, *Cosmos 2*

Speakers: V. Weerdesteyn (organizer), A. Ashburn, A. Mansfield, M. Roerdink

O.21 DEVELOPMENT OF POSTURE AND GAIT II, *Living 4*

Moderators: Beverly Ulrich, Beatrix Vereijken

O.21.1 How do you learn to walk? Thousands of steps and hundreds of falls per day
K.E. Adolph, W.G. Cole, M. Komati, J. Garciaguirre, D. Badaly, J.M. Lingeman, G. Chan, R.B. Sotksy

O.21.2 The generation of locomotor trajectories in typically developing children: Direct perception-action coupling or cognitive construction of space?
V. Belmonti, G. Cioni, A. Berthoz

O.21.3 EMG activity during treadmill stepping: Young children with typical development
J.K. Sansom, C. Teulier, B. Ulrich

O.21.4 Bipedal asymmetries during relaxed standing reveal postural control deficits in young adults with CP
N. Skjaeret, E.A.F. Ihlen, B. Vereijken

O.22 VESTIBULAR FUNCTION, *Cosmos 3C*

Moderators: Kazuo Ishikawa, Mindy Levin

O.22.1 Postural Responses to Sensory Conflict during Combined Sinusoidal Galvanic Vestibular Stimulation and Optic Flow
E. Keshner, R. Buddharaju

O.22.2 The effects of postural threat on vestibular reflex gain
B. Horslen, C.J. Dakin, J.T. Inglis, M.G. Carpenter

O.22.3 Vergence and standing balance in subjects with idiopathic bilateral loss of vestibular function
Z. Kapoula, Q. Yang, C. Gaertner, P. Denise, M. Toupet

O.22.4 Lack of vestibular information alters navigational behaviour and brain activation during real navigation
A. Zwergal, C. la Fougere, G. Xiong, T. Brandt, M. Dieterich, E. Schneider, K. Jahn

O.22.5 Visual-vestibular interactions during obstacle crossing: effects of aging on whole body and segmental control
A.C. Novak, N. Deshpande

O.22.6 Vestibulospinal influence on upper body coordination
M.F. Levin, A.G. Feldman, T. Sibindi, T. Krasovsky, E. Dannenbaum, A. Zeitouni

16:00 – 16:30

BREAK

16:30 – 17:30

YOUNG SCIENTIST AWARD LECTURE, *Cosmos 2*

Speaker: Dan Marigold

17:30 – 18:10

YES-NO DEBATES, *Cosmos 2*

Moderator: Jacques Duysens

17:30-17:50

“Is cognitive function a critical key for minimizing fall risk?”
Debaters: James Frank (yes-side) and Stephen R. Lord (no-side)

17:50-18:10

“Is postural sway a good marker of postural control?”
Emily Keshner (yes-side) and Mark Carpenter (no-side)

18.10-18.30

DR. AFTAB PATLA AWARD ANNOUNCEMENT

Sponsored by NDI
Presented by Brad McFadyan



20:00 – 24:00

MID-SUMMER DINNER PARTY

Clarion Hotel and Congress Centre, Trondheim

DAY 5

Thursday, June 28

8:30 – 9:30

K.5 KEYNOTE LECTURE V, *Cosmos 2*

What is it with gait speed?
Speaker: Professor Stephanie Studenski

9:30 – 10:30

O.23 NEUROLOGICAL DISEASES V - PARKINSON'S DISEASE, *Cosmos 2*

Moderators: Lisa Shulman, Jeffrey Hausdorff

O.23.1 Towards the Detection of the neural correlates of Parkinson's disease sub-types using MRI
J.M. Hausdorff, K.R. Katz, T. Herman, Y. Jacob, N. Giladi, T. Hendler

O.23.2 STN Deep Brain Stimulation in patients with Parkinson's disease: Does it reduce the negative effects of dual tasking on gait?

A. Mirelman, E. Seri-Fainshtat, J.M. Hausdorff, A. Weiss, Z. Israel

O.23.3 'Think Big' verbal cuing in Parkinson's disease leads to modulation of postural responses but not electroencephalographic potentials of contingent negative variation.

B. Smith, J.V. Jacobs, F.B. Horak

O.23.4 Are balance control asymmetries in Parkinson's disease related to falls and walking difficulties?

