

| Session                                  |                           | SchCode                                    | Title   | Paper#   |
|--|---------------------------|--|---|--|
| Interactive Session, INT1<br>10:45–12:15 | Therapeutic<br>Robotics I | WeBINT1.1                                  | Soft Fluidic Actuators of Rotary Type for Safe Physical Human–Machine Interaction<br>Oleg Ivlev*<br>FWBI Research Company & University of Bremen [Germany]  | 91   |
|  |                           | WeBINT1.2                                  | Development of Isokinetic and Iso-Contractile Exercise Machine MEM–MRB” Using MR Brake ”<br>Kunihiko Oda* , Shiro Isozumi , Yuuki Ohyama , Kazuya Tamida , Takehito Kikuchi , Junji Furusho<br>Osaka Electro–Communication University [Japan]   | 162  |
|  |                           | WeBINT1.3                                  | Time Course of Abnormal Synergies of Stroke Patients Treated and Assessed by a Neuro–Rehabilitation Robot<br>Pin–Cheng Kung , Chou–Ching K Lin* , Ming–Shaung Ju , Shu–Min Chen<br>National Cheng Kung University Hospital [Taiwan]   | 23   |
|  |                           | WeBINT1.4                                  | Error–Enhanced Augmented Proprioceptive Feedback in Stroke Rehabilitation Training: A Pilot Study.<br>Birgit I. Molier* , Jacintha de Boer , G.B. (Gerdienke) Prange , Michiel J.A. Jannink<br>Roessingh Research & Development [Netherlands]   | 53   |
|  |                           | WeBINT1.5                                  | Rehabilitation of Grasping and Forearm Pronation/Supination with the Haptic Knob<br>Olivier Lamercy* , Ludovic Dovat , Hong Yun , Seng Kwee Wee , Christopher Wee Keong Kuah , Karen Sui<br>Geok Chua , Roger Gassert , Theodore Edgar Milner , Chee Leong Teo , Etienne Burdet<br>National University of Singapore [Singapore] | 148  |
|  |                           | WeBINT1.6                                  | A Randomized Controlled Trial on the Recovery Process of Wrist Rehabilitation Assisted by Electromyography<br>(EMG)–Driven Robot for Chronic Stroke<br>Xiaoling Hu , Kai Yu Tong* , Rong Song , Xiujuan Zheng , W.W.F. Leung<br>The Hong Kong Polytechnic University [China]  | 85   |
|  |                           | WeBINT1.7                                  | Development of Wrist Rehabilitation Equipment Using Pneumatic Parallel Manipulator –Acquisition of P.T.’s<br>Motion and Its Execution for Patient<br>Masahiro Takaiwa* , Toshiro Noritsugu<br>Okayama University [Japan]  | 100  |
|  |                           | WeBINT1.8                                  | Intermanual Transfer of Learning Reveals Representations in Simultaneous Extrinsic and Intrinsic Coordinate<br>Amit Meghani* , Jamie Burgess , James Patton<br>University of Illinois at Chicago [USA]  | 135  |
|  |                           | WeBINT1.9                                  | Analysis of Pick–And–Place, Eating and Drinking Movements for the Workspace Definition of Simple Robotic<br>Che Fai Yeong* , Alejandro Melendez , Etienne Burdet<br>Imperial College London [United Kingdom]  | 211  |
|  |                           | WeBINT1.10                                 | FES Artifact Suppression for Real–Time Tremor Compensation<br>Ferdinan Widjaja* , Cheng Yap Shee , Philippe Poinet , Wei Tech Ang<br>Nanyang Technological University [Singapore]   | 94   |
|  |                           | WeBINT1.11                                 | Upper Limb Rehabilitation of Stroke Participants Using Electrical Stimulation: Changes in Tracking and EMG<br>Ann–Marie Hughes* , Chris T Freeman , Jane Helena Burridge , Paul H Chappell , Paul L Lewin , Eric Rogers<br>Univeristy of Southampton [United Kingdom]   | 89   |
