Programme at a Glance

Time	Monday 9 September	Tuesday 10 September		Wednesday 11 September			Time
	ATHENE 1	ATHENE 1	PA318	ATHENE 1	PA318	PA329	
7:00							7:00
8:00	**Registration**			**Gait Course**			8:00
8:15		**Gait Course**					8:15
8:30	**Gait Course**		**Pre-Conference Seminar 1** Python programming for the movement sciences		**Pre-Conference Seminar 3** Systematic interpretation of clinical gait analysis in children with CP		8:30
8:45							8:45
9:00						**Musculoskeletal Modelling Workshop**	9:00
9:15							9:15
9:30				**Coffee Break**			9:30
9:45				**Gait Course**			9:45
10:00		**Coffee Break**					10:00
10:15	**Coffee Break**	**Gait Course**					10:15
10:30	**Gait Course**		Coffee Break		**Coffee Break**		10:30
10:45							10:45
11:00			**Pre-Conference Seminar 1** Python programming for the movement sciences		**Pre-Conference Seminar 3** Systematic interpretation of clinical gait analysis in children with CP		11:00
11:15							11:15
11:30							11:30
11:45							11:45
12:00	**Lunch Break**			**Lunch Break**			12:00
12:15		**Lunch Break**	**Break**		**Break**		12:15
12:30							12:30
12:45	**Gait Course**			**Gait Course**			12:45
13:00		**Gait Course**					13:00
13:15			**Pre-Conference Seminar 2** Lower limb orthoses and influence on gait and motion in children and adults		**Pre-Conference Seminar 4** Machine Learning for Clinical Gait Analysis		13:15
13:30							13:30
13:45							13:45
14:00							14:00
14:15				**Coffee Break**			14:15
14:30	**Coffee Break**	**Coffee Break**					14:30
14:45	**Gait Course**	**Gait Course**		**Gait Course**			14:45
15:00			**Coffee Break**		**Coffee Break**		15:00
15:15							15:15
15:30			**Pre-Conference Seminar 2** Lower limb orthoses and influence on gait and motion in children and adults		**Pre-Conference Seminar 4** Machine Learning for Clinical Gait Analysis		15:30
15:45							15:45
16:00							16:00
16:15	**Break**						16:15
16:30	**Gait Course**	**Break**					16:30
16:35		**Gait Course**					16:35
16:45							16:45
17:00							17:00
17:30							17:30
17:45							17:45
18:00				**ESMAC 2024 Welcome Cocktail** Oslo Town Hall			18:00
18:15							18:15
18:30							18:30
18:45							18:45
19:00							19:00
19:15							19:15
19:30				**Early Career Network (ECN) Opening Ceremony** Gamle-Raadhus-Scene			19:30
19:45							19:45
20:00							20:00
20:15							20:15
20:30							20:30
20:45							20:45
21:00							21:00
21:30							21:30
22:00							22:00

Time	Thursday 12 September			Friday 13 September		Saturday 14 September		Time
	HALL A	HALL B	HALL C	HALL A	HALL B	HALL A	MEETING ROOM 1	
7:00				Charity Run				7:00
8:00								8:00
8:15	Opening & Awards Session							8:15
8:30	Baumann Lecture Andrew Roberts			9) Foot and Ankle		15) Modern methodology - Multiplanar analysis		8:30
8:45								8:45
9:00	1) Hot topics in CP and muscle tone							9:00
9:15								9:15
9:30						17) Muscle tissue properties and development	16) Clinical Case Studies	9:30
9:45								9:45
10:00				Industry Presentation				10:00
10:15	Sponsors' Pitches			Coffee Break				10:15
10:30	Coffee Break					Coffee Break		10:30
10:45				Keynote Lecture 2 Tron Krosshaug				10:45
11:00	2) Machine learning and AI in motion analysis					18) Paediatric neurological disorders and syndromes		11:00
11:15								11:15
11:30				Industry Presentation				11:30
11:45				10) Sports & sports injuries				11:45
12:00								12:00
12:15	Industry Presentation					Keynote Lecture 3 Reidun Jansen		12:15
12:30	Poster Panic Session							12:30
12:45								12:45
13:00	Lunch & Posters I.			Poster Panic Session		Awards & Closing ceremony		13:00
13:15				Lunch & Posters II.				13:15
13:30								13:30
13:45								13:45
14:00	Keynote Lecture 1 Jason Wilken							14:00
14:15				11) Movement analysis methodology 1 - Enhaced methods and harmonising gait data	12) Spine & Trunk - Cervical spine and adults			14:15
14:30								14:30
14:45	3) Prosthetics & orthotics	4) Modelling and simulation	5) Stability and fall risk					14:45
15:00								15:00
15:15								15:15
15:30				Coffee Break				15:30
15:45								15:45
16:00				13) Movement analysis methodology 2 - Advances in clinical application	14) Spine & Trunk - Scoliosis and upper extremity			16:00
16:15	Coffee Break							16:15
16:30								16:30
16:35	6) Spinal cord injury and rehabilitation	7) Adult neurological disorders and orthopaedics	8) Markerless Motion Capture					16:35
16:45								16:45
17:00								17:00
17:30								17:30
17:45	ESMAC Annual General Assembly							17:45
18:00								18:00
18:15								18:15
18:30								18:30
18:45								18:45
19:00	Vicon User Group Social Roor Restaurant			ESMAC Gala Dinner Grefsenkollen				19:00
19:15								19:15
19:30								19:30
19:45								19:45
20:00								20:00
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20:30								20:30
20:45								20:45
21:00								21:00
21:30								21:30
22:00								22:00

Detailed Programme

Thursday, 12 September 2024

Opening & Awards Session

08:15–08:30, Hall A

Baumann Lecture: Andrew Roberts

08:30–09:00, Hall A

Chair: Ayman Assi (Lebanon)

Andrew Roberts[1]

[1] *RJAH Orthopaedic Hospital, Oswestry, United Kingdom*

Plenary Session: 1) Hot topics in CP and muscle tone

09:00–10:15, Hall A

Chairs: Andrew Roberts (United Kingdom), Marjolein van der Krogt (Netherlands)

O 001 One muscle to explain them all? Heterogeneity of muscle size in ambulant children with spastic cerebral palsy

Britta Hanssen[1,2], *Nicky Peeters*[1], *Tijl Dewit*[1,3], *Catherine Huenaerts*[3], *Nathalie De Beukelaer*[1,4], *Anja Van Campenhout*[5,6], *Kaat Desloovere*[1,3]

[1] *KU Leuven, Department of Rehabilitation Sciences, Leuven, Belgium*
[2] *University Hospitals Leuven, Department of Physical Rehabilitation Medicine, Leuven, Belgium*
[3] *University Hospitals Leuven, Clinical Motion Analysis Laboratory, Pellenberg, Belgium*
[4] *University of Geneva, Department of Surgery, Geneva, Switzerland*
[5] *University Hospitals Leuven, Department of Orthopedics, Leuven, Belgium*
[6] *KU Leuven, Department of Development and Regeneration, Leuven, Belgium*

O 002 ☆ Triceps surae muscle-tendon length changes and shear modulus ratios across the ankle motion in adolescents with cerebral palsy

Francesco Cenni[1], *Nathalie Alexander*[2], *Maria Sukanen*[3], *Alejandro Hernandez Belmonte*[4], *Iida Laatikainen-Raussi*[3], *Simon-Henri Schless*[5], *Harri Piitulainen*[3], *Taija Finni*[3]

[1] *University of Brescia, Department of Clinical and Experimental Sciences, Brescia, Italy*
[2] *Children's Hospital of Eastern Switzerland, Laboratory for Motion Analysis, St. Gallen, Switzerland*
[3] *University of Jyväskylä, Faculty of Sport and Health Sciences, Jyväskylä, Finland*
[4] *University of Murcia, Human Performance and Sports Science Laboratory, Faculty of Sport Sciences, Murcia, Spain*
[5] *ALYN Hospital, Motion analysis laboratory Helmsley PARC, Jerusalem, Israel*

O 003 ☆ On the clinical interpretation of overground gait stability indices in children with cerebral palsy

Morgan Sangeux[1], *Elke Viehweger*[1], *Jacqueline Romkes*[1], *Katrin Bracht-Schweizer*[1]

[1] *UKBB, Centre for Clinical movement analysis, Basel, Switzerland*

O 004 Walking energy expenditure is more sensitive to bodyweight support in children with cerebral palsy than in their typically developing peers

Andrew Ries[1], *Katherine M. Steele*[2], *J Maxwell Donelan*[3], *Michael H. Schwartz*[1]

[1] *Gillette Children's Specialty Healthcare, Center for Gait and Motion Analysis, St Paul, USA*
[2] *University of Washington, Mechanical Engineering, Seattle, USA*
[3] *Simon Fraser University, Biomedical Physiology and Kinesiology, Burnaby, Canada*

O 005 Selective dorsal rhizotomy reduces stretch hyperreflexia and possibly muscle tone in children with spastic cerebral palsy

Jente Willaert[1], *Catherine Huenaerts*[2], *Lena H. Ting*[3], *Kaat Desloovere*[4], *Anja Van Campenhout*[5], *Friedl De Groote*[1]

[1] *KU Leuven, Department of Movement sciences, Leuven, Belgium*
[2] *University Hospitals Leuven, Clinical Movement Analysis laboratory, Pellenberg, Belgium*
[3] *Emory University and Georgia Institute of Technology, The Wallace H. Coulter Department of Biomedical Engineering, Atlanta, USA*
[4] *KU Leuven / UZ Leuven, Department of Rehabilitation sciences, Leuven, Belgium*
[5] *KU Leuven / UZ Leuven, Department of Development and Regeneration, Leuven, Belgium*

O 006 ☆ Is the measure of variability a suitable biomarker to quantify dystonia during gait in individuals with mixed tone cerebral palsy?

Gilad Sorek[1], *Marije Goudriaan*[2], *Itai Schurr*[3], *Simon-Henri Schless*[1,3]

[1] *Helmsley PARC research center - ALYN Pediatric and Adolescent Rehabilitation Hospital, Laboratory for Paediatric Motion Analysis and Biofeedback Rehabilitation, Jerusalem, Israel*
[2] *Utrecht University, Corporate Offices - Student & Academic Affairs Office - Education- Education Policy, Utrecht, Netherlands*
[3] *ALYN Pediatric and Adolescent Rehabilitation Hospital, Motion analysis and biofeedback laboratory, Jerusalem, Israel*

O 007 Worsening Gait deviations are possible in Hereditary Spastic Paraparesis

Lane Wimberly[1], *Cinthya Meza*[2], *Kelly Jeans*[3], *Linsley Smith*[4], *Michelle Christie*[4], *Fabiola Reyes*[5], *Lizabeth Bunkell*[3]

[1] *Scottish Rite for Children, Orthopaedic Surgery, Dallas, USA*
[2] *Scottish Rite for Children, Clinical Research, Dallas, USA*
[3] *Scottish Rite for Children, Movement Analysis Laboratory, Dallas, USA*
[4] *Scottish Rite for Children, Neurology, Dallas, USA*
[5] *Scottish Rite for Children, Physical Medicine and Rehabilitation, Dallas, USA*

Sponsors' Pitches

10:15–10:30, Hall A

Coffee Break

10:30–11:00

Plenary Session: 2) Machine learning and AI in motion analysis

11:00–12:15, Hall A

Chairs: Morgan Sangeux (Switzerland), Kaat Desloovere (Belgium)

O 008 Exploring the potential of AI diffusion models for synthesizing diverse gait patterns

Eirik Gromholt Homlong[1], Hemin Ali Qadir[1], Rahul Prasanna Kumar[1], Ole Jacob Elle[1], Ola Wiig[2]

[1] *Oslo University Hospital, Intervention Centre, Oslo, Norway*
[2] *Oslo University Hospital, Orthopaedic Department, Oslo, Norway*

O 009 Explainable artificial intelligence for walking speed classification from vertical ground reaction forces

Fabian Horst[1,2], Djordje Slijepcevic[2,3], Wolfgang Immanuel Schöllhorn[1], Brian Horsak[4,5], Matthias Zeppelzauer[3]

[1] *Johannes Gutenberg-University Mainz, Institute of Sport Science, Mainz, Germany*
[2] *Both Authors Contributed Equally to this Work, Austria*
[3] *St. Pölten University of Applied Sciences, Institute of Creative Media Technologies, St. Pölten, Austria*
[4] *St. Pölten University of Applied Sciences, Center for Digital Health and Social Innovation, St. Pölten, Austria*
[5] *St. Pölten University of Applied Sciences, Institute of Health Sciences, St. Pölten, Austria*

O 010 Predicting ground reaction forces in overground walking from gait kinematics using machine learning

Djordje Slijepcevic[1], Philipp Krondorfer[2,3], Fabian Unglaube[4], Andreas Kranzl[4], Matthias Zeppelzauer[1], Brian Horsak[2,3]

[1] *St. Pölten University of Applied Sciences, Institute of Creative Media Technologies, St. Pölten, Austria*
[2] *St. Pölten University of Applied Sciences, Institute of Health Sciences, St. Pölten, Austria*
[3] *St. Pölten University of Applied Sciences, Center for Digital Health and Social Innovation, St. Pölten, Austria*
[4] *Orthopaedic Hospital Vienna-Speising, Laboratory of Gait and Movement Analysis, Vienna, Austria*

O 011 Machine learning models to help predict treatment decisions in clinical gait analysis

Michael Schwartz[1], Andrew Ries[1], Andrew Georgiadis[1]

[1] *Gillette Children's Specialty Healthcare, Center for Gait and Motion Analysis, St. Paul, USA*

O 012 ☆ Machine learning models to help predict treatment outcomes in clinical gait analysis

Michael Schwartz[1], Andrew Ries[1], Andrew Georgiadis[1]

[1] *Gillette Children's Specialty Healthcare, Center for Gait and Motion Analysis, St. Paul, USA*

O 013 Activity recognition in children with CP: Development and validation of a human activity recognition model

Marte Fossflaten Tørring[1], *Aleksej Logacjov*[2], *Siri Merete Brændvik*[1], *Astrid Ustad*[1], *Karin Roeleveld*[1], *Ellen Marie Bardal*[1]

[1] *Norwegian University of Science and Technology, Neuromedicine and Movement Science, Trondheim, Norway*
[2] *Norwegian University of Science and Technology, Computer Science, Trondheim, Norway*

O 014 Accelerating prosthetics: A machine learning approach to identifying locomotor activities with shank-mounted accelerometers

Liam Hughes[1], *Martin Bencsik*[2], *Maria Bisele*[3], *Cleveland Barnett*[2]

[1] *University Hospital Coventry and Wawrickshire, Gait Lab, Coventry, United Kingdom*
[2] *Nottingham Trent University, Science and Technology, Nottingham, United Kingdom*
[3] *Heidelberg University Hospital, Orthopedic Department, Heidelberg, Germany*

Vicon Industry Presentation

12:15–12:30, Hall A

Poster Panic Session I.