T. Boonstra, J.P. Van Vugt, H. Van der Kooij, B.R. Bloem

O.24 PAIN, *Living 4*

Moderators: Karin Roeleveld, Lara Allet

O.24.1 Inflexible use of anticipatory postural adjustments with low back pain

J. Jacobs, K.V. Lomond, J.R. Hitt, M.J. DeSarno, J.Y. Bunn, K.J. Nagle, S.M. Henry

O.24.2 Does wearing unstable shoes enable a more upright posture during standing in patients with low back pain?

S. Armand, L. Allet, Z. Tavcar, K. Turcot, P. Hoffmeyer, S. Genevay

O.24.3 Plantar orthotics for patients with chronic low back pain (CLBP) decreases pain and improves spine function and mobility

P. Villeneuve, C. Ehring, S. Kurzawa, B. Weber, P.M. Gagey

O.24.4 The effect of daily perturbation training with a specially designed foot-worn system on balance control of elderly subjects with knee osteoarthritis

Y. Laufer, G. Segal, R. Shoham-Blonder, A. Elbza

O.25 EFFECT OF MEDICATION, *Cosmos 3A*

Moderators: Kazumi Iseki, Olav Sletvold

O.25.1 Effects of supramaximal dopaminergic replacement on freezing of gait when passing through doorways in Parkinson's disease

SK. Ehgoetz Martens, F. Pieruccini-Faria, Q.J. Almeida, B.R. Bloem

O.25.2 Spatial memory and cognition in patients with Parkinson's disease: testing the dopaminergic effect

K. Iseki, S. Slobounov, S. Kranick, P. Ghosh, N. Pal, C. Collins, B. McElroy, D. Benninger, M. Hallett

O.25.3 Can memantine improve axial signs in Parkinson's disease? A randomized, double-blind, placebo-controlled study

A. Delval, C. Moreau, V. Tiffreau, S. Bleuse, A. Destée, K. Dujardin, L. Defebvre, D. Devos

O.25.4 The complementary effect of exercise and medication on gait, balance, and disease severity in persons with parkinson disease

K. Foreman, O. Addison, R.L. Marcus, P.C. LaStayo, R. Willis, L.E. Dibble

O.26 TOOLS AND METHODS V, *Cosmos 3C*

Moderators: Robert Peterka, Sabato Mellone

O.26.1 Treadmill training with virtual reality to decrease the risk of falls in elderly idiopathic fallers: A pilot study

A. Mirelman, N. Raphaely-Beer, M. Dorfman, M. Brozgot, N. Giladi, J.M. Hausdorff

O.26.2 TProbability of fall as a measure for upright balance of human states: An analytic method to calculate the probability in ankle strategy model

M. Honarvar, M. Nakashima

Detailed Daily Congress Program

DAY 5 **Thursday, June 28** *continued*

O.26.3 TGait segmentation for a reliable gait assessment in unsupervised settings
L. Chiari, S. Mellone, F.B. Horak

O.26.4 TISAW: Instrumented stand and walk test for quick clinical measurement of balance and gait
F.B. Horak, M. Mancini, A. Salarian, L. Holstrom

10:30 – 11:00

BREAK

11:00 – 12:30

O.27 AGING III, Cosmos 2

Moderator: Brian Maki, Clemens Becker

O.27.1 Lack of inhibitory control induces errors in step initiation in older adults
P. Sparto, S.I. Fuhrman, S. Perera, J.R. Jennings, R.D. Nebes, M.S. Redfern, J.M. Furman

O.27.2 Relationships between appendicular skeletal muscle mass, percentage body fat and balance control in older people

J. Menant, D.L. Sturnieks, J. Lo, M. Brodie, S.R. Lord

O.27.3 Leg strength is associated with local dynamic stability of treadmill walking in elderly subjects
M. Toebees, R. Furrer, M. Hoozemans, J. Dekker, J. van Dieën

O.27.4 The temporal relationship between cognitive performance and handgrip strength in the oldest old
A. Maier, D.G. Taekema, T.J. de Craen, R.G. Westendorp, C.G. Meskers

O.27.5 Effect of uni- and multi-modal cueing on handrail grasping behavior in older adults
S.M. McKay, J.E. Fraser, A.L. Peters, T.A. Lee, C.Y. Scovil, B. Maki

O.27.6 Cognitive and physical performance in familial longevity
M. Stijntjes, A.J. de Craen, R.G. Westendorp, E. Slagboom, C.G. Meskers, A. Maier

O.28 MODELING, ROBOTICS & BIOMECHANICS II, Living 4

Moderators: Joyce Fung, Gertjan Ettema

O.28.1 Feedback mechanisms for frontal-plane balance control are strongly influenced by stance width
R.J. Peterka, A.D. Goodworth