|  |                           | WeBINT1.12                                 | Design and Control of an Upper Arm FES Workstation for Rehabilitation<br>Chris T Freeman* , Ann–Marie Hughes , Jane Helena Burridge , Paul H Chappell , Paul L Lewin , Eric Rogers<br>Univeristy of Southampton [United Kingdom]  | 39   |
|  |                           | Evaluation<br>and Clinical<br>Experience I | WeBINT1.13  | A Mobile Gait Monitoring System for Gait Analysis<br>JoonBum Bae* , Kyoungchul Kong , Nancy Byl , Masayoshi Tomizuka<br>Univeristy of California, Berkeley [USA] |
|  | WeBINT1.14                |  | Simulation of Clonic Movement with Leg–Robot Driven by Compact MR Fluid Clutch<br>Takehito Kikuchi* , Kunihiko Oda , Junji Furusho<br>Osaka University [Japan]  | 41   |

|  |   |   |  |     |
|--|---|---|--|-----|
| Interactive Session, INT1<br>10:45–12:15 |   | WeBINT1.15  | Rehabilitation Control Strategies for Gait Robot Via EMG Evaluation and Quantification<br>Ping Wang , K. H. Low* , Hup Boon Lim , Adela Tow<br>Nanyang Technological University [Singapore]  | 109 |
|  |   | WeBINT1.16  | Effects of an Upper Limb Robot-Mediated Therapy on Paretic Upper Limb in Chronic Hemiparetic Subjects: A Biomechanical and EEG-Based Approach for Functional Assessment<br>Stefano Mazzoleni* , Martina Coscia , Giulia Rossi , Sara Aliboni , Federico Posteraro , Maria Chiara Carrozza<br>Scuola Superiore Sant'Anna [Italy]                      | 81  |
|  |   | WeBINT1.17  | T-TOAT: A Method of Task-Oriented Arm Training for Stroke Patients Suitable for Implementation of Exercises in Rehabilitation Technology<br>Annick. A. A. Timmermans* , Richard P. J. Geers , Johan A. Franck , Paul Dobbelsteijn , Annemie I.F. Spooren , Herman Kingma , Henk A.M. Seelen<br>Rehabilitation Foundation Limburg (SRL) [Netherlands] | 104 |
|  |   | WeBINT1.18  | Acceptability of Robot Assisted Active Arm Exercise As Part of Rehabilitation after Stroke<br>Andrew Edward Jackson* , Sophie Makower , Peter Robert Culmer , Ray Holt , Alastair Cozens , Martin Levesley , Bipin Bhakta<br>University of Leeds [United Kingdom]  | 117 |
|  | Robotics for<br>Human-Motion<br>Analysis1 | WeBINT1.19  | Realtime Identification Software for Human Whole-Body Segment Parameters Using Motion Capture and Its Visualization Interface<br>Gentiane Venture* , Ko Ayusawa , Yoshihiko Nakamura<br>Tokyo University of Agriculture and Technology [Japan]   | 31  |
|  |   | WeBINT1.20  | Waseda Bioinstrumentation System #3 As a Tool for Objective Rehabilitation Measurement and Assessment – Development of the Inertial Measurement Unit –<br>Salvatore Sessa* , Massimiliano Zecca , Zhuohua Lin , Tomoya Sasaki , Kazuko Itoh , Atsuo Takanishi<br>Waseda University [Japan]   | 187 |
|  |   | WeBINT1.21  | Development of Mechanical Load Adjusting Device with Motion Measurement Interface for Robotic Assistive Rehabilitation System<br>Toru Tsumugiwa* , Yuki Watanabe , Ryuichi Yokogawa<br>Doshisha University [Japan]   | 102 |
|  |   | WeBINT1.22  | MIMICS: Multimodal Immersive Motion Rehabilitation of Upper and Lower Extremities by Exploiting Biocooperation Principles<br>Marko Munih* , Robert Riener , Gery Colombo , Volker Dietz , Lars Lunenburger , Friedemann Mueller , Mel Slater , Matjaž Mihelj<br>University of Ljubljana [Slovenia]   | 120 |
|  |   | WeBINT1.23  | Motor Task Planning for Neuromuscular Function Tests Using an Individual Muscle Control Technique<br>Jun Ueda* , Moiz Hyderabadwala<br>Georgia Institute of Technology [USA]   | 146 |
|  |   | WeBINT1.24  | An Automated Metrics Set for Mutual Adaptation between Human and Robotic Device<br>Dana Damian* , Alejandro Hernandez Arieta , Max Lungarella , Rolf Pfeifer<br>University of Zurich [Switzerland]   | 37  |