12:30–13:00, Hall A

Lunch & Posters I.

13:00–14:00

Keynote Lecture 1: Jason Wilken

14:00–14:45, Hall A

Chair: Thomas Dreher (Switzerland)

Where are the disagreements? From clinical opinion to scientific evidence

Jason Wilken[1]

[1] *University of Iowa, Department of Physical Therapy and Rehabilitation Science, USA*

Parallel Session: 3) Prosthetics & Orthotics

14:45–16:15, Hall A

Chairs: Jason Wilken (Norway), Ingrid Skaaret (Norway)

O 015 Ultrasound imaging for accurate EMG electrode placement in transtibial amputees: A novel approach

Faranak Rostamjoud[1], Friðrika Þorkelsdóttir[2], Kristín Briem[3]

1 *University of Iceland, Faculty of Medicine, Reykjavík, Iceland*
2 *Össur, Biomechanics Lab, Reykjavík, Iceland*
3 *University of Iceland, Department of Physical Therapy, Faculty of Medicine, Reykjavík, Iceland*

O 016 Compensatory trunk movements of transfemoral amputees when walking with different gait velocities

Eva Proebsting[1], Malte Bellmann[1,2], Harald Böhm[2,3], Michael Ernst[1], Barbara Pobatschnig[1], Thomas Schmalz[1], Veit Schopper[4], Ursula Trinler[5]

1 *Ottobock SE & Co. KGaA, Clinical Research and Services, Göttingen, Germany*
2 *HAWK, University of applied sciences and arts, Göttingen, Germany*
3 *KIZ Chiembau, Biomechanical Lab, Aschau i. Chiemgau, Germany*
4 *German Sport University Cologne, Sport, Cologne, Germany*
5 *BG Klinik Ludwigshafen, Motoriklabor, Ludwigshafen, Germany*

O 017 Self-reported prosthetic mobility of lower limb prosthetic users in Norway

Terje Gjøvaag[1], Linn Reed-Schwanborg[2], Mari Bergelien Solberg[2], Ingrid Iversen Langseth[2], Inger Marie Starholm[2]

1 *Oslo Metropolitan University, Rehabilitation Reseach and Health Technology, Oslo, Norway*
2 *Prosthetic and Orthotic, Rehabilitation Science and Health Technology, Oslo, Norway*

O 018 Prediction of the optimal ankle foot orthosis stiffness using peak ankle moment when walking on shoes-only in neuromuscular diseases

Niels Waterval[1], Elisa Arch[2], Frans Nollet[1], Merel-Anne Brehm[1]

1 *Amsterdam UMC, Rehabilitation Medicine, Amsterdam, Netherlands*
2 *University of Delaware, Department of Kinesiology and Applied Physiology, Newark, USA*

O 019 A predictive simulation study to assess the effect of ankle foot orthosis stiffness on balance recovery after tripping

Eva Schokkenkamp[1], Marjolein van der Krogt[1], Eline van der Kruk[2], Niels Waterval[1]

1 *Amsterdam UMC, Rehabilitation Medicine, Amsterdam, Netherlands*
2 *TU Delft, Department of Biomechanical Engineering, Delft, Netherlands*

O 020 Preliminiary feasibility and validity of the ADJUST-AFO

Rein Miedema[1,2], Niels Waterval[1,2], Frans Nollet[1,2], Jaap Harlaar[3,4], Merel Brehm[1,2]

1 *Amsterdam UMC location University of Amsterdam, Rehabilitation Medicine, Amsterdam, Netherlands*
2 *Amsterdam Movement Sciences, Rehabilitation & Development, Amsterdam, Netherlands*
3 *Delft University of Technology, Biomechanical Engineering, Delft, Netherlands*
4 *Erasmus University Medical Center, Orthopedics & Sports Medicine, Rotterdam, Netherlands*

O 021 Rocker shoe apex settings do not influence foot progression angle during second and third rocker

Rifko Rahmat Kurnianto[1,2], Maarten Segeren[3], Juha Hijmans[4], Christian Greve[1], Han Houdijk[1]

1 *University Medical Center Groningen, Department of Human Movement Sciences, Groningen, Netherlands*
2 *Institut Teknologi Bandung, Industrial Engineering Department, Bandung, Indonesia*
3 *University of Groningen, Faculty of Medical Sciences, Groningen, Netherlands*
4 *University Medical Center Groningen, Department of Rehabilitation Medicine, Groningen, Netherlands*

O 022 Effectiveness and cost-effectiveness of specialized orthotic care for improving functioning in adults with neuromuscular disorders: a randomized controlled trial

Elza Van Duijnhoven[1,2], Fieke Sophia Koopman[1,2], Jana Tuijtelaars[1,2], Viola Altmann[3], Johanna Maria van Dongen[2,4], Manon Janse[5], Frans Nollet[1,2], Merel-Anne Brehm[1,2]

1 *Amsterdam UMC- location University of Amsterdam, Department of Rehabilitation Medicine, Amsterdam, Netherlands*
2 *Amsterdam Movement Sciences, Rehabilitation & Development, Amsterdam, Netherlands*
3 *Klimmendaal, Rehabilitation Center, Arnhem, Netherlands*
4 *Vrije Universiteit Amsterdam, Department of Health Sciences, Amsterdam, Netherlands*
5 *Reade, Center for Rehabilitation & Rheumatology, Amsterdam, Netherlands*

O 023 Impact of a 3D-Printed Orthosis on the knee biomechanics in Individuals with Anterior Cruciate Ligament Injury during Daily Activities

Florian Mougin[1], Mickaël Begon[1], Gauthier Desmyttere[1], Jacinte Bleau[2], Marie-Lyne Nault[3], Yosra Cherni[1]

1 *Université de Montréal, Montréal Qc Canada, Kinésiologie, Montréal, Canada*
2 *Médicus - Canada, Médecine, Montréal, Canada*
3 *Centre de Recherche Azrieli du CHU Sainte-Justine - Montréal Qc Canada, Kinésiologie, Montréal, Canada*

Parallel Session: 4) Modelling and simulation

14:45–16:15, Hall B

Chairs: Stéphane Armand (Switzerland), Lanie Gutierrez Farewik (Sweden)

O 024 Modeling impairments in predicitive simulations of walking in children with CP: A series of case studies

Bram Van Den Bosch[1], Anja Van Campenhout[2,3], Kaat Desloovere[4,5], Ilse Jonkers[1], Friedl De Groote[1]

[1] *KU Leuven, Department of Movement Sciences, Leuven, Belgium*
[2] *KU Leuven, Department of Development and Regeneration, Leuven, Belgium*
[3] *UZ Leuven, Woman and Child, Leuven, Belgium*
[4] *KU Leuven, Department of Rehabilitation Sciences, Leuven, Belgium*
[5] *UZ Leuven, Clinical Movement Analysis Laboratory, Pellenberg, Belgium*

O 025 How does Gluteus Medius Electromyography Signal Clustering improve management of Duchenne gait in patients with Cerebral Palsy?

Mehrdad Davoudi[1], Firooz Salami[1], Robert Reisig[1], Sebastian Wolf[1]

[1] *Heidelberg University Hospital, Clinic for Orthopedics and Trauma Surgery, Heidelberg, Germany*

O 026 Neuro-musculoskeletal modelling informed rehabilitation in Parkinson's disease: Comparison between overground robotic training and physical therapy

Giulio Rigoni[1], Marco Romanato[2], Elena Pegolo[1], Fabiola Spolaor[1], Annamaria Guiotto[1], Fulvia Fichera[3], Daniele Volpe[3], Federica Cibin[4], Zimi Sawacha[1]

[1] *Dept of Information Engineering, University of Padova, Padova, Italy*
[2] *Institut du Cerveau, Paris Brain Institute, Paris, France*
[3] *Fresco Parkinson Center, Villa Margherita, Vicenza, Italy*
[4] *BBSoF S.r.l, Spinoff University of Padova, Padova, Italy*

O 027 In-silico informed gait retraining for the treatment of knee osteoarthritis

Bryce Killen[1], Gil Serrancoli[2], Friedl De Groote[1], Ilse Jonkers[1]

[1] *KU Leuven, Human Movement Biomechanics Research Group, Leuven, Belgium*
[2] *Universitat Politècnica de Catalunya, Simulation and Movement Analysis Lab, Barcelona, Spain*

O 028 Multi-scale mechanobiological growth simulations can differentiate between individuals with different femoral growth patterns

Willi Koller[1,2], Gabriel Mindler[3], Andreas Kranzl[4], Martin Svehlik[5], Arnold Baca[1], Hans Kainz[1]

[1] *Centre for Sport Science and University Sports- University of Vienna, Department of Sport and Human Movement Science, Vienna, Austria*
[2] *University of Vienna, Vienna Doctoral School of Pharmaceutical- Nutritional and Sport Sciences, Vienna, Austria*
[3] *Orthopaedic Hospital Speising, Department of Pediatric Orthopaedics, Vienna, Austria*
[4] *Orthopaedic Hospital Speising, Laboratory for Gait and Human Movements, Vienna, Austria*
[5] *Medical University of Graz, Department of Orthopedics and Traumatology, Graz, Austria*

O 029 The shape and size of the femur adapts during growth to maintain a constant cartilage load

Hans Kainz[1], Willi Koller[1], Markus Bastir[2], Martin Svehlik[3], Michael H. Schwartz[4]

[1] *University of Vienna, Centre for Sport Science and University Sports - Department of Biomechanics - Kinesiology and Computer Science in Sport, Vienna, Austria*
[2] *Museo Nacional de Ciencias Naturales CSIC, Department of Paleobiology, Madrid, Spain*
[3] *Medical University of Graz, Department of Orthopedics and Traumatology, Graz, Austria*
[4] *University of Minnesota, Department of Orthopedic Surgery, Minnesota, USA*

O 030 Morphometric analysis of growth-related changes in femoral geometry

Markus Bastir[1], Willi Koller[2], Hans Kainz[2]

[1] *Museo Nacional de Ciencias Naturales CSIC, Department of Paleobiology, Madrid, Spain*
[2] *University of Vienna, Centre for Sport Science and University Sports - Department of Biomechanics - Kinesiology and Computer Science in Sport, Vienna, Austria*

O 031 Predicting paediatric lower limb bone geometry and clinical bone measurements using 8 bony landmarks

Laura Carman[1], Julie Choisne[1], Thor Besier[1]

[1] *Auckland Bioengineering Institute - The University of Auckland, Musculoskeletal Modelling Group, Auckland, New Zealand*

Parallel Session: 5) Stability and fall risk

14:45–16:15, Hall C

Chairs: Arve Opheim (Norway), Neil Postans (United Kingdom)

O 032 Children with developmental coordination disorder walk cautiously and resist forward-falling perturbations better than typical, but do not improve with practice

Heloise Debelle[1], Mark Hollands[1], Richard Foster[1], Greg Wood[2], Constantinos Maganaris[1], Thomas O'Brien[1]

[1] *Liverpool John Moores University, School of Sport and Exercise Sciences, Liverpool, United Kingdom*
[2] *Manchester Metropolitan University, Department of Sport and Exercise Sciences, Manchester, United Kingdom*

O 033 Effect of visual input on gait stability using immersive virtual reality in children with cerebral palsy

Regine Zibold[1], Morgan Sangeux[1], Rebecca Winter[1], Rosa Visscher[2], Philippe Claude Cattin[3], Elke Viehweger[1]

[1] *University Children's Hospital Basel, Laboratory for Movement Analysis, Basel, Switzerland*
[2] *Kalaidos University of Applied Sciences, Careum School of Health, Zurich, Switzerland*
[3] *University of Basel, Department of Biomedical Engineering, Allschwil, Switzerland*

O 034 Children with cerebral palsy avoid stepping in potholes with mediolateral changes in foot placement that cause laterally instability

Rebecca Louise Walker[1], Thomas D O'Brien[1], Gabor J Barton[1], Bernie Carter[2], David M Wright[3], Richard J Foster[1]

1 *Liverpool John Moores University, Research Institute for Sport and Exercise Sciences, Liverpool, United Kingdom*
2 *Edge Hill University, Faculty of Health - Social Care and Medicine, Ormskirk, United Kingdom*
3 *Alder Hey Children's NHS Foundation Trust, North West Movement Analysis Centre, Liverpool, United Kingdom*