O.28.2 Vector space analysis of the body centre of mass movements to determine gait stability in normal and impaired locomotion

J. Fung, K. Patterson, C. Perez, V Goussev

O.28.3 The dependence of human balance control on stimulus amplitude.
H. van der Kooij, R.J. Peterka, S. Kolk

O.28.4 A stance control model incorporating canal-otolith integration predicts the time course of body sway evoked by galvanic vestibular stimulation

R. Peterka, T. Mergner

O.28.5 On the validity of the Lyapunov exponent for gait stability
S. Rispens, A. Daffertshofer, M. Pijnappels, K.S. van Schooten, J.H. van Dieën

O.28.6 Phase-dependent changes in local dynamical stability of human gait
E.A.F. Ihlen, T. Gohl, P.B. Wik, O. Sletvold, J.L. Helbostad, B. Vereijken

O.29 SENSORIMOTOR CONTROL III, Cosmos 3A

Moderator: Dan Marigold

O.29.1 Posture-gait problem and its solution
A. Feldman, T. Krasovsky, M. Baniña, A. Lamontagne, M. Levin

O.29.2 Error-signals driving locomotor adaptation: Effects of peripheral nerve stimulation on ankle control during walking in an elastic force field

J. Choi, J. Lundbye-Jensen, C. Leukel, L.J. Bouyer, J.B. Nielsen

O.29.3 Does the cortex contribute to exploratory postural sway?
C.D. Murnaghan, R. Chua, J.T. Inglis, .M.G. Carpenter

O.29.4 Patient-customized vibrotactile feedback for postural control
P. Loughlin, A. Mahboobin, J. Furman, .P. Sparto

O.29.5 The effects of vibrating insoles on standing balance in diabetic neuropathy
K. Postema, J.M. Hijmans

O.29.6 Muscular effort in maintaining balance by handrail grasping: Implications for the design of public transportation vehicles

T.A. Sarraf, D.S. Marigold, S.N. Robinovitch

O.30 COGNITIVE IMPAIRMENT, *Cosmos 3C*

Moderator: Brad McFadyen, Galit Yogev-Seligmann

O.30.1 Can the Stroop test for double-task locomotor performance reveal the existence of cognitive decline?

G. *Kemoun*, A. Perrochon, A. Berthoz

O.30.2 Physiological fall risk factors in cognitively impaired older people: A one year prospective study

M. *Taylor*, S.R. Lord, K. Delbaere, J.C. Close

O.30.3 Mobility in persons with early-onset Alzheimer's disease

G. *Tangen*, J. Olsson, A.M. Mengshoel, E. Londos

O.30.4 Physical and cognitive function in relation to medial temporal lobe metabolism: 1h mrs in amnesic mild cognitive impairment and cognitively healthy older adults

E. *McGough*, K.E Weaver, R.G. Logsdon, J.M. Padowski, T.L. Richards, S.M. McCurry, L. Teri

O.30.5 The influence of focal cerebellar lesions on a working memory task with and without walking

W. *Ilg*, A. Christensen, O.M. Mueller, S.L. Goericke, M. A. Giese, D. Timmann

O.30.6 Visual scanning during the navigation of complex environments in persons with mild to severe traumatic brain injury

B. *McFadyen*, P. Fait, I. Cossette, B. Swaine

12:30 – 14:30

LUNCH AND POSTER SESSION

14:30 – 16:00

O.31 COGNITIVE, ATTENTIONAL & EMOTIONAL INFLUENCES, *Living 4*

Moderators: Mona Aaslund, Karen Li

O.31.1 Cognitive loading differentially affects gait-characteristics and conscious monitoring of gait

O. *Kannape*, O. Blanke

O.31.2 Dual-task priority during single-support standing balance: Effects of hearing difficulty

K. *Li*, C. Barnes, T. Gralnick, E. Zavaglia

O.31.3 Attentional dynamics during perturbation recovery in young and older adults

M. *Redfern*, R. Jennings, J. Roche

O.31.4 Emotional influences on the kinematics of interactions between two walkers: Preliminary results on angeriness

A. *Olivier*, J. Perrinet, J. Pettré

O.31.5 Effects of manipulating anxiety on stepping behaviour during adaptive locomotion