| WeBINT1.25                               |   | Stochastic Estimation of Human Arm Impedance under Nonlinear Friction in Robot Joints: A Model Study<br>Pyung Hun Chang , Sang Hoon Kang*<br>KAIST [Korea, South]                                     | 98   |     |
| WeBINT1.26                               |   | Visuo-Manual Tracking in a Robot-Generated Dynamic Environment<br>Valentina Squeri* , Lorenzo Masia , Elena Vergaro , Maura Casadio , Pietro Giovanni Morasso , Vittorio Università di Genova [Italy] | 126  |     |

|  |                                 |            |  |     |
|--|---------------------------------|------------|--|-----|
| Interactive Session, INT1<br>10:45–12:15 | Artificial Human Exoskeletons 1 | WeBINT1.27 | Design of a Single-Dof Active Hand Orthosis for Neurorehabilitation<br>Giulio Rosati*, Stefano Cenci , Giovanni Boschetti , Damiano Zanotto , Stefano Masiero<br>University of Padua [Italy]                                     | 111 |
|  |                                 | WeBINT1.28 | Design of a Flexible Fluidic Actuation System for a Hybrid Elbow Orthosis<br>Christian Pylatiuk* , Artem Kargov , Immanuel Gaiser , Tino Werner , Stefan Schulz , Georg Bretthauer<br>Forschungszentrum karlsruhe gmbh [Germany] | 124 |
|  |                                 | WeBINT1.29 | Orthopaedic Rehabilitation – a Powered Elbow Orthosis Using Compliant Actuation<br>Innes Vanderniepen* , Ronald Van Ham , Dirk Lefeber<br>Vrije Universiteit Brussel [Belgium]   | 198 |
|  |                                 | WeBINT1.30 | Mechanical Designs of Active Upper-Limb Exoskeleton Robots State-Of-The-Art and Design Difficulties<br>Ranathunga Arachchilage Ruwan Chandra Gopura , Kazuo Kiguchi*<br>Saga University [Japan]                                  | 20  |
|  |                                 | WeBINT1.31 | Development of a New Exoskeleton for Upper Limb Rehabilitation<br>Rocco Vertechy* , Antonio Frisoli , Andrea Dettori , Massimiliano Solazzi , Massimo Bergamasco<br>Scuola Superiore Sant' Anna [Italy]                          | 173 |
|  |                                 | WeBINT1.32 | Finger Exoskeleton for Treatment of Tendon Injuries<br>Hakan Ertas , Elif Hocaoglu , Duygun Erol Barkana , Volkan Patoglu*<br>Sabanci University [Turkey]  | 191 |
|  |                                 | WeBINT1.33 | Design of Redundant Drive Joint with Adjustable Stiffness and Damping to Improve Joint Admittance<br>Kiyoshi Nagai , Yosuke Ikegami* , Rui C. V. Loureiro , William Harwin<br>Ritsumeikan University [Japan]                     | 214 |
| Interactive Session, INT2<br>15:15–16:45 | Cybernetics                     | WeDINT2.1  | Standing-Up Motion Support for Paraplegic Patient with Robot Suit HAL<br>Atsushi Tsukahara* , Yasuhisa Hasegawa , Yoshiyuki Sankai<br>University of Tsukuba [Japan]  | 95  |
|  |                                 | WeDINT2.2  | Gait Rehabilitation for Stair Climbing with a Locomotion Interface<br>Hiroaki Yano* , Shintarou Tamefusa , Naoki Tanaka , Hideyuki Saitou , Hiroo Iwata<br>University of Tsukuba [Japan]   | 206 |
|  |                                 | WeDINT2.3  | Fingertip Stiffness Control Using Polyarticular Tendon Drive System<br>Masahiro Iwaki* , Yasuhisa Hasegawa , Yoshiyuki Sankai<br>University of Tsukuba [Japan]   | 205 |
|  |                                 | WeDINT2.4  | Analysis of Surface EMG Signal Based on Empirical Mode Decomposition<br>Min Lei*<br>Shanghai Jiao Tong University [China]  | 60  |
|  |                                 | WeDINT2.5  | Position Control of SMA Actuator for 3D Tactile Display<br>Teeranoot Chanthasopeephan*<br>King Mongkut's University of Technology Thonburi [Thailand]  | 110 |
|  |                                 | WeDINT2.6  | Multichannel Audio Aided Dynamical Perception for Prosthetic Hand Biofeedback<br>Jose Eduardo Gonzalez Vargas* , Wenwei Yu<br>Chiba University [Japan]   | 149 |