O 035 Effect of chronic neck pain on standing stability and functional mobility speed under single-task, and cognitive and motor dual-tasks conditions

Gülşah Çallıoğlu[1], Müge Kırmızı[1], Sevtap Uçurum[1]

1 *Izmir Katip Celebi University Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Izmir, Turkey*

O 036 Simple dynamic stability indicators for characterising and supporting the diagnosis of patients suffering from severe bilateral vestibulopathy

Gautier Grouvel[1], Anissa Boutabla[2], Julie Corre[2], Rebecca Revol[2], Samuel Cavuscens[2], Maurizio Ranieri[2], Raymond van de Berg[3], Nils Guinand[2], Angélica Pérez-Fornos[2], Stéphane Armand[4]

1 *Geneva University Hospitals and University of Geneva, Kinesiology Laboratory - Division of Otorhinolaryngology Head and Neck Surgery, Geneva, Switzerland*
2 *Geneva University Hospitals and University of Geneva, Division of Otorhinolaryngology Head and Neck Surgery, Geneva, Switzerland*
3 *Maastricht University Medical Center, Division of Balance Disorders - Department of Otorhinolaryngology and Head and Neck Surgery, Maastricht, Netherlands*
4 *Geneva University Hospitals and University of Geneva, Kinesiology Laboratory, Geneva, Switzerland*

O 037 "It was probably because of lockdown that I fell": Older adults' experiences of independent living in relation to stair falls

Emily Wharton[1], Thomas O'Brien[1], Clarissa Giebel[2], Richard Foster[1], Constantinos Maganaris[1]

1 *Liverpool John Moores University, School of Sport and Exercise Science, Liverpool, United Kingdom*
2 *NIHR Applied Research Collaboration North West Coast, Health and Care Across the Life Course, Liverpool, United Kingdom*

O 038 The influence of single-session blocked vs. randomized perturbation-based balance training on dynamic stability in young adults

Melina Beyerlein[1], Michael Herzog[1], Thorsten Stein[1]

1 *Karlsruhe Institute of Technology KIT, BioMotion Center - Institute of Sports and Sports Science IfSS, Karlsruhe, Germany*

O 039 Simulating slipping responses through an innovative mechanical perturbation algorithm

Marina Geissmann[1], Linard Filli[1,2]

[1] Balgrist Campus, Swiss Center for Movement Analysis, Zurich, Switzerland
[2] University Hospital Balgrist, Spinal Cord Injury Center, Zurich, Switzerland

O 040 The effect of treadmill belt acceleration on muscle force in the elderly: A preliminary study

Michalina Błażkiewicz-Janeczko[1]

[1] The Józef Piłsudski University of Physical Education in Warsaw, Rehabilitation, Warsaw, Poland

Coffee Break

16:15–16:45

Parallel Session: 6) Spinal cord injury and rehabilitation

16:45–17:45, Hall A

Chairs: Reidun Birgitta Jahnsen (Norway), Martin Gough (United Kingdom)

O 041 The correlation between foot centre of pressure indexes and knee adduction moment during walking with orthotic shoes

Ziang Jiang[1], Demian Siegwart[1], Jana Ender[1], William Taylor[1], Qiang Zhang[1]

[1] Institute for Biomechanics, Department of Health Sciences and Technology, Zurich, Switzerland

O 042 Effects of Ankle-foot orthoses on gait in children with cerebral palsy investigated with a gait classification system

Tobias Goihl[1], David Rusaw[2], Karin Roeleveld[1], Siri Merete Brændvik[1]

[1] NTNU, Department of Neuromedicine and Movement Science, Trondheim, Norway
[2] University of Jönköping, Department of Rehabilitation, Jönköping, Sweden

O 043 A nudge in the right direction? The effects of anteroposterior forces on body weight supported gait

Sanne Ettema[1,2], Tom J.W. Buurke[2,3], Sina David[4], Coen A.M. van Bennekom[1,5], Han Houdijk[2]

[1] Heliomare Rehabilitation, Research and Development, Wijk aan Zee, Netherlands
[2] University of Groningen - University Medical Center Groningen, Department of Human Movement Sciences, Groningen, Netherlands
[3] KU Leuven, Department of Movement Sciences, Leuven, Belgium
[4] Vrije Universiteit Amsterdam - Amsterdam Movement Sciences, Department of Human Movement Sciences, Amsterdam, Netherlands
[5] Amsterdam UMC, Department of Public and Occupational Health, Amsterdam, Netherlands

O 044 Factors influencing gait performance in persons with spinal cord injury

Minh Truong[1], Emelie Butler Forslund[2], Åke Seiger[2], Lanie Gutierrez Farewik[1]

1 *KTH Royal Institute of Technology, KTH MoveAbility, Dept. Engineering Mechanics, Stockholm, Sweden*
2 *Karolinska Institutet and Aleris Rehab Station, Department of Neurobiology- Care Science and Society, Stockholm, Sweden*

O 045 Role of 3D Gait Analysis in targeted rehabilitation for enhancing outcomes in patients with Spinal Cord Injury

Manish Gupta[1], Bhavuk Garg[1], Rajesh Malhotra[1], Madhusudan Pal[2], Anoop Chawla[3], Sudipto Mukherjee[3], Kaushik Mukherjee[3]

1 *All India Institute of Medical Sciences, Orthopaedics, New Delhi, India*
2 *Defense Institute of Physiology & Allied Science, Defence Research & Development Organisation, Delhi, India*
3 *Indian Institute of Technology, Department of Mechanical Engineering, Delhi, India*

Parallel Session: 7) Adult neurological disorders and orthopaedics

16:45–17:45, Hall B

Chairs: Anders Holsgaard-Larsen (Denmark), Stephen Cooke (United Kingdom)

O 046 How do gait outcomes evolve in adults with spastic cerebral palsy who received orthopedic care in childhood?

Anne Tabard-Fougère[1], Alice Bonnefoy-Mazure[1], Oscar Vazquez[1], Geraldo de Coulon[1], Stephane Armand[1]

1 *Geneva University Hospitals and University of Geneva, Willy Taillard Laboratory of Kinesiology, Geneve, Switzerland*

O 047 Long-term Outcomes of Multilevel Surgery in Adults with Cerebral Palsy: A Prospective Study

Merete Aarsland Fosdahl[1], Ingrid Skaaret[2], Per Reidar Høiness[3], Terje Terjesen[4]

1 *Oslo University Hospital, Department of Clinical Neuroscience for Children, Oslo, Norway*
2 *Oslo Metropolitan University, Department of Prosthetics and Orthotics, Oslo, Norway*
3 *Drammen Hospital, Department of Ortopaedics, Drammen, Norway*
4 *Oslo University Hospital, Division of Orthopaedic Surgery, Oslo, Norway*

O 048 Changes in Lower Limb Asymmetry following Intensive Balance Training in adults with Chronic Stroke

Aleksander Solberg[1], Ingvild Koren Maalen-Johansen[1], Sandra Linnea Klund-Hansen[1], Marianne Nilsen[2], Marit Eline Spørck[1], Cecilie Aasland Schau[2], Charlotta Hamre[1]

1 *Sunnaas Rehabilitation Hospital, Research Department, Nesodden, Norway*
2 *Sunnaas Rehabilitation Hospital, Brain Injury Rehabilitation, Nesodden, Norway*

O 049 Associations and change in knee function, pain, and biomarkers of bone- and cartilage degradation in individuals with knee osteoarthritis

Josefine Eriksson Naili[1], Morten Bilde Simonsen[2,3], Cecilia Aulin[4]

[1] *Karolinska Institutet and Karolinska University Hospital, Dept. of Women's and Children's Health, Stockholm, Sweden*
[2] *Aalborg University, Department of Materials and Production, Aalborg, Denmark*
[3] *Aalborg University, Center for Mathematical Modeling of Knee Osteoarthritis, Aalborg, Denmark*
[4] *Karolinska Institutet, Department of Medicine Solna- Division of Rheumatology - Centre for Molecular Medicine, Stockholm, Sweden*

O 050 Three-Dimensional gait kinematics in older adults after stable trochanteric fracture

Andreia Carvalho[1,2], Jos Vanrenterghem[2], Filomena Carnide[1], Ana Assunção[1], Nádia Veiga[3], António Prieto Veloso[1], Vera Moniz-Pereira[1]

[1] *Faculdade de Motricidade Humana - Universidade de Lisboa, Laboratório de Biomecânica e Morfologia Funcional - CIPER, Dafundo - Lisboa, Portugal*
[2] *Faculty of Movement and Rehabilitation Sciences - KU Leuven, Research Group for Musculoskeletal Rehabilitation, Leuven, Belgium*
[3] *ULS São José, CRI-TO - Centro de Responsabilidade Integrada de Traumatologia Ortopédica, Lisboa, Portugal*

O 051 Increased posterior pincer might drive higher risk of hip osteoarthritis in adult spinal deformity with high pelvic retroversion

Elena Jaber[1], Rami Rachkidi[1], Abir Massaad[1], Ali Rteil[1], Elma Ayoub[1], Maria Saadé[1], Celine Chaaya[1], Mohamad Karam[1], Ismat Ghanem[1], Ayman Assi[1,2], Maria Asmar[1]

[1] *Faculty of Medicine/ University of Saint-Joseph, Laboratory of Biomechanics and Medical Imaging, Beirut, Lebanon*
[2] *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

Parallel Session: 8) Markerless Motion Capture

16:45–17:45, Hall C

Chairs: Sebastian Wolf (Germany), Georgios Gkrimas (Greece)

O 052 Bridging the gap between markerless and marker-based gait angles with shallow neural networks

Gabor Barton[1], Henni Greaves[2], Richard Foster[1]

[1] *Liverpool John Moores University, Research Institute for Sport and Exercise Sciences, Liverpool, United Kingdom*
[2] *Alder Hey Children's Hospital NHS Trust, North West Movement Analysis Centre, Liverpool, United Kingdom*

O 053 Comparison of lower-body 3D gait kinematics between Theia3D markerless and IOR and CGM marker-based models in healthy subjects

Jacqueline Pitzer[1], Tobias Siebert[1], Vincent Fohanno[2], Sonia D'Souza[3]

1 *University of Stuttgart, Motion and Exercise Science, Stuttgart, Germany*
2 *Qualisys AB, Software and Application, Gothenburg, Sweden*
3 *Olgahospital - Klinikum Stuttgart, Gait Lab - Orthopaedics, Stuttgart, Germany*

O 054 Single camera markerless motion capture in children with gait pathology

Elyse Passmore[1,2,3,4], Erich Rutz[3,4,5], Gareth Ball[1,3]

1 *Murdoch Children's Research Institute, Developmental Imaging, Melbourne, Australia*
2 *University of Melbourne, Engineering and Information Technology, Melbourne, Australia*
3 *University of Melbourne, Medicine Dentistry and Health Sciences, Melbourne, Australia*
4 *Royal Children's Hospital, Gait Analysis Laboratory, Melbourne, Australia*
5 *University of Basel, Medical Faculty, Basel, Switzerland*

O 055 Impact of infrared interference on Azure Kinect's motion tracking performance during validation studies against marker-based gold standard

Silvia Zaccardi[1,2], Redona Brahimetaj[1], Erick Rodriguez[1], Sven Van Den Bergh[2], Mona Ibrahim[2], Eva Swinnen[2], David Beckwée[2], Bart Jansen[1]

1 *Vrije Universiteit Brussel, Department of Electronics and Informatics ETRO, Brussel, Belgium*
2 *Vrije Universiteit Brussel, Rehabilitation Research Group RERE, Brussel, Belgium*

O 056 Inter-session repeatability of a Smartphone-based 3D Markerless system to assess joint Kinematics for walking and a sit-to-stand task

Brian Horsak[1], Kerstin Prock[1], Bernhard Dumphart[2]

1 *St. Pölten University of Applied Sciences, Center for Digital Health and Social Innovation, St. Pölten, Austria*
2 *St. Pölten University of Applied Sciences, Institute of Health Sciences, St. Pölten, Austria*

O 057 To undress or not: Effects of clothing conditions on smartphone-based 3D markerless motion capture

Brian Horsak[1], Maximilian Puhr[2], Kerstin Prock[1], Mark Simonlehner[3], Bernhard Dumphart[3]

1 *St. Pölten University of Applied Sciences, Center for Digital Health and Social Innovation, St. Pölten, Austria*
2 *Study Program Digital Healthcare, Departement of Health, St. Pölten, Austria*
3 *St. Pölten University of Applied Sciences, Institute of Health Sciences, St. Pölten, Austria*

ESMAC Annual General Assembly

17:45–18:45, Hall A

Vicon User Group Social

19:00–21:00, ROOR

Friday, 13 September 2024

Charity Run

07:00–08:00

Plenary Session: 9) Foot and Ankle

08:30–10:00, Hall A

Chairs: Jesper Bencke (Denmark), Thomas Dreher (Switzerland)

O 058 ☆ Concurrent validation of a new foot deviation index metric for multisegmental foot models

Bruce Macwilliams[1], Mark McMulkin[2], Prabhav Saraswat[3]

1 *University of Utah, Orthopedics, Salt Lake City, USA*
2 *Shriners Children's, Movement Analysis Center, Spokane, USA*
3 *Shriners Children's, Movement Analysis Center, Greenville, USA*

O 059 ☆ Influence of muscle activation on articular ankle joint mechanics

Barbara Postolka[1], Bryce A. Killen[1], Hannelore Boey[1], Jos Vander Sloten[2], Ilse Jonkers[1]