M.A. Hollands, B. *Curzon-Jones*, J.A. Bosch

O.32 AGING IV, *Cosmos 2*

Moderators: Clemens Becker, Mark Hollands

O.32.1 Age related changes in knee muscle specificity during weight bearing

D. *Benoit*, A.J. Smith, T.L. Flaxman

O.32.2 Visualizing age-dependency of central vestibular compensation - a rat microPET study

A. *Zwergal*, J. Schlichtiger, G. Xiong, M. Strupp, K. Jahn, M. Dieterich, M. Dutia, C. la Fougere

O.32.3 The impact of individual perceptual style on ability to resolve sensory conflicts and maintain balance in healthy young and older adults

N. *Bugnariu*, R. Patterson, J. Knebl

O.32.4 Age-related differences in gaze behaviour during virtual walking

M. *Hollands*, J. Stanley

O.32.5 Cortical and subcortical brain activity during imagined gait tasks across age

D. *Peterson*, K.A. Pickett, G.M. Earhart

O.32.6 Workers adaptability to gait and movement constraints as a function of age

M. *Gilles*

O.33 EXERCISE III - INTERVENTION STUDIES, *Cosmos 3A*

Moderators: Jennifer Brach, Christophe Büla

O.33.1 The effects of computer game dancing on voluntary step execution in older adults

G. *Pichierrri*, K. Murer, E.D. de Bruin

O.33.2 Smiling randomized trial: Effect of a training program with chaotic perturbations on gait performance

K. Aminian, C.J. *Büla*, I. Meltzer, F. Marcellini, V. Gabor, R. Papa, S. Rochat, C. Hoskovec, B. Mariani, M. Belokopytov, S. Bar Haim

O.33.3 The effects of physical exercise supplemented by a cognitive computer training on gait quality of older adults

E. *van het Reve*, K. Murer, E.D. de Bruin

O.33.4 Dual tasking when walking improves with a 4-week training program in people with Parkinson's Disease: A single blind randomised clinical trial.

S. *Brauer*, R.M. Lamont, M.H. Woollacott, M.E. Morris

Detailed Daily Congress Program

DAY 5 Thursday, June 28 *continued*

- O.33.5 Higher intensity treadmill training results in no deterioration in walking pattern or quality: A pilot RCT
S. Brauer, R.M. Lamont, M.H. Woollacott, M.E. Morris
- 14:30 – 16:00 **O.34 FALLS & FALLS PREVENTION II - PSYCHOLOGICAL FACTORS**, *Cosmos 3C*
Moderators: Emily Keshner, Kim Delbare
- O.34.2 Development and initial validation of the Iconographical Falls Efficacy Scale: Icon-FES
K. Delbaere, S.T. Smith, S.R. Lord
- O.34.3 Fear of falling in an older Irish population: Prevalence and psychosocial predictors
H. Cronin, C. O'Regan, O. Donoghue, P. Kearney, G. Savva, R.A. Kenny
- O.34.4 Cross-sectional relationship between fear of falling, activity restriction and dual task gait
O. Donoghue, H. Cronin, G. Savva, C. O'Regan, R.A. Kenny
- O.34.5 Older adults motivating factors and barriers to exercise to prevent falls
G.C.L. de Groot, L. Fagerström
- 16:00 – 16:30 **MEMBER MEETING & CLOSING**, *Cosmos 2*

Awards

Promising Young Scientist Award Winner

The Promising Young Scientist Award acknowledges superior research by a young investigator in Posture and/or Gait. The awards committee is pleased to announce this year's award recipient - **Dan Marigold**.

Dan is an Assistant Professor in the Department of Biomedical Physiology and Kinesiology at Simon Fraser University in British Columbia, Canada.

Through his research, Dan has:

- revealed how vision is integrated and used to guide walking
- provided new knowledge on fall mechanisms and balance control in older adults with stroke; and
- shown how context and knowledge of an impending gait perturbation dramatically alters the neural control and biomechanics of the response

On behalf of the Joint World Congress of ISPGR and Gait & Mental Function, we would like to congratulate Dan. We look forward to his plenary presentation at the Congress. **Dan's presentation will take place on Wednesday at 16:30 in the Cosmos Room.**

Research and Innovation Award in memory of Aftab Patla

Sponsored, once again, by Northern Digital, Inc. the congress will offer two student poster presentation awards in honour of Dr. Aftab Patla. One award will be for basic science and one for clinical science. Recipients will be chosen from a panel of researchers based on several criteria including:

- creativity and originality of research
- clarity of presentation
- level of understanding

The award winner will be announced at approximately 18:10 on Wednesday, following the Yes-No debates.

Note: This award is for student poster submissions only.