|  | Artificial Human Exoskeletons 2 | WeDINT2.7  | Design of a Joint-Coupled Orthosis for FES-Aided Gait<br>Ryan Farris* , Hugo Quintero , Thomas Withrow , Michael Goldfarb<br>Vanderbilt University [USA]   | 28  |
|  |                                 | WeDINT2.8  | Gait Trials of an Active AFO for Achilles Tendon Ruptures<br>Nobuyuki Yoshizawa*<br>Nippon Institute of Technology [Japan]   | 34  |

|  |   |  |  |     |
|--|---|--|--|-----|
| Interactive Session, INT2<br>15:15–16:45 |   | WeDINT2.9  | Design of a Reconfigurable Ankle Rehabilitation Robot and Its Use for the Estimation of Ankle Impedance<br>Aykut Cihan Satici , Ahmetcan Erdogan , Volkan Patoglu*<br>Sabanci University [Turkey]  | 156 |
|  |   | WeDINT2.10   | Gait and Neuromuscular Learning Effects through the Use of a Gait Monitoring System<br>Jody L. Riskowski*<br>University of Texas at El Paso [USA]  | 65  |
|  |   | WeDINT2.11   | Gait Planning for Effective Rehabilitation – from Gait Study to Application in Clinical Rehabilitation<br>K. H. Low*<br>Nanyang Technological University [Singapore]   | 57  |
|  |   | WeDINT2.12   | Safe and Compliant Guidance in Robot-Assisted Gait Rehabilitation Using Proxy-Based Sliding Mode Control<br>Pieter Beyl* , Micha Van Damme , Pierre Cherelle , Dirk Lefeber<br>Vrije Universiteit Brussel [Belgium]                                | 165 |
|  |   | WeDINT2.13   | Monitoring Method of Interactive Torque between Human and Robot in Exoskeleton Systems<br>Beomsoo Hwang , Hyosang Moon*<br>Sogang university [Korea, South]  | 210 |
|  | Neural-Machine<br>Interfaces<br>& Control | WeDINT2.14   | Estimation of Finger Joint Angles from Seng Using a Recurrent Neural Network with Time-Delayed Input<br>Masaaki Hioki* , Haruhisa Kawasaki<br>GifuUniversity [Japan]   | 43  |
|  |   | WeDINT2.15   | Human Forearm Motion Discrimination Based on Myoelectric Signal by Fuzzy Inference<br>Atsushi Kiso* , Hirokazu Seki<br>Chiba Institute of Technology [Japan]   | 72  |
|  |   | WeDINT2.16   | Comparison of Surface EMG Monitoring Electrodes for Long-Term Use in Rehabilitation Device Control<br>Christian Pylatiuk* , Meinolf M•ler-Riederer , Artem Kargov , Stefan Schulz , Georg Bretthauer<br>Forschungszentrum karlsruhe gmbh [Germany] | 87  |
|  |   | WeDINT2.17   | Thumb-Tip Force Estimation from Seng and a Musculoskeletal Model for Real-Time Finger Prosthesis<br>Wonil Park , Suncheol Kwon , Hae-Dong Lee , Jung Kim*<br>KAIST [Korea, South]  | 152 |
|  |   | WeDINT2.18   | A Study on Classification of Upper Limb Motions from Around-Shoulder Muscle Activities<br>Yuse Horiuchi* , Wenwei Yu<br>Chiba Univ [Japan]   | 209 |
|  |   | WeDINT2.19   | Fundamental Research about Electroencephalogram (EEG) – Functional Electrical Stimulation (FES)<br>Rehabilitation System<br>Mitsuru Takahashi* , Manabu Gouko , Koji Ito<br>Tokyo Institute of Technology [Japan]                                  | 84  |
|  |   | WeDINT2.20   | Evaluation of the Bremen SSVEP Based BCI in Real World Conditions<br>Ivan Volosyak* , Hubert Cecotti , Diana Valbuena , Axel Gräer<br>University of Bremen [Germany]   | 123 |
|  |   | WeDINT2.21   | Wearable Stimulator for SSVEP-Based Brain-Computer Interfaces<br>Thorsten L•th* , Axel Gräer<br>University of Bremen [Germany]   | 113 |
| WeDINT2.22                               |   | Motor Imagery in Robot-Assistive Rehabilitation: A Study with Healthy Subjects<br>Muhammad Nabeel Anwar* , Vittorio Sanguineti , Pietro Giovanni Morasso , Koji Ito<br>Tokyo Institute of Technology [Japan] | 119  |     |