1 *KU Leuven, Department of Movement Sciences, Leuven, Belgium*
2 *KU Leuven, Department of Mechanical Engineering, Leuven, Belgium*

O 060 Medio-lateral forefoot segmentation for clinical gait analysis based on metatarsal subunit rigidity and angular motion

Amy Zavatsky[1], Po-Hsiang Chan[1], Julie Stebbins[2]

1 *University of Oxford, Department of Engineering Science, Oxford, United Kingdom*
2 *Oxford University Hospitals, Oxford Gait Laboratory, Oxford, United Kingdom*

O 061 Optimizing clinical outcomes: Modeling individual muscle force responses to Achilles tendon lengthening surgery using tendon forces quantified in vivo

Cemre Su Kaya Keles[1], Firooz Salami[2], Sebastian I. Wolf[2], Filiz Ates[1]

1 *University of Stuttgart, Institute of Structural Mechanics and Dynamics in Aerospace Engineering, Stuttgart, Germany*
2 *Heidelberg University Hospital, Clinic for Orthopedics, Heidelberg, Germany*

O 062 The effect of serial casting on medial gastrocnemius muscle architecture in children with idiopathic toe walking

Christiana Barker[1,2], Nichola Wilson[2,3], Susan Stott[2,3], Antoine Nordez[4], Peter McNair[1]

1 *Auckland University of Technology, Health and Rehabilitation Research Institute, Auckland, New Zealand*
2 *Starship Child Health, Paediatric Orthopaedics, Auckland, New Zealand*
3 *University of Auckland, Faculty of Medical and Health Sciences, Auckland, New Zealand*
4 *University of Nantes, Movement-Interactions-Performance, Nantes, France*

O 063 Needle vs. Open Z-Lengthening for Achilles Tendon in CP: One-Year 3D Gait Analysis Results

Per Reidar Høiness[1], *Merete Fosdahl*[2]

[1] *Drammen Hospital, Orthopedic Dept, Drammen, Norway*
[2] *Oslo University Hospital, Pediatric Department, Oslo, Norway*

O 064 Gait parameters in children with late clubfoot relapse after initial conservative therapy are different

Barbara Szazi[1], *Britta K. Krautwurst*[2], *Gianna Klucker*[1], *Thomas Dreher*[2], *Sandro Canonica*[2], *Tanja Kraus*[3]

[1] *A collaboration between University Children's Hospital Zurich and Balgrist University Hospital, Motion Analysis Zurich, Zurich, Switzerland*
[2] *University Children's Hospital Zurich, Pediatric Orthopedics and Traumatology, Zurich, Switzerland*
[3] *Medical University Graz, Department of Trauma and Orthopedics - Pediatric and Adolescent Orthopedic and Trauma Unit, Graz, Austria*

O 065 Effects of individually optimized rocker midsoles and self-adjusting insoles on the margins of stability in individuals with diabetic peripheral neuropathy

Athra Malki[1], *María Baltasar Badaya*[1], *Rienk Dekker*[1], *Gijsbertus Jacobus Verkerke*[1,2], *Juha Hijmans*[1]

[1] *UMCG, Rehabilitation, Groningen, Netherlands*
[2] *University of Twente, Biomechanical Engineering, Enschede, Netherlands*

O 066 Effectiveness of corrective tarsal arthrodesis for pes equinovarus deformity in people with unilateral upper motor neuron syndrome

Bente Bloks[1,2], *Noël Keijsers*[1,2,3], *Jan Willem Louwerens*[4], *Alexander Geurts*[2,5], *Jorik Nonnekes*[2,5]

[1] *Sint Maartenskliniek, Department of Research, Nijmegen, Netherlands*
[2] *Radboud University Medical Center, Department of Rehabilitation, Nijmegen, Netherlands*
[3] *Radboud University, Department of Sensorimotor Neuroscience, Nijmegen, Netherlands*
[4] *Sint Maartenskliniek, Department of Orthopedics, Nijmegen, Netherlands*
[5] *Sint Maartenskliniek, Department of Rehabilitation, Nijmegen, Netherlands*

Moveshelf Industry Presentation

10:00–10:15, Hall A

Moveshelf – Movement Analysis. Standardized.

Johannes Gijsbers[1]

[1] *Moveshelf, Product Management, Utrecht, Netherlands*

Coffee Break

10:15–10:45

Keynote Lecture 2: Tron Krosshaug

10:45–11:30, Hall A

Chair: Terje Gjøvaag (Norway)

Using motion analysis to understand injury mechanisms and biomechanical risk factors for Anterior Cruciate Injury. A travel from year 2000 into the future

Tron Krosshaug[1]

[1] *Norwegian School of Sport Sciences, Oslo Sports Trauma Research Center and the Department of Sports Medicine, Oslo, Norway*

Kistler Industry Presentation

11:30–11:40, Hall A

Piezoelectric sensor technology meets digital innovation

Julian Hoch[1]

[1] *Kistler, Biomechanics, Winterthur, Switzerland*

Moveck Industry Presentation

11:40–11:45, Hall A

Moveck – On the edge of data harmonization for clinical gait analysis

Arnaud Barré[1]

[1] *Moveck Solution inc., Canada*

Plenary Session: 10) Sports & sports injuries

11:45–13:00, Hall A

Chairs: Tron Krosshaug (Norway), Philippe Dixon (Canada)

O 067 Reliability and repeatability assessment of single camera 2D and 3D markerless approach for sport applications

Giulio Rigoni[1], *Federica Cibin*[2], *Niccolò Monaco*[2], *Fabiola Spolaor*[1], *Annamaria Guiotto*[1], *Zimi Sawacha*[1]

[1] *Dept of Information Engineering, University of Padova, Padova, Italy*
[2] *BBSoF S.r.l, Spinoff University of Padova, Padova, Italy*

O 068 ☆ Predicting knee contact forces in walking: A comparative study of machine learning models including a physics-informed approach

Philipp Krondorfer[1], Djordje Slijepčević[2], Fabian Unglaube[3], Andreas Kranzl[3], Matthias Zeppelzauer[2], Hans Kainz[4], Brian Horsak[1]

1 *St. Pölten University of Applied Sciences, Center for Digital Health and Social Innovation, St. Pölten, Austria*
2 *St. Pölten University of Applied Sciences, Institute of Creative\Media/Technologies, St. Pölten, Austria*
3 *Orthopaedic Hospital Vienna-Speising, Laboratory of Gait and Movement Analysis, Vienna, Austria*
4 *University of Vienna, Centre for Sport Science and University Sports, Vienna, Austria*

O 069 Can a standardized anticipated or unanticipated jump-and-cut task resemble the knee joint loads of a sport-specific sidecut?

Ida Steendahl[1], Niels J Nedergaard[1], Louise Wendt Nielsen[1], Jesper Bencke[1]

1 *Human Movement Analysis Laboratory - Department of Orthopaedic Surgery, Copenhagen University Hospital - Amager-Hvidovre, Copenhagen, Denmark*

O 070 Execution types and correlates of frontal knee angle in healthy adults performing split lunges

Klaus Widhalm[1,2], Sebastian Durstberger[1], Harald Penasso[1], Peter Putz[1], Hans Kainz[3], Peter Augat[2,4]

1 *FH Campus Wien University of Applied Sciences, Health Sciences, Vienna, Austria*
2 *Paracelsus Medical University, Institute for Biomechanics, Salzburg, Austria*
3 *University of Vienna, Centre for Sport Science and University Sports- Department of Biomechanics, Vienna, Austria*
4 *BG Unfallklinik Murnau, Institute for Biomechanics, Murnau, Germany*

O 071 The effect of motor control impairment and low back pain on the athletic performance of elite soccer players

Cansu Akkuş[1], Aynur Demirel[1]

1 *Hacettepe University, Department of Physiotherapy and Rehabilitation in Sports - Faculty of Physical Therapy and Rehabilitation, Ankara, Turkey*

O 072 Disproportional ventilatory response to acute incremental exercise in individuals with cerebral palsy

Linnéa Corell[1], Emma Hjalmarsson[1], Rodrigo Fernandez-Gonzalo[2], Sebastian Edman[1], Asta Kizyte[3], Ruoli Wang[3], Annika Kruse[4], Eva Pontén[1], Jessica Norrbom[5], Ferdinand Von Walden[1]

1 *Karolinska Institutet, Women's and Children's Health, Stockholm, Sweden*
2 *Karolinska Institutet, Laboratory Medicine, Stockholm, Sweden*
3 *KTH, School of Engineering Sciences SCI - Engineering Mechanics. KTH MoveAbility, Stockholm, Sweden*
4 *University of Graz, Department of Human Movement Science - Sport and Health, Graz, Austria*
5 *Karolinska Institutet, Physiology and Pharmacology, Stockholm, Sweden*

O 073 Impact of Joint Hypermobility on Running: Frontal plane lower extremity biomechanics

Adnan Apti[1,2], Shavkat Nadir Kuchimov[2,3], Nazif Ekin Akalan[1,2], Burcu Semin Akel[1,2]

1 *Istanbul Kultur University, Faculty of Health Science- Physiotherapy and Rehabilitation Department, Istanbul, Turkey*
2 *Istanbul Kultur University, Motion Analysis Center, Istanbul, Turkey*
3 *Bogazici University, Institute of Biomedical Engineering, Istanbul, Turkey*

Poster Panic Session II.

13:00–13:15, Hall A

Lunch & Posters II.

13:15–14:15

Parallel Session: 11) Movement analysis methodology 1 - Enhanced methods and harmonising gait data

14:15–15:30, Hall A

Chairs: Gabor Barton (United Kingdom), Domenic Grisch (Switzerland)

O 074 Assessing the status of EMG in therapy management for patients with Cerebral Palsy through a Delphi Process

Robert Reisig[1], Mehrdad Davoudi[1], Firooz Salami[1], Sebastian Wolf[1]

[1] *Orthopädische Universitätsklinik Heidelberg, Heidelberg Motionlab, Heidelberg, Germany*

O 075 Harmonising historical clinical gait analysis data using personalised musculoskeletal models

Thor Besier[1], Laura Carman[1], Julie Choisne[1], Elyse Passmore[2], Luca Modenese[3], Chris Carty[4]

[1] *The University of Auckland, Auckland Bioengineering Institute, Auckland, New Zealand*
[2] *Royal Children's Hospital, Gait Analysis Laboratory, Melbourne, Australia*
[3] *University of New South Wales, Graduate School of Biomedical Engineering, Sydney, Australia*
[4] *Griffith University, Griffith Centre of Biomedical and Rehabilitation Engineering, Gold Coast, Australia*

O 076 Kinematic consistency during walking in three different treadmill-based laboratories towards big data sharing

Anke Van Bladel[1,2], Rachel Senden[3], Kenneth Meijer[4], Pieter Meyns[5], Lynn Bar-On[1]

[1] *Ghent University - Faculty of Medicine and Health Sciences, Department of Rehabilitation Sciences, Ghent, Belgium*
[2] *Ghent University Hospital, Physical Medicine and Rehabilitation, Ghent, Belgium*
[3] *Maastricht University Medical Center MUMC+, Department of Physical Therapy, Maastricht, Netherlands*
[4] *Maastricht University - NUTRIM Institute for Nutrition and Translational Research in Metabolism, Department of Nutrition and Movement Sciences, Maastricht, Netherlands*
[5] *Hasselt University - Faculty of Rehabilitation Sciences, Rehabilitation Research Centre - REVAL, Hasselt, Belgium*

O 077 An enhanced characterization of gait deviations in Hemiparesis by combining knee and ankle kinematics

Lorenzo Hermez[1], Nesma Houmani[1], Garcia-Salicetti Sonia[1], Galarraga Omar[2], Vigneron Vincent[3]

[1] *Télécom SudParis - Institut Polytechnique de Paris, Samovar, Palaiseau, France*
[2] *UGECAM Ile-de-France, Movement Analysis Laboratory, Coubert, France*
[3] *Université Paris-Saclay, Informatique - Bio-Informatique et Systèmes Complexes IBISC EA 4526, Evry, France*

O 078 Improving accuracy and reliability of upper limb inertial motion capture without increasing calibration complexity

Mhairi Mcinnes[1], *Edward Chadwick*[1], *Dimitra Blana*[2], *Andrew Starkey*[1]

[1] *University of Aberdeen, School of Engineering, Aberdeen, United Kingdom*
[2] *University of Aberdeen, School of Medicine - Medical Sciences and Nutrition, Aberdeen, United Kingdom*

O 079 Assessing gait in neurological disorders during body weight support: Nonlinear registration and statistical parametric mapping for amplitude and temporal effects

Morten Bøgelund Pedersen[1,2], *Morten Bilde Simonsen*[3], *Anders Holsgaard-Larsen*[1,2]

[1] *University of Southern Denmark, Department of Clinical Research, Odense, Denmark*
[2] *Odense University Hospital, Department of Orthopaedics and Traumatology, Odense, Denmark*
[3] *Aalborg University, Department of Materials and Production, Aalborg, Denmark*

O 080 Advanced movement and muscle analysis to evaluate motor behavior in typically developing newborns: A feasibility cohort study

Nathalie De Beukelaer[1], *Xavier Gasparutto*[1], *Alice Bonnefoy-Mazure*[1], *Marion Crouzier*[2], *Stéphane Sizonenko*[3], *Olivier Baud*[4], *Stéphane Armand*[1]

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[2] *Nantes University, Laboratory Movement - Interactions - Performance, Nantes, France*
[3] *University of Geneva, Division of Child Development and Growth - Department of Pediatrics, Geneva, Switzerland*
[4] *University Geneva Hospitals, Division of Neonatology and Pediatric Intensive Care, Geneva, Switzerland*