| WeDINT2.23                               |   | Environment Discrimination with Vibration Feedback to the Foot, Arm, and Fingertip<br>Netta Gurari* , Kathryn Smith , Manu Madhav , Allison M. Okamura<br>Johns Hopkins University [USA]                     | 164  |     |

|  |                                 |            |  |     |
|--|---------------------------------|------------|--|-----|
| Interactive Session, INT2<br>15:15–16:45 | Therapeutic<br>Robotics2        | WeDINT2.24 | Novel Home-Based Rehabilitation Device to Prevent Secondary Diseases for Patients with Spinal Cord Injury<br>Noritaka Kawashima* , Rie Suzuki , Kimitaka Nakazawa , Yuji Ohta<br>Research Inst., National Rehabilitation Center for Persons with Disability [Japan]              | 118 |
|  |                                 | WeDINT2.25 | Real-Time Fuzzy Trajectory Generation for Robotic Rehabilitation Therapy<br>Peter Martin , M. Reza Emami*<br>University of Toronto [Canada]  | 136 |
|  |                                 | WeDINT2.26 | Discussion of Sling Control Simulation in Feedback Type Gait Training System<br>Hidetaka Ikeuchi* , Shingo Takiyama , Yukio Saito<br>Oita University [Japan]   | 93  |
|  |                                 | WeDINT2.27 | Adaptive Control of an Endeffector Based Electromechanical Gait Rehabilitation Device<br>Sami Hussein* , Henning Schmidt , Jörg Krüger<br>TU Berlin [Germany]  | 195 |
|  |                                 | WeDINT2.28 | Interaction Control of a Programmable Footpad-Type Gait Rehabilitation Robot for Active Walking on Various<br>Bondhan Novandy* , Jungwon Yoon<br>Gyeongsang National University [Korea, South]   | 122 |
|  |                                 | WeDINT2.29 | Effects of a Robot-Mediated Locomotor Training on EMG Activation in Healthy and SCI Subjects<br>Stefano Mazzoleni* , Giulia Stampacchia , Emanuele Cattin , Eleonora Bradaschia , Martina Tolaini , Bruno Rossi<br>, Maria Chiara Carrozza<br>Scuola Superiore Sant'Anna [Italy] | 79  |
|  |                                 | WeDINT2.30 | A New Robotic Platform for Gait Rehabilitation of Bedridden Stroke Patients<br>Vito Monaco* , Giuseppe Galardi , Je Hyung Jung , Sergio Bagnato , Cristina Boccagni , Silvestro Micera<br>ARTS Lab, Scuola Superiore Sant'Anna [Italy]   | 115 |
|  |                                 | WeDINT2.31 | Influence on Walking Dynamics of a Gait Training Device That Is Connected through a Lumbar Belt<br>Jan Veneman* , Dejan Popovic , Thierry Keller<br>Fatronik-Tecnalia [Spain]  | 108 |
|  |                                 | WeDINT2.32 | MotionTherapy@Home • a Robotic Device for Automated Locomotion Therapy at Home<br>Ruediger Rupp* , Harry Plewa , Eberhard Hofer , Markus Knestel<br>Orthopedic University Hospital [Germany]   | 176 |
|  |                                 | WeDINT2.33 | Increases in Overground Gait Speed with Body Weight Support in People Post-Stroke<br>Jamie Burgess* , Gwendolyn Weibel, David Brown<br>Northwestern University [USA]   | 137 |
| Interactive Session, INT3<br>10:45–12:15 | Bio-<br>cooperative<br>Robotics | ThBINT3.1  | Bio-Cooperative Robotics: Controlling Mechanical, Physiological and Mental Patient States<br>Robert Riener* , Alexander Christian Koenig , Bolliger Marc , Martin Wieser , Alexander Duschau-Wicke , Heike<br>ETH Zurich [Switzerland]   | 36  |
|  |                                 | ThBINT3.2  | Adaptive Body Weight Support Controls Human Activity During Robot-Aided Gait Training<br>Alexander Duschau-Wicke* , Simon Felsenstein , Robert Riener<br>ETH Zurich [Switzerland]  | 32  |
|  |                                 | ThBINT3.3  | Voluntary Gait Speed Adaptation for Robot-Assisted Treadmill Training<br>Alexander Christian Koenig* , Carmen Binder , Joachim v. Zitzewitz , Ximena Omlin , Bolliger Marc , Robert<br>ETH Zurich [Switzerland]  | 68  |