Parallel Session:
12) Spine & Trunk - Cervical spine and adults

14:15–15:30, Hall B

Chair: Jacqueline Romkes (Switzerland)

O 081 Investigation of the relationship between neck proprioception and balance parameters in patients with cervical spinal stenosis

Hilal Uzunlar[1,2], *Karya Polat*[3], *Sevtap Gunay Ucurum*[1], *Ismail Ertan Sevin*[4], *Hasan Kamil Sucu*[4]

[1] *Izmir Katip Celebi University Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Izmir, Turkey*
[2] *Hitit University Faculty of Sports Sciences, Department of Sports Management, Corum, Turkey*
[3] *Izmir Katip Celebi University Institute Health Sciences, Department of Physiotherapy and Rehabilitation, Izmir, Turkey*
[4] *Izmir Katip Celebi University Faculty of Medicine, Department of Brain and Nerve Surgery, Izmir, Turkey*

O 082 The effect of stabilization exercise on pain intensity, muscle endurance, and balance in patients undergoing cervical laminoplasty surgery: Preliminary report

Hilal Uzunlar[1,2], Sevtap Gunay Ucurum[1], Karya Polat[1], Ismail Ertan Sevin[3], Hasan Kamil Sucu[3]

1 *Izmir Katip Celebi University Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Izmir, Turkey*
2 *Hitit University Faculty of Sports Sciences, Department of Sports Management, Corum, Turkey*
3 *Izmir Katip Celebi University Faculty of Medicine, Department of Brain and Nerve Surgery, Izmir, Turkey*

O 083 Head held high? Investigating the relationship between trunk flexion and head/neck position during walking in able-bodied adults across the lifespan

Elissa Embrechts[1], Tamaya Van Criekinge[2]

1 *University of Antwerp, Rehabilitation Sciences and Physiotherapy, Wilrijk, Belgium*
2 *Katholieke Universiteit Leuven, Rehabilitation Sciences, Brugge, Belgium*

O 084 The gait functional score: An objective score to evaluate functional disability in patients with adult spinal deformity

Rami Rehayem[1], Abir Massaad[1], Rami Rachkidi[1], Elio Mekhael[1], Nabil Nassim[1], Ali Rteil[1], Elma Ayoub[1], Maria Saadé[1], Elena Jaber[1], Ayman Assi[1,2], Maria Karam[1]

1 *Faculty of Medicine/ University of Saint-Joseph, Laboratory of Biomechanics and Medical Imaging, Beirut, Lebanon*
2 *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

O 085 Coronal malalignment and axial spinal deformity might be related to increased gait fatigue in patients with adult spinal deformity

Georges El Haddad[1], Marc Boutros[1], Abir Massaad[1], Maria Karam[1], Maria Asmar[1], Emmanuelle Wakim[1], Elio Mekhael[1], Nabil Nassim[1], Rami Rachkidi[1], Ayman Assi[1,2]

1 *Faculty of Medicine/ University of Saint-Joseph, Laboratory of Biomechanics and Medical Imaging, Beirut, Lebanon*
2 *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

O 086 Pelvic retroversion seem to be restored during walking in mild patients with adult spinal deformity

Marc Boutros[1], Georges El Haddad[1], Rami Rachkidi[1], Aren Joe Bizdikian[1], Mohamad Karam[1], Nabil Nassim[1], Elio Mekhael[1], Ismat Ghanem[1], Abir Massaad[1], Ayman Assi[1,2], Emmanuelle Wakim[1]

1 *Faculty of Medicine/ University of Saint-Joseph, Laboratory of Biomechanics and Medical Imaging, Beirut, Lebanon*
2 *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

Coffee Break

15:30–16:00

Parallel Session: 13) Movement analysis methodology 2 - Advances in clinical application

16:00–17:00, Hall A

Chairs: Bruce Macwilliams (USA), Juha-Pekka Kulmala (Finland)

O 087 The syllables of human movement under threat

Ulises Daniel Serratos Hernandez[1], Jack Brookes[1], Samson Hall[1], Juliana K. Sporrer[1], Sajjad Zabbah[1], Dominik R. Bach[2]

[1] *University College London, Max Planck UCL Centre for Computational Psychiatry and Ageing Research - and Wellcome Centre for Human Neuroimaging - UCL Queen Square Institute of Neurology, London, United Kingdom*
[2] *University of Bonn, Transdisciplinary Research Area "Life and Health" - Hertz Chair for Artificial Intelligence and Neuroscience, Bonn, Germany*

O 088 Characterizing gait heterogeneity in people with incomplete spinal cord injury using data-driven techniques

Minh Truong[1], Emelie Butler Forslund[2,3], Åke Seiger[2,3], Elena M. Gutierrez-Farewik[1,4]

[1] *KTH Royal Institute of Technology, KTH MoveAbility - Department of Engineering Mechanics, Stockholm, Sweden*
[2] *Karolinska Institutet, Department of Neurobiology - Care Science and Society, Stockholm, Sweden*
[3] *Aleris Rehab Station, R&D Unit, Stockholm, Sweden*
[4] *Karolinska Institutet, Department of Women's and Children's Health, Stockholm, Sweden*

O 089 Machine learning approaches for predicting Ankle Dorsi Plantar Moments in Cerebral Palsy gait analysis: A comparative study

Mustafa Erkam Özates[1], Firooz Salami[2], Sebastian I. Wolf[2], Yunus Ziya Arslan[3]

[1] *Turkish German University, Department of Electrical and Electronics Engineering- Faculty of Engineering, Istanbul, Turkey*
[2] *Heidelberg University Hospital, Clinic for Orthopedics and Trauma Surgery, Heidelberg, Germany*
[3] *Turkish German University, Department of Robotics and Intelligent Systems - Institute of Graduate Studies in Science and Engineering, Istanbul, Turkey*

O 090 Enhancing gait parameter analysis for Cerebral Palsy using Attention modules

John Bosco Uroko[1], Donging Gu[1], Haider Raza[1], Liang Hu[2]

[1] *University of Essex, School of Computer Science and Electronic Engineering, Essex, United Kingdom*
[2] *Harbin Institute of Technology, Department of Automation - School of Mechanical and Electrical Engineering and Automation, Shenzhen, China*

O 091 Effect of Gait Speed and Dynamic Time-Warping on the prediction of Lower-Limb Joint Angles

Vaibhav Shah[1,2], Philippe C. Dixon[3]

[1] *University of Montreal, School of Kinesiology and Physical activity Sciences, Montreal, Canada*
[2] *The Sainte-Justine University Hospital CRCHUSJ, Research Center of the Sainte-Justine University Hospital CRCHUSJ, Montreal, Canada*
[3] *McGill University, Kinesiology and Physical Education, Montreal, Canada*

O 092 3D Gait analysis in children using wearable sensors

Shima Moghadam[1], Ted Yeung[1], Pablo Ortega Auriol[1], Julie Choisne[1]

[1] *University of Auckland, Auckland Bioengineering Institute, Auckland, New Zealand*

Parallel Session: 14) Spine & Trunk - Scoliosis and upper extremity

16:00–17:00, Hall B

Chair: Ursula Trinler (Germany)

O 093 Use of predictive analytics for the screening of patients with adolescent idiopathic scoliosis with quantitative gait analysis

Christophe Boulay[1], Renaud Lafage[2], Benjamin Blondel[3], Jean-Luc Jouve[1], Sébastien Pesenti[1]

[1] *Aix Marseille University, Gait lab - pediatric orthopaedic surgery department - Timone Children Hospital, Marseille, France*

[2] *Lenox Hill Hospital, Orthopedic Surgery, New York, USA*

[3] *Aix Marseille University, Orthopedic Surgery - CHU Timone, Marseille, France*

O 094 Relationship of sagittal and frontal spinal curvatures and mobility with balance and respiratory functions in adolescent idiopathic scoliosis: Preliminary report

Sevtap Günay Ucurum[1], Hilal Uzunlar[1], Müge Kırmızı[1], Karya Polat[1], Ebru Ozdemir[2], Aynur Sahin[1], Kevser Sevik Kacmaz[1], Derya Ozer Kaya[1]

[1] *Katip Celebi University, Physical Therapy and Rehabilitation, İzmir, Turkey*

[2] *Dokuz Eylül University, Health Science Institute, İzmir, Turkey*

O 095 Kinematic adaptations during the sit-to-stand movement in adolescent idiopathic scoliosis with different types of curvature

Maria Karam[1], Emmanuelle Wakim[1], Maria Asmar[1], Rami Rachkidi[1], Georges El Haddad[1], Marc Boutros[1], Mohamad Karam[1], Maria Rassam[1], Abir Massaad[1], Ayman Assi[1,2]

[1] *Faculty of Medicine/ University of Saint-Joseph, Laboratory of Biomechanics and Medical Imaging, Beirut, Lebanon*

[2] *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

O 096 Different kinematic strategies are adopted by subjects with adolescent idiopathic scoliosis during walking depending on their type of curvature

Maria Asmar[1], Maria Karam[1], Emmanuelle Wakim[1], Abir Massaad[1], Mohamad Karam[1], Georges El Haddad[1], Marc Boutros[1], Ismat Ghanem[1], Rami Rachkidi[1], Ayman Assi[1,2]

[1] *Faculty of Medicine/ University of Saint-Joseph, Laboratory of Biomechanics and Medical Imaging, Beirut, Lebanon*

[2] *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

O 097 Two approaches to normalize biceps Brachii EMG in patients with spasticity

Anna Pennekamp[1], *Mirjam Thielen*[1], *Julia Glaser*[2], *Ursula Trinler*[1]

[1] *BG Trauma Center Ludwigshafen, Laboratory for Clinical Movement Analysis, Ludwigshafen, Germany*
[2] *BG Trauma Center Ludwigshafen, Hand-Plastic and Reconstructive Surgery, Ludwigshafen, Germany*

O 098 Using Upper Limb Kinematics to Refine Clinical Assessment in Neuromuscular Disorders

Alessandra Favata[1], *Luc Van Noort*[1], *Roger Gallart-Agut*[2], *Jesica Exposito-Escudero*[3], *Julita Medina-Cantillo*[3], *Andres Nascimiento-Osorio*[3], *Daniel Natera de-Benito*[3], *Carme Torras-Genís*[2], *Josep Maria Font-Llagunes*[1], *Rosa Pàmies-Vilà*[1]

[1] *Universitat Politècnica de Catalunya - UPC, Research Centre for Biomedical Engineering, Barcelona, Spain*
[2] *Institut de Robòtica i Informàtica Industrial, Perception and Manipulation, Barcelona, Spain*
[3] *Hospital Sant Joan de Déu, Neuromuscular Unit, Barcelona, Spain*

ESMAC Gala Dinner

19:00–23:00, Grefsenkollen Restaurant

Saturday, 14 September 2024

Plenary Session: 15) Modern methodology - Multiplanar analysis

08:30–09:30, Hall A

Chairs: Hans Kainz (Austria), Christian Von Deimling (Switzerland)

O 099 ☆ The role of functional knee axis calibration in the presence of rotational malalignment in the lower limbs

Arik Rehani Musagara[1], Firooz Salami[1], Marco Götze[1], Katharina Gather[1], Sebastian Wolf[1]

[1] *Clinic for Orthopaedics and Trauma Surgery, Heidelberg University Hospital, Heidelberg, Germany*

O 100 ☆ A new method for accurate measurement of upper limb axial rotations with markerless motion capture using cross-sections of 4D-scans

Fermín Basso[1], Helios De Rosario-Martínez[1], Rosa Porcar-Seder[2], Mario Lamas-Rodríguez[1], Juan López-Pascual[1]

[1] *Instituto de Biomecánica de Valencia, Universitat Politècnica de València, Biomedical Engineering, Valencia, Spain*

[2] *Instituto de Biomecánica de Valencia, Universitat Politècnica de València, Market Development Area, Valencia, Spain*

O 101 Frontal and transverse plane hip angles during walking vary between CGM2 and Plug-in-Gait models

Jesper Bencke[1], Niels J Nedergaard[1], Ida B Steendahl[1], Emilie Zwicky[1]

[1] *Copenhagen University Hospital, Human Movement Analysis Laboratory sect. 247, Hvidovre, Denmark*

O 102 Correlations between gait and clinical parameters and the levels of pain and mobility in adolescents with lower extremity torsional abnormality

Marianne Gagnon[1,2], Mitchell Bernstein[2,3], Louis-Nicolas Veilleux[1,2]

[1] *Shriners Hospitals for Children - Canada, Motion Analysis Center, Montreal, Canada*

[2] *McGill University, Departments of Surgery, Montreal, Canada*

[3] *Shriners Hospitals for Children - Canada, Department of Surgery, Montreal, Canada*

O 103 Asymmetric sitting may contribute developing asymmetric hip and pelvis rotational profiles during walking for healthy adolescents: A pilot study

Buse Kara[1], Aleyna Kızılcan[1], Nazif Ekin Akalan[1,2], Shavkat Kuchimov[2]

[1] *Istanbul Kultur University, Faculty of Health Sciences- Division of Physiotherapy and Rehabilitation, Istanbul, Turkey*

[2] *Istanbul Kultur University, Motion Analysis Center, Istanbul, Turkey*

O 104 ☆ Multiple exoskeletons, multiple objectives: Simulating optimal assistance of active, quasi-passive, and passive assistive devices

Israel Luis[1], Lanie Gutierrez Farewik[1]

[1] *KTH Moveability - KTH Royal Institute of Technology, Engineering Mechanics, Stockholm, Sweden*

Parallel Session: 16) Clinical Case Studies

09:30–10:30, Meeting Room 1

Chairs: Kaat Desloovere (Belgium), Han Houdijk (Netherlands)

O 105 Multidisciplinary biomechanical evaluation of orthopedic foot surgery in cerebral palsy: A clinical case study

Gaia van den Heuvel[1,2], Wouter Schallig[1,2,3], Babette Mooijekind[1,2,4], Ruud Wellenberg[5], Melinda Witbreuk[6], Mario Maas[5], Marjolein van der Krogt[1,2], Annemieke Buizer[1,2,7]

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[2] *Amsterdam Movement Sciences, Rehabilitation & Development, Amsterdam, Netherlands*
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[4] *Ghent University, Rehabilitation Sciences, Ghent, Belgium*
[5] *Amsterdam UMC location University of Amsterdam, Radiology and Nuclear Medicine, Amsterdam, Netherlands*
[6] *Amsterdam UMC location University of Amsterdam, Orthopedic Surgery and Sports Medicine, Amsterdam, Netherlands*
[7] *Emma Children's Hospital, Amsterdam UMC, Amsterdam, Netherlands*

O 106 Innovative Combination of focal vibration therapy and botulinum toxin to treat equinus in a child with unilateral spastic cerebral palsy

Christophe Boulay[1], Jean-Michel Gracies[2], Morgan Sangeux[3], Guillaume Authier[1], Bernard Parratte[1], Sébastien Pesenti[1]

[1] *Aix Marseille University, Gait lab- Pediatric Orthopaedic Surgery Department, Timone Children Hospital, Marseille, France*
[2] *AP-HP- Hôpitaux Universitaires Henri Mondor, Service de Rééducation Neurolocomotrice, Unité de Neurorééducation, Créteil, France*
[3] *University Children's Hospital, Basel, Switzerland*

O 107 L5-S1 arthrodesis impact on spino-pelvic parameters, gait, and quality-of-life in a patient with chronic low back pain with spondylolisthesis

Gilles Prince[1], Rami Rachkidi[1], Abir Massaad[1], Ibrahim Hamati[1], Moustapha Rteil[1], Joe Azar[1], Guy Awad[1], Nadim Freiha[1], Mohamad Karam[1], Ayman Assi[1,2]

[1] *Faculty of Medicine/ University of Saint-Joseph, Laboratory of Biomechanics and Medical Imaging, Beirut, Lebanon*
[2] *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

O 108 Antalgic flexed thorax posture, in static and during gait, restored by localized arthrodesis in a case of L4-L5 spondylolisthesis

Joe Azar[1], Rami Rachkidi[1], Abir Massaad[1], Guy Awad[1], Gilles Prince[1], Ibrahim Hamati[1], Moustapha Rteil[1], Nadim Freiha[1], Mohamad Karam[1], Ayman Assi[1,2]

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[2] *Arts et Métiers, Institut de Biomecanique Humaine Georges Charpak, Paris, France*

O 109 Personalized clinical decision-making by evaluating the effects of a selective nerve block on cycling and gait: A clinical case study

Hanneke Van Duijnhoven[1], Lotte Van De Venis[1], Maarten Nijkrake[1], Allan Pieterse[1], Alexander Geurts[1], Jorik Nonnekes[1]

[1] *Radboudumc, Rehabilitation, Nijmegen, Netherlands*

O 110 Predicting botulinum toxin-a injection effects on gait in a child with hemiparetic cerebral palsy: A case study

Kubra Onerge[1,2,3], Nazif Ekin Akalan[1,3], Rukiye Sert[4], Fuat Bilgili[5]

[1] *Istanbul Kultur University, Faculty of Health Sciences- Physiotherapy and Rehabilitation Department, Istanbul, Turkey*
[2] *Hacettepe University, Graduate School of Health Sciences- Physical Therapy and Rehabilitation Division, Ankara, Turkey*
[3] *Istanbul Kultur University, Motion Analysis Center, Istanbul, Turkey*
[4] *Istanbul University, Institute of Health Sciences - Department of Pediatric Basic Sciences, Istanbul, Turkey*
[5] *Istanbul University, Istanbul Faculty of Medicine - Orthopaedics and Traumatology Department, Istanbul, Turkey*

Parallel Session: 17) Muscle tissue properties and development

09:30–10:30, Hall A

Chairs: Ayman Assi (Lebanon), Francesco Cenni (Italy)

O 111 Muscle growth and motor development in NICU graduates and infants at high-risk of adverse neurological outcome over the first year

Sian Williams[1,2], Malcolm Battin[3], Louise Pearce[4], Amy Mulqueeney[3], Alana Cavadino[5], Mirjalili Ali[6], N Susan Stott[7]

[1] *Curtin University, School of Allied Health, Perth, Australia*
[2] *University of Auckland, Liggins Institute, Auckland, New Zealand*
[3] *Te Toka Tumai, Auckland, Te Whatu Ora, Newborn Services, Starship Child Health, Auckland, New Zealand*
[4] *Auckland Children's Physiotherapy, Physiotherapy, Auckland, New Zealand*
[5] *University of Auckland, Epidemiology & Biostatistics - School of Population Health, Auckland, New Zealand*
[6] *University of Auckland, Department of Anatomy and Medical Imaging, Auckland, New Zealand*
[7] *University of Auckland, Department of Surgery, Auckland, New Zealand*

O 112 The contribution of physical activity and nutrition to muscle morphology in children with spastic cerebral palsy

Ineke Verreydt[1], Anja Van Campenhout[2,3], Els Ortibus[2], Olaf Verschuren[4], Marieke De Craemer[5], Lauraine Staut[1], Erika Vanhauwaert[6], Daisy Rymen[2], Kaat Desloovere[1,7]

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4 *Utrecht University and De Hoogstraat Rehabilitation, Center of Excellence for Rehabilitation Medicine - UMC Utrecht Brain Center - University Medical Center Utrecht, Utrecht, Netherlands*
5 *Ghent University, Department of Rehabilitation Sciences, Ghent, Belgium*
6 *University Colleges Leuven-Limburg UCLL, Centre of Expertise Health Innovation, Leuven, Belgium*
7 *University Hospitals Leuven, Clinical Motion Analysis Laboratory, Pellenberg, Belgium*

O 113 Spatial distribution of intramuscular fat in triceps surae in children with cerebral palsy

Zhongzheng Wang[1], Chen Xu[1], Antea Destro[1], Sven Petersson[2,3], Eva Pontén[4,5], Cecilia Lidbeck[4,5], Ruoli Wang[1]

1 *KTH Royal Institute of Technology, KTH MoveAbility - Department of Engineering Mechanics, Stockholm, Sweden*
2 *Karolinska Institutet, Department of Clinical Neuroscience, Stockholm, Sweden*
3 *Karolinska University Hospital, Department of Medical Radiation Physics and Nuclear Medicine, Stockholm, Sweden*
4 *Karolinska Institutet, Department of Women's and Children's Health, Stockholm, Sweden*
5 *Astrid Lindgren Children's Hospital - Karolinska University Hospital, Department of Pediatric Orthopaedic Surgery, Stockholm, Sweden*

O 114 Morphological changes of the semitendinosus muscle among ambulant children with spastic cerebral palsy

Nathalie De Beukelaer[1,2,3], Ineke Verreydt[3], Ines Vandekerckhove[3], Britta Hanssen[3], Tijl Dewit[3], Els Ortibus[2], Anja Van Campenhout[4,5], Kaat Desloovere[3]

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2 *KU Leuven, PRONTO Research Lab- Department of Development and Regeneration, Leuven, Belgium*
3 *KU Leuven, Neurorehabilitation Research Group - Department of Rehabilitation Sciences, Leuven, Belgium*
4 *KU Leuven, Department of Development and Regeneration, Leuven, Belgium*
5 *UZ Leuven, Department of Orthopedics, Leuven, Belgium*

O 115 A novel botulinum toxin formula, which diminishes the adverse effects of BTX-A on muscular mechanics

Cemre Su Kaya Keles[1,2], Can A. Yucesoy[2]

1 *University of Stuttgart, Institute of Structural Mechanics and Dynamics in Aerospace Engineering, Stuttgart, Germany*
2 *Boğaziçi University, Institute of Biomedical Engineering, Istanbul, Turkey*

Coffee Break

10:30–11:00

Plenary Session: 18) Paediatric neurological disorders and syndromes

11:00–12:15, Hall A

Chairs: N Susan Stott (New Zealand), Per Reidar Høiness (Norway)

O 116 Test-retest repeatability of a motorized ankle resistance measurement in children

Ruoli Wang[1], Alexandra Palmcrantz[2,3], Antea Destro[1], Zhihao Duan[1], Cecilia Lidbeck[2,4]

1 *Royal Institute of Technology - KTH, Promobilia MoveAbility Lab - Dept. of Mechanics - SCI, Stockholm, Sweden*
2 *Karolinska Institutet, Department of Women's and Children's Health, Stockholm, Sweden*
3 *Karolinska University Hospital, Functional Area Occupational Therapy & Physiotherapy, Stockholm, Sweden*
4 *Karolinska University Hospital, Department of Pediatric Orthopaedic Surgery, Stockholm, Sweden*

O 117 Investigation of gross motor function, balance, muscle structure, and spatiotemporal parameters of running in children with Down Syndrome

Esra Kınacı Biber[1], Abdullah Ruhi Soylu[2], Semra Topuz[3], Akmer Mutlu[1]

1 *Hacettepe University, Faculty of Physical Therapy and Rehabilitation - Developmental and Early Physiotherapy Unit, Ankara, Turkey*
2 *Hacettepe University, Faculty of Medicine, Department of Biophysics, Ankara, Turkey*
3 *Hacettepe University, Faculty of Physical Therapy and Rehabilitation - Movement Analysis Laboratory, Ankara, Turkey*

O 118 Longitudinal trajectories of muscle strength deficits in growing boys with Duchenne muscular dystrophy

Ines Vandekerckhove[1], Marleen Van den Hauwe[1,2], Tijl Dewit[1,3], Geert Molenberghs[4,5], Nathalie Goemans[2,6], Liesbeth De Waele[2,6], Anja Van Campenhout[6,7], Friedl De Groote[8], Kaat Desloovere[1,3]

1 *KU Leuven, Department of Rehabilitation Sciences, Leuven, Belgium*
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3 *University Hospital Leuven, Clinical Motion Analysis Laboratory, Pellenberg, Belgium*
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6 *KU Leuven, Department of Development and Regeneration, Leuven, Belgium*
7 *University Hospital Leuven, Department of Orthopedics, Leuven, Belgium*
8 *KU Leuven, Department of Movement Sciences, Leuven, Belgium*

O 119 Sensory function of the foot and leg in children with arthrogryposis and myelomeningocele

Åsa Bartonek[1], Mikael Reimeringer[1], Marie Eriksson[1]

1 *Karolinska Institutet, Women's and Children's Health, Stockholm, Sweden*

O 120 Idiopathic toe-walkers demonstrate multiplanar gait deviations compared to typically developed children voluntarily toe-walking

Halenur Evrendilek[1,2,3], Julie Stebbins[3,4], Alpesh Kothari[3,4]

1 *Istanbul Kultur University, Department of Physiotherapy and Rehabilitation, İstanbul, Turkey*
2 *Istanbul University - Cerrahpasa, Division of Physiotherapy and Rehabilitation, İstanbul, Turkey*
3 *University of Oxford, Nuffield Department of Orthopaedics - Rheumatology and Musculoskeletal Sciences, Oxford, United Kingdom*
4 *NHS, Oxford Gait Laboratory, Oxford, United Kingdom*

O 121 German translation and cross-cultural comparison of a mobility questionnaire (MobQues47) for ambulant children and adolescents with cerebral palsy

Jacqueline Romkes[1], Matthias Hösl[2], Annika Kruse[3], Martin Svehlik[4], Elke Viehweger[5], Steffen Berweck[6,7], Sean Nader[8], Annemieke I. Buizer[9,10], Helga Haberfehlner[11]

1 *University of Basel Children's Hospital, Centre for Clinical Movement Analysis, Basel, Switzerland*
2 *Schön Clinic Vogtareuth, Gait and Motion Analysis Laboratory, Vogtareuth, Germany*
3 *University of Graz, Institute of Human Movement Science / Sport and Health, Graz, Austria*
4 *Medical University of Graz, Department of Orthopaedics and Trauma, Graz, Austria*
5 *University of Basel Children's Hospital, Neuro-Orthopaedic Department, Basel, Switzerland*
6 *Ludwig-Maximilians-University of Munich, LMU Hospital / Department of Pediatrics, Munich, Germany*
7 *Schön Clinic Vogtareuth, Specialist Centre for Paediatric Neurology / Neuro-Rehabilitation and Epileptology, Vogtareuth, Germany*
8 *Schön Clinic Vogtareuth, Specialist Centre for Paediatric Orthopaedics / Neuro-Orthopaedics and Deformity Reconstruction, Vogtareuth, Germany*
9 *Amsterdam UMC location Vrije Universiteit Amsterdam, Rehabilitation Medicine, Amsterdam, Netherlands*
10 *Amsterdam Movement Sciences, Rehabilitation & Development, Amsterdam, Netherlands*
11 *KU Leuven Bruges, Department of Rehabilitation Medicine, Bruges, Belgium*

Keynote Lecture 3: Reidun Birgitta Jahnsen

12:15–13:00, Hall A

Chair: Arve Opheim (Norway)

Movement is a living thing

Reidun Birgitta Jahnsen[1]