|  |                                 | ThBINT3.4  | Biocooperation in Rehabilitation Robotics of Upper Extremities<br>Marko Munih* , Domen Novak , Tadej Bajd , Matjaž Mihelj<br>University of Ljubljana [Slovenia]  | 52  |

|   |                         |            |  |  |    |
|---|-------------------------|------------|--|--|----|
| Interactive Session, INT3<br>10:45–12:15                |                         | ThBINT3.5  | Haptic Training of Lower Extremities Enhanced by Visual Modality<br>Tomaz Koritnik* , Alexander Christian Koenig , Tadej Bajd , Robert Riener , Marko Munih<br>University of Ljubljana [Slovenia]                                  | 35   |    |
|   |                         | ThBINT3.6  | A Universal Haptic Device for Arm and Wrist Rehabilitation<br>Jakob Oblak* , Imre Cikajlo , Zlatko Matjačić<br>Institute for rehabilitation [Slovenia]   | 50   |    |
| Mental and<br>Physical<br>Rehabilitation<br>Engineering |                         | ThBINT3.7  | Methodological Consideration for the Recruitment of Upper Limb Muscles During Two Joint Arm Movements<br>Tasuku Miyoshi* , Yoshiyuki Takahashi , Lee Hokyoo , Masaki Yamaguchi , Takashi Komeda<br>Iwate University [Japan]        | 21   |    |
|   |                         | ThBINT3.8  | Mental Health Evaluation Using Chemical Sensor As Human–Machine Interface<br>Yusuke Tahara* , Takayuki Takahashi , Kazunori Takeda , Tasuku Miyoshi , Masaki Yamaguchi<br>Iwate University [Japan]                                 | 66   |    |
|   |                         | ThBINT3.9  | A Study on Power–Assisted Rehabilitation Robot Arms Operated by Patient with Upper Limb Disabilities<br>Atushi Umemura* , Yukio Saito<br>Tokyo Denki University [Japan]  | 160  |    |
|   |                         | ThBINT3.10 | Development of Oral Rehabilitation Robot WAO–1R Designed to Provide Various Massage Techniques<br>Jorge Solis* , Yuichi Obokawa , Hiroyuki Ishii , Hiroki Koga , Atsuo Takanishi , Akitoshi Katsumata<br>Waseda University [Japan] | 103  |    |
|   |                         | ThBINT3.11 | Integration of Error Augmentation Training Method to an Assistive Controller for Rehabilitation Robotic<br>Furui Wang* , Duygun Erol Barkana , Nilanjan Sarkar<br>Vanderbilt University [USA]                                      | 76   |    |
|   |                         | ThBINT3.12 | Patient–Tracking for an Over–Ground Gait Training System<br>Tobias Nef* , David Brennan , Iain Black , Joe Hidler<br>The Catholic University of America [USA]  | 138  |    |
|   |                         | ThBINT3.13 | Negative Viscosity Can Enhance Learning of Inertial Dynamics.<br>Felix Huang* , James Patton , Ferdinando Mussa–Ivaldi<br>Rehabilitation Institute of Chicago [USA]  | 139  |    |
|   |                         | ThBINT3.14 | Development of an Isokinetic FES Leg Stepping Trainer (iFES–LST) for Individuals with Neurological Disability<br>Nur Azah Hamazaid* , Che Fornusek , Andrew Ruys , Glen Davis<br>The University of Sydney [Australia]              | 96   |    |
|   | Assistive<br>Robotics I |            | ThBINT3.15   | Estimation of Intention of User Arm Motion for the Proactive Motion of Upper Extremity Supporting Robot<br>Taisuke Sakaki* [Japan]<br>Kyushu Sangyo University | 40 |
|   |                         |            | ThBINT3.16   | Development of a Human Symbiotic Assist Arm PAS–Arm<br>Mineo Higuchi* , Tsukasa Ogasawara<br>Mitsubishi Electric Corporation [Japan]                           | 58 |
|   |                         | ThBINT3.17 | Tremor Suppression Control of Meal–Assist Robot with Adaptive Filter<br>Eiichi Ohara , Ken’ichi Yano* , Satoshi Horihata , Takaaki Aoki , Yutaka Nishimoto<br>Gifu University [Japan]  | 97   |    |