1 *University of Oslo, Institute of Health and Society, Department for Public Health Science and Epidemiology, Oslo, Norway*

Awards & Closing Ceremony

13:00–13:30, Hall A

List of Posters

Day 1 – Poster session

Topic groups 03, 07, 08, 09, 10, 13, 14, 18

Group 03 Elderly

P 001 Stair descent in older adults: Fall history and fear's effect on ankle kinematics

Cintia Elord Julio[1], Silvio Antonio Garbelotti Junior[2], Fernanda Colella Antonialli[1], Adriane Mara de Souza Muniz[3], Paulo Lucareli[1]

[1] *Nove de Julho University, Rehabilitation Science, São Paulo, Brazil*
[2] *Santa Marcelina Medical School, Department of Anatomy, São Paulo, Brazil*
[3] *Physical Education School of Brazilian Army, EsEFEx, Rio de Janeiro, Brazil*

P 002 Development of a locomotor sensory integration test in healthy young and older adults: A protocol study

Esma Nur Kolbasi Dogan[1], Lotte Janssens[1], Joke Spildooren[1], Pieter Meyns[1]

[1] *Hasselt University, REVAL Rehabilitation Research, Diepenbeek, Belgium*

P 003 Intrinsic capacity comparisons between fallers and non-fallers in Singaporean elderly population

Yixing Liu[1], Kai Zhe Tan[1,2], Sai G.S. Pai[1], Preeti Gupta[3,4], Ecosse Lamoureux[3,4], Navrag Singh[1,2]

[1] *Singapore-ETH Center, Future Health Technologies, Singapore, Singapore*
[2] *ETH Zürich, 2 Institute for Biomechanics- Dept. of Health Sciences and Technology, Zürich, Switzerland*
[3] *Duke-NUS Medical School, Health Services and System Research, Singapore, Singapore*
[4] *The Academia, Singapore Eye Research Institute SERI, Singapore, Singapore*

P 004 Spatiotemporal parameters of older adults' outdoor walking on hilly and level terrains

Emmi Matikainen-Tervola[1,2,3], Neil Cronin[2,4], Eeva Aartolahti[1], Sanna Sihvonen[1], Sailee Sansgiri[2], Taija Finni[2], Olli-Pekka Mattila[3], Merja Rantakokko[1,3,5]

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[2] *University of Jyväskylä, Neuromuscular Research Center - Faculty of Sport and Health Sciences, Jyväskylä, Finland*
[3] *University of Jyväskylä, Gerontology Research Center GEREC - Faculty of Sport and Health Sciences, Jyväskylä, Finland*
[4] *University of Gloucestershire, School of Education and Sciences, Gloucester, United Kingdom*
[5] *The Wellbeing services county of Central Finland, The Wellbeing services county of Central Finland, Jyväskylä, Finland*

P 005 Impact of age-related characteristics in females on neuromuscular and motor control: Musculoskeletal modeling using OpenSim software

Zahra Chegini[1], Behzad Yasrebi[2], Siamak Haghipour[2], Farhad Tabatabai Ghomsheh[3], Aliakbar Pahlievanian[4], Meroeh Mohammadi[5]

[1] *Tabriz Branch - Islamic Azad Univer Tabriz Branch - Islamic Azad University, Biomedical Engineering, Tabriz, Islamic Republic of Iran*
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[4] *Semnan University of Medical Sciences & Health Sevices, Neuromuscular Rehabilitation Research Center, Semnan, Islamic Republic of Iran*
[5] *Islamic Azad University, Biomedical Engineering, Tehran, Islamic Republic of Iran*

P 006 Physical activity, neuropsychiatric symptoms, and physical function among nursing home residents: The HUNT-study

Stine Øverengen Trollebø[1], Ellen Marie Bardal[1], Nina Skjæret Maroni[1]

[1] *Faculty of Medicine and Health, Department of Neuromedicine and Movement Science, Trondheim, Norway*

P 007 Consistency of different functional mobility tests in older people with Parkinson's disease

Veli Batur[1], İlkim Çıtak Karakaya[2], Semiha Yenişehir[3], Mehmet Gürhan Karakaya[2]

[1] *Private Empati Rehabilitation Center, Physiotherapy and Rehabilitation, Denizli, Turkey*
[2] *Muğla Sıtkı Koçman University - Faculty of Health Sciences, Physiotherapy and Rehabilitation, Muğla, Turkey*
[3] *Muş Alparslan University- Faculty of Health Sciences, Physiotherapy and Rehabilitation, Muş, Turkey*

P 008 Distinguishing (pre)frail from non-frail older adults based on walking pattern: A Scoping Review on gait parameters derived from inertial sensors

Xin Zhang[1], Li Feng[2], Barbara Munster[3], Hans Hobbelen[4], Claudine JC Lamoth[1]

[1] *University of Groningen - University Medical Center Groningen, Human Movement Science, Groningen, Netherlands*
[2] *Jilin University, School of NursingSchool of Nursing, Changchun, China*
[3] *University of Groningen - University Medical Center Groningen, University Center for Geriatric Medicine, Groningen, Netherlands*
[4] *University of Groningen - University Medical Center Groningen, Department of General Practice and Elderly Care Medicine, Groningen, Netherlands*

Group 07 Movement analysis methodology

P 009 Objective assessment and understanding using machine learning algorithms: Application in individuals with Unilateral Trans-Tibial Amputation

Maria Bisele[1], Martin Bencsik[2], Martin G.C. Lewis[3], Cleveland T. Barnett[2]

[1] *Heidelberg University Hospital, Orthopedic Department, Heidelberg, Germany*
[2] *Nottingham Trent University, School of Science & Technology, Nottingham, United Kingdom*
[3] *Qualisys, Sales & Application, Göteborg, Sweden*

P 010 Assessing two IMU-based gait event detection methods and their effect on spatiotemporal gait parameters across young and elderly populations

Redona Brahimetaj[1], Silvia Zaccardi[1], Ivan Bautmans[2], Bart Jansen[1]

[1] *Vrije Universiteit Brussel, Electronics and Informatics ETRO, Brussels, Belgium*
[2] *Vrije Universiteit Brussel, Frailty in Ageing FRIA, Brussels, Belgium*

P 011 Comparison of lower-body 3D gait kinematics between Theia3D markerless and IOR and CGM marker-based models during pathological gait

Jacqueline Pitzer[1], Tobias Siebert[1], Vincent Fohanno[2], Sonia D'Souza PhD[3]

[1] *University of Stuttgart, Motion and Exercise Science, Stuttgart, Germany*
[2] *Qualisys AB, Software and Application, Gothenburg, Sweden*
[3] *Olgahospital - Klinikum Stuttgart, Gait Lab - Orthopaedics, Stuttgart, Germany*

P 012 The impact of initial contact events on kinematics in pathological gait – Preliminary results of an ongoing study

Bernhard Dumphart[1], Djordje Slijepčević [2], Fabian Unglaube[3], Andreas Kranzl[3], Arnold Baca[4], Brian Horsak[5]

[1] *St. Pölten University of Applied Sciences, Health Sciences, St. Pölten, Austria*
[2] *St. Pölten University of Applied Sciences, Institute of Creative \ Media/Technologies, St. Pölten, Austria*
[3] *Orthopaedic Hospital Vienna-Speising, Laboratory of Gait and Movement Analysis, Vienna, Austria*
[4] *University of Vienna, Centre for Sport Science and University Sports, Vienna, Austria*
[5] *St. Pölten University of Applied Sciences, Center for Digital Health & Social Innovation, St. Pölten, Austria*

P 013 ☆ Objective assessment in serious game rehabilitation: Hand kinematics via device tracking

Nestor Jarque-Bou[1], Verónica Gracia Ibañez[1]

[1] *Universitat Jaume I, Departamento de Ingeniería Mecánica y Construcción, Castellón, Spain*

P 014 Development of open science guidelines for movement laboratories

Michelle Haas[1], Bettina B. Sommer[1], Simon Van Rekum[2], Felix Moerman[3], Eveline S. Graf[1]

[1] *ZHAW Zurich University of Applied Sciences, School of Health Sciences, Winterthur, Switzerland*
[2] *ZHAW Zurich University of Applied Sciences, University Library, Winterthur, Switzerland*
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P 015 ☆ Changes in trunk and lower body gait kinematics in children following a Theia3D update

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P 016 Midgait method for obtaining plantar pressure variables during overground walking at different self-selected speeds: A reliability study

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P 017 Does walking toward and away from a markerless dual-camera system yield similar results?

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P 018 The effect of active, augmented reality induced head movements on walking, mapped by spatiotemporal gait parameters in healthy adults

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P 019 Assessing the robustness of an optimization method for estimating muscle activity during gait: Preliminary findings

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P 020 ☆ Knee joint kinematics with the new conventional gait model (CGM2): A comparison of inverse versus direct kinematics

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P 021 The effect of unilateral sensitive weight carrying on gait biomechanics

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P 022 Improved knee abduction moment prediction by incorporating tibial rotation into the knee abduction angle in single-leg squats with dynamic valgus

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P 023 Kinematic and kinetic parameters of prosthetic knee joints during walking – Comparison of gait analysis results and internal sensor data

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P 024 AI-driven single camera markerless gait analysis in Parkinson's disease for home-based rehabilitation: Reliability assessment

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P 025 Biomechanic pattern of knees after ACL reconstruction

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P 026 Assessment the feasibility of an AI model predicting lower extremity joint moments during walking in patients with cerebral palsy

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P 027 Evaluating the relationship between muscle activities and joint moments during walking through a simple model

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P 028 Sonification can alter Joint Alignment for Personalized Rehabilitation: Evidence from a Controlled Pilot Study

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P 029 Markerless capture of gait kinematics while walking with ankle-foot orthoses

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P 030 A video-based methodology for automated classification of dystonia and choreoathetosis in dyskinetic cerebral palsy during a lower extremity task

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P 031 Novel ground reaction force-based parameters for monitoring rehabilitation in tibial fractures

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P 032 Glyph visualisation of physical examination measurements for clinical gait analysis to aid cognitive efficiency

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P 033 How does the choice of reference frame impact the distribution of WBAM components around different anatomical axes?

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Group 08 Musculoskeletal disorders - general

P 034 Unsupervised cluster approach to identify possible associations between phenotypes and gait motor control in children with Fragile x syndrome

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P 035 Correlation between passive ankle dorsiflexion and gait parameters in idiopathic toe-walkers

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P 036 ☆ Functional popliteal angle test for identification of hamstring muscle spasticity in patients with a central neurological lesion

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P 037 Muscle thickness, muscle strength, and fitness in two young adults with moderate and severe spastic cerebral palsy

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P 038 Exploring gait spatiotemporal in chronic low back pain and healthy populations: A comparative study

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P 039 ☆ Gait analysis in children with Duchenne Muscular Dystrophy: Overground vs. Treadmill walking

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P 040 The relationship between chronic nonspecific low back pain intensity and postural sway during single and double leg standing

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Group 09 Musculoskeletal disorders - Spine, shoulder, hip, knee deformity

P 041 Investigating impact of unilateral and bilateral femoral anteversion on lower extremity parameters during walking in hypermobile children: A pilot study

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P 042 Investigating the relationship between hamstring tightness-related gait parameters and femoral anteversion-based modified popliteal angle measurement in healthy individuals

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P 043 Gait asymmetry in children with achondroplasia in comparison to a group of typically developed children

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P 044 Comparison of spine structure, mobility, and competency in subjects with and without Temporomandibular Joint Dysfunction Symptoms: A pilot study

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P 045 Walking and running of children with decreased femoral torsion are compared to each other

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P 046 Linking pain and disability to kinematic deviations in subacromial shoulder pain

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P 047 ☆ Movement Deviation Profile and pain intensity: Insights from three-dimensional gait analysis in women with patellofemoral pain

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P 048 Determining the kinematic gait alterations of lower extremity in individuals with mechanical low back pain

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Group 10 Orthopedic problems - osteoarthritis and joint movement

P 049 Can a single sensor measure hip range of motion in hip osteoarthritis patients?