|   |                         | ThBINT3.18 | An Empirical Study with Simulated ADL Tasks Using a Vision–Guided Assistive Robot Arm<br>Dae–Jin Kim* , Ryan Lovelett , Aman Behal<br>University of Central Florida [USA]  | 143  |    |
|   |                         | ThBINT3.19 | A List of Household Objects for Robotic Retrieval Prioritized by People with ALS<br>Young Sang Choi* , Travis Deyle , Tiffany Chen , Jonathan Glass , Charlie Kemp<br>Georgia Institute of Technology [USA]                        | 199  |    |

|  |   |   |  |     |
|--|---|---|--|-----|
| Interactive Session, INT3<br>10:45–12:15 |   | ThBINT3.20  | Design, Simulation and Testing of a New Modular Wheelchair Mounted Robotic Arm to Perform Activities of Peter Schrock , Fabian Farelo , Redwan Alqasemi* , Rajiv Dubey<br>University of South Florida [USA]  | 217 |
|  |   | ThBINT3.21  | A Universal Mobile Robot for Assistive Tasks<br>Motoki Takagi* , Yoshiyuki Takahashi , Takashi Komeda<br>Shibaura Institute of Technology [Japan]  | 56  |
|  |   | ThBINT3.22  | Robotic Assistance with Attitude: A Mobility Agent for Motor Function Rehabilitation and Ambulation Support<br>Jaime Valls Miro* , Vivien Osswald , Mitesh Patel , Gamini Dissanayake<br>University of Technology Sydney [Australia]   | 147 |
|  |   | ThBINT3.23  | Generalized Elasticities Improve Patient–Cooperative Control of Rehabilitation Robots<br>Heike Vallery* , Alexander Duschau–Wicke , Robert Riener<br>ETH Zurich [Switzerland]  | 64  |
|  | Therapeutic<br>Robotics3                  | ThBINT3.24  | MIT–Skywalker<br>Caitlyn Joyce Bosecker , Hermano Igo Krebs*<br>MIT [USA]  | 69  |
|  |   | ThBINT3.25  | Design of a New Lower Extremity Orthosis for Overground Gait Training with the WalkTrainer<br>Yves Allemand* , Yves Stauffer , Reymond Clavel , Roland Brodard<br>Fondation Suisse pour les Cyberthèses (FSC) [Switzerland]  | 75  |
|  |   | ThBINT3.26  | Control System for Lower Limb Function Training Device by Using Internal Model Control<br>Ryoichi Suzuki* , Nobuaki Kobayashi , Eberhard Hofer<br>Kanazawa Institute of Technology [Japan]   | 128 |
|  |   | ThBINT3.27  | Design and Control of Two Planar Cable–Driven Robots for Upper–Limb Neurorehabilitation<br>Giulio Rosati* , Damiano Zanotto , Riccardo Secoli , Aldo Rossi<br>University of Padua [Italy]  | 114 |
|  |   | ThBINT3.28  | Development of Evaluation System of the Motor Function for Upper Limbs Using 3–D Rehabilitation Robot EMUL” and Near–Infrared Spectroscopy “NIRS”<br>Makoto Haraguchi* , Takehito Kikuchi , Masahito Mihara , Megumi Hatakenaka , Ichiro Miyai , Junji Furusho<br>Osaka University [Japan]   | 153 |
|  |   | ThBINT3.29  | Modular Robotics for Playful Physiotherapy<br>Henrik Hautop Lund*<br>Technical University of Denmark [Denmark]   | 150 |
|  | Evaluation<br>and Clinical<br>Experience2 | ThBINT3.30  | Arm Training in Multiple Sclerosis Using Phantom: Clinical Relevance of Robotic Outcome Measures<br>Peter Feys* , Geert Alders , Domien Gijbels , Karin Coninx , Chris Raymaekers , Joan De Boeck , Tom Deweyer , Veronik Truyens , Patric Groenen , Hans Savelberg , Kenneth Meijer , Bert Eijnde O<br>University College (PHL) and University of Hasselt [Belgium] | 47  |
|  |   | ThBINT3.31  | A User–Centered Evaluation Study of a Mobile Arm Support<br>Katarina Lund , Richard Brandt , Gert Jan Gelderblom , Just Herder*<br>Delft University of Technology [Netherlands]  | 186 |
|  |   | ThBINT3.32  | Tracking and Analysis of Human Head Motion During Guided Fmri Motor Tasks<br>Ningbo Yu* , Robert Riener<br>ETH Zurich [Switzerland]  | 38  |
|  |   | ThBINT3.33  | Intuitiveness Facilitates Rehabilitation: Clinical Results<br>Ludovic Saint–Bauzel* , Viviane Pasqui , Isabelle Monteil<br>Université Pierre et Marie Curie–Paris6 [France]  | 121 |