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P 050 Exploring gait patterns: Differences in knee force profiles among patients with knee osteoarthritis

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P 051 Gait analysis technologies for biomechanical assessment in knee osteoarthritis: Understanding variability and distinctions

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P 052 A footmounted sensor assesses the foot progression angle sufficiently accurate during walking when aiming to minimize knee load

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P 053 Effect of using the cane on muscle activity during walking with and without cane executed by knee osteoarthritis people

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P 054 Bracing for relief: The impact of knee brace design on gait in patellofemoral pain

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P 055 Acute effects of artificially increased frontal plane projection angle on gait biomechanics in healthy subjects: A pilot study

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P 056 Evaluation the dynamic function of temporomandibular joint in patients with TMJ osteoarthritis

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P 057 Gait analysis can distinguish patients with and without union of tibial shaft fractures as early as six weeks after surgery

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P 058 Associations with a positive Trendelenburg Test and adolescent Hip Dysplasia

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P 059 Effects of functional electrical stimulation (FES) on daily-living questionnaire outcomes in adult patients with upper motor neuron syndrome

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P 060 Symmetric gait with prosthetic and orthotic devices in children with congenital lower limb deficiencies

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P 061 Inter-session and inter-rater variability in biomechanical gait parameters for a single subject: Preliminary results of a multicenter study

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P 062 Practices in providing Ankle Foot Orthoses to Children with Cerebral Palsy in Norway

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P 063 Variation in spatiotemporal parameters and DoA of gait between transtibial and transfemoral amputees : A single centre study

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P 064 Effects of gait variability training following ankle-foot-orthosis provision in three individuals with bilateral calf muscle weakness due to neuromuscular disorders

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P 065 Designing sensor-equipped insoles for Diabetic Foot and investigation of its usability

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Group 14 Robotic and assistive devices

P 066 A review on the implementation of lower-limb exoskeletons to improve the intrinsic capacity and functional ability of older adults

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P 067 Functional electrical stimulation for the recovery of dorsiflexion during early rehabilitation after stroke

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P 068 Neuromuscular disparities between amputee walking gait with crutches and healthy gait for lower extremities

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P 069 The impact of cycling on the physical and mental health of people with disabilities

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P 070 Effects of the Exopulse Mollii suit on spasticity and gait in spinal cord injury

Jia Min Yen[1], Nur Shafawati Kamsani[2], Ning Tang[1], Hwa Sen Lai[1], Jiun Shiah Low[3], Effie Chew[1]

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P 071 Feasibility of a new soft ankle exoskeleton on people with dropfoot post-stroke

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Group 18 Clinical reasoning and evidence

P 072 Cluster analysis to identify the most prominent gait patterns in children with torsional deformities

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P 073 3D-Gait-analysis and patient reported outcome measures before and one year after femoral derotational osteotomy in adolescents with increased femoral anteversion

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P 074 The effect of lower-body positive-pressure treadmill training in early rehabilitation for patients with lower extremity fractures

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P 075 The effect of vibrotactile training on gait biomechanics in children with idiopathic toe walking

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Day 2 – Poster session

Topic groups 01, 02, 04, 05, 06, 11, 12, 15, 16, 17, 19

Group 01 Adult neurological disorders

P 076 Visual perturbation training reduces visual dependency and improves gait in people with Parkinson's disease

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P 077 Evaluation of complex gait features using an accelerometer-based method in advanced Parkinson's disease

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P 078 ☆ Modeling self-reported mobility in Parkinson's Disease through sensor-derived gait parameters

Alan Castro Mejia[1,2], Stefano Sapienza[1,2], Patricia Martins Conde[1,2], Lukas Pavelka[1,3,4], Rejko Krueger[1,3,4,5], Jochen Klucken[1,2,6]

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P 079 Longitudinal effects of stroke rehabilitation: A new deep learning method on joint angle latent space

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P 080 Effects of gait training using hybrid assistive limb on spatiotemporal gait parameters among stroke survivors: A single-arm pilot study

Haidzir Manaf[1], Nazrin Mahezi[2], Mohamad Azlan Mohamed Shapie[3], Zainizam Rasid[2], Nurhazalina Rosley[2], Eng Wah Tan[2], Hafez Hussain[2], Saiful Adli Bukry[1], Hafifi Hisham[4]

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P 081 Comparison of gait-domains between freezers and non-freezers in Parkinson's disease

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P 082 ☆ Effects of treadmill and virtual reality gait training on the quality of life of people with Parkinson's disease

Gileno Melo[1,2], Jose Robertto Zaffalon Junior[3], Jamile BP Lopes[1], Natália A C Duarte[1], Deise A P Oliveira[1], Leonardo P Rezende[4], Pedro Augusto[1], Luanda C Grecco[1], Veronica Cimolin[5], Claudia Oliveira[1,6]

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P 083 Assessing the impact of a rehabilitation treatment with exoskeleton on gait and posture of Parkinson's disease individuals

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Group 02 Coordination and motor control

P 084 The effects of attentional focus instructions on biomechanical parameters of single-leg drop-landing

Fatemeh Alaei[1], Zdenek Svoboda[1], Reza Abdollahipour[1], Javad Sarvestan[2], Hana Chlebníčková[1]

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P 085 To Switch or not to Switch: Leg-preference Consistency and Motor Ability in 7-year-old children

Osnat Atun-Einy[1], Inna Farkash[1]

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P 086 Motor control in children with cerebral palsy during walking on flat and uneven ground compared to typically developing children

Linda Bühl[1,2], Morgan Sangeux[1,2], Heide Elke Viehweger[1,2], Jacqueline Romkes[1], Michele Widmer[1], Katrin Bracht-Schweizer[1]

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P 087 Pilot evaluation of changes in motor control after a CrossFit® intervention in adolescents with unilateral cerebral palsy

Linda Bühl[1,2], Jacqueline Romkes[1], Morgan Sangeux[1,2], Heide Elke Viehweger[2], Michèle Widmer[1]

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P 088 Soleus H-reflex modulation during split-belt walking in healthy young adults: Preliminary results

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P 089 Effect of short walking exercise on gait kinematic in adults with Type 1 Muscular Dystrophy

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P 090 The effects of virtual reality on muscle synergies during walking and balancing in healthy adults

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P 091 Can we walk smoothly on irregular surfaces: Insights from outdoor wearable sensor analysis

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P 092 Assessing dynamic stability in children with idiopathic toe walking in overground walking

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P 093 Psychological stress affects trial-to-trial variability of temporal-spatial gait parameters, but not of muscle synergy activation coefficients

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P 094 Impact of age on the cortical processing of postural sway

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P 095 Subthreshold TMS induced supraspinal modulation of spinal excitability in children and adolescents

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P 096 The role of selective motor control in single-leg standing biomechanics for children with cerebral palsy

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P 097 ☆ Understanding the impact of an early visual impairment on body-midline crossing skills while reaching for objects at the side

Stefania Petri[1], Walter Setti[1], Claudio Campus[1], Helene Vitali[1], Sabrina Signorini[2], Francesca Tinelli[3], Sandra Strazzer[4], Giuseppina Giammari[5], Elena Cocchi[6], Monica Gori[1]

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P 098 Effects of tDCS Associated with Proprioceptive Exercises on Postural Control in Individuals with Total Blindness

Rodolfo B Parreira[1], Roberta C Toledo[1], Deborah C S Cardoso[1], Gabrielly R C Silva[2], Carvalho P Milena C[2], Giovana L Silva[2], Iransé O Silva[1], Manuela Galli[3], Veronica Cimolin[3], Cláudia Santos Oliveira[1,4]

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P 099 The development of a clinical method to assess the Sensorimotor Control of the upper limbs using Pressure Mapping

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P 100 Speed-dependent changes in spatiotemporal gait parameters and margins of stability in response to optic flow perturbation in healthy young adults

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P 101 Activity of the abductor hallucis muscle during level walking

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P 102 The effect of sportive Latin American ballroom dance on foot and ankle posture

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P 103 Comparison of postural stability during static and dynamic tasks between young adults with flexible flatfoot and normal foot posture

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P 104 How wearing high-heel shoes changes muscle activation for young female: Comparison between barefoot and high-heel shoe walking gate

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P 105 Effect of the anterior weight-bearing lunge on the anterior tibiofibular gap in healthy adults

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Group 05 Imaging and anatomy

P 106 Correlation between brain microstructural white matter integrity and qualitative gait outcome after stroke: A research protocol

Renata Loureiro Chaves[1], Amber van Hinsberg[1], Cathy Stinear[2], Laetitia Yperzeele[3], Wim Saeys[1], Steven Truijen[1]

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P 107 Dynamic behavior of the gastrocnemius medialis during functional power exercises in typically developing children

Babette Mooijekind[1,2,3], Marjolein M. van der Krogt[1,2], Liesbeth F. van Vulpen[4], Francesco Cenni[5], Alberto Botter[6], Elena Cesti[6], Annemieke I. Buizer[1,2,7], Lynn Bar-On[3]

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P 108 Radiographic adaptation of subjects with adolescent idiopathic scoliosis between the standing and sitting positions

Emmanuelle Wakim[1], Maria Asmar[1], Maria Karam[1], Abir Massaad[1], Mohamad Karam[1], Georges El Haddad[1], Marc Boutros[1], Ismat Ghanem[1], Rami Rachkidi[1], Ayman Assi[1,2]

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Group 06 Modelling and simulation

P 109 Predicting neuromuscular control patterns that minimize ACL forces for injury prevention: Proof of concept on a muscle-driven 6DOF knee model

Maria Dalle Vacche[1], Giulio Rigoni[1], Davide Pavan[1], Annamaria Guiotto[1], Fabiola Spolaor[1], Zimi Sawacha[1]

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P 110 Neck neuromuscular adaptation in various directions and magnitudes of head kicks in taekwondo: Musculoskeletal modeling using OpenSim

Siavash Kaviani Kosarkhizi[1], Neda Boroushak[2], Mohadeseh sadat Nabavi[3], Meroeh Mohammadi[3]

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P 111 Modeling the effects of common types of arm swing on muscle forces of the hip and knee joints

Elham Naziri[1], Soroush Sadeghnejad[1], Mostafa Rostami[1], Sadegh Madadi[1]

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P 112 How deep muscle activation is affected during cycling: A musculoskeletal simulation study

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Group 11 Normative studies

P 113 The Movement Deviation Profile gives a speed-matched measure of gait deviation

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Group 12 Paediatric neurological disorders

P 114 Treatment of idiopathic toe walkers with TurtleBraces®: A comparison of biomechanical outcomes between pre-and post-treatment

Julie Basset[1], Camille Costa[1,2,3], Marianne Gagnon[1,4], Katerina Jirasek[1], Jean-François Girouard[1], Reggie Charles Hamdy[1,4], Louis-Nicolas Veilleux[1,4]

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P 115 Serious Game in Children with Unilateral Spastic Cerebral Palsy and Equinus Gait: Muscle shortening prevalence on the spasticity

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P 116 Spine kinematics during gait in children with Hereditary Spastic Paraparesis

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P 117 ☆ Ecological spatial exploration: Preliminary data about motor behaviors of children with visual impairments

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P 118 Hip and ankle proprioception affects balance performance in children with cerebral palsy: A case-control study

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P 119 The relation between macro- and microscopic muscle size parameters of the medial gastrocnemius in children with spastic cerebral palsy

Charlotte Lambrechts[1], Jorieke Deschrevel[2], Karen Maes[2], Anke Andries[2], Nathalie De Beukelaer[1,3], Britta Hanssen[1,4], Ines Vandekerckhove[1], Anja Van Campenhout[5,6], Ghislaine Gayan-Ramirez[2], Kaat Desloovere[1,7]

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P 120 "Foot posture, function and alignment", a continuing theme in children post SDR surgery?

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P 121 Exploring scooting: Insights from a Delphi Panel on a distinctive walking pattern in children using posterior walkers

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P 122 Wearable sensors approach to quantify tip-toe behaviour in children and pre-adolescents with autism spectrum disorders: A pilot study

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P 123 Characterizing adaptation capacity during split-belt walking among children with cerebral palsy

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P 124 Study protocol to assess effects of fatigue on gait in children and adolescents with cerebral palsy

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P 125 An in vivo evaluation of skeletal muscle volume of preterm infants at term equivalent and at 3 months corrected age

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P 126 Ambulatory performance in children with hereditary Spastic Paraplegia

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Group 15 Sports and sports injury

P 127 The effects of reducing hip internal rotation on jumping performance and jump biomechanics in volleyball players with flexible pes planus

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P 128 Countermovement jump reveals decreased functional outcome despite subjective improvement after ACL reconstruction

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P 129 The acute effects of insoles on jumping performance and lower extremity biomechanics in volleyball players with flexible pes planus

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P 130 Static and dynamic balance of female figure skaters

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P 131 The interaction between biomechanical variables and oxygen consumption during running

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P 132 Investigating upper-body muscle activation in different hand rotation angles during push-up variants using OpenSim Musculoskeletal Modeling

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P 133 Knee joint contact load associated by balance control for stance leg during taekwondo front kick: A musculoskeletal modeling approach

Hamed Shamsi[1], *Mahdieh Iranshahi*[2], *Asra Sohrabi*[3], *Saba Alishah*[4], *Faezeh Foadiyan*[5], *Soha Maleki*[2], *Meroeh Mohammadi*[6]

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P 134 The effect of arm swing during countermovement jump in pes planus athletes

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P 135 Effects of mild hyperbaric oxygen therapy for running performance in junior male athletes

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P 136 How cycling in different power changes muscle-driven activation during pedaling phases

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P 137 Effect of cycling power output on neuromuscular activation of biarticular muscles

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Group 16 Stability and fall risk

P 138 Effects of bed height on rescuer's centre of pressure kinematics during chest compressions performed during cardiopulmonary resuscitation: Preliminary results

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P 139 Gait stability estimation using a common bodytracking-system in older adults

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P 140 Augmented reality induced gait and postural balance perturbations in fallers and non-fallers: A multisensory approach

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P 141 Sagittal malalignment in patients with adult spinal deformity seems to increase frontal instability during gait

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Group 16 Stability and fall risk

P 142 The effectiveness of home-based video-game balance-training on gait stability in children with cerebral palsy

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P 143 Exploring the role of Auditory Stimuli in Manipulating Center of Mass Sway

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P 144 How should we shape clinical balance analysis

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P 145 Mediolateral margin of stability is larger in older than younger adults during the single-support phase

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P 146 Influence of increased femoral anteversion on the trunk and pelvic kinematics during gait in hypermobile children

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P 147 Test-retest reliability and level of agreement in kinematic variables during a standardized drinking task in adults with unilateral CP

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P 148 Neuromuscular control of neck muscles by the CNS in different head postures: A musculoskeletal modeling study using OpenSim software

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P 149 Relationship between manual ability, dystonia and choreoathetosis and upper limb movement patterns during reaching and grasping in dyskinetic cerebral palsy

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P 150 Transforming our understanding of patient mobility in the community through wearable, invisible and inexpensive technology

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P 151 Relationship between physical activity metrics and Late Life Function and Disability Instrument (LLFDI) among Proximal Femoral Fracture cohort: MobiliseD dataset

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