| ThBINT3.34                               |   | Selective and Adaptive Robotic Support of Foot Clearance for Training Stroke Survivors with Stiff Knee Gait<br>Edwin van Asseldonk* , bram koopman , Jaap Buurke , Corien Simons , Herman Van der Kooij<br>University of Twente [Netherlands] | 158  |     |

|  |                                |            |  |     |
|--|--------------------------------|------------|--|-----|
| Interactive Session, INT4<br>16:00–17:30 | Robotics for<br>Caregiving     | ThDINT4.1  | Development of Multi-Functional Robotic Test-Bed for Post-Surgical Healthcare Room<br>Feng-Li Lian*<br>National Taiwan University [Taiwan]   | 16  |
|  |                                | ThDINT4.2  | Unrestraint Support Robot for Elderly Gait Rehabilitation<br>Makoto Nokata* , Wataru Hirai<br>Ritsumeikan University [Japan]   | 105 |
|  |                                | ThDINT4.3  | A Proposal of a Method to Reduce Burden of Excretion Care Using Robot Technology<br>Keiko Homma* , Yoji Yamada , Osamu Matsumoto , Eiichi Ono , Suwoong Lee , Mikio Horimoto , Takahiro Suzuki ,<br>Noriyuki Kanehira , Toshiaki Suzuki , Shinichiro Shiozawa<br>National Institute of Advanced Industrial Science and Technology (AIST) [Japan] | 144 |
|  |                                | ThDINT4.4  | Self-Aided Manipulator System for Bed-Ridden Patients – Evaluation of Psychological Influence for the<br>Generated Approach Motion –<br>Akihiko Hanafusa* , Johta Sasaki , Teruhiko Fuwa , Tomozumi Ikeda<br>Shibaura Institute of Technology [Japan]  | 159 |
|  |                                | ThDINT4.5  | A First Step towards a Pervasive and Smart ZigBee Sensor System for Assistance and Rehabilitation<br>Filippo Cavallo* , Michela Aquilano , Luca Odetti , Maria Chiara Carrozza<br>Scuola Superiore Sant'Anna – Pisa [Italy]  | 215 |
|  | Mechatronics<br>in Prosthetics | ThDINT4.6  | Self-Contained Powered Knee and Ankle Prosthesis: Initial Evaluation on a Transfemoral Amputee<br>Frank Sup* , Huseyin Atakan Varol , Jason Mitchell , Thomas Withrow , Michael Goldfarb<br>Vanderbilt University [USA]  | 24  |
|  |                                | ThDINT4.7  | Powered Sit-To-Stand and Assistive Stand-To-Sit Framework for a Powered Transfemoral Prosthesis<br>Huseyin Atakan Varol* , Frank Sup , Michael Goldfarb<br>Vanderbilt University [USA]   | 80  |
|  |                                | ThDINT4.8  | Successful Walking with a Biologically-Inspired Below-Knee Prosthesis<br>Rino Versluys* , Ronald Van Ham , Innes Vanderniepen , Dirk Lefeber<br>Vrije Universiteit Brussel [Belgium]   | 133 |
|  |                                | ThDINT4.9  | Powered Ankle-Foot System That Mimics Intact Human Ankle Behavior: Proposal of a New Concept<br>Rino Versluys* , Arnout Matthys , Ronald Van Ham , Innes Vanderniepen , Dirk Lefeber<br>Vrije Universiteit Brussel [Belgium]   | 134 |
|  |                                | ThDINT4.10 | Precise Position and Trajectory Control of Pneumatic Soft-Actuators for Assistance Robots and Motion<br>Therapy Devices<br>Mathias Jordan , Dennis Pietrusky , Miroslav Mihajlov , Oleg Ivlev*<br>FWBI Research Company & University of Bremen [Germany]   | 92  |
|  |                                | ThDINT4.11 | Feasibility Study of a New Powered Humeral Rotator for Upper Limb Myoelectric Prostheses<br>Raffaele Caminati , Marco Troncossi* , Angelo Davalli , Vincenzo Parenti Castelli<br>University of Bologna [Italy]   | 170 |
|  |                                | ThDINT4.12 | Design of a Multifunctional Anthropomorphic Prosthetic Hand with Extrinsic Actuation<br>Skyler Dalley* , Tuomas Wiste , Thomas Withrow , Michael Goldfarb<br>Vanderbilt University [USA]   | 181 |
|  |                                | ThDINT4.13 | Progress Towards the Development of the SmartHand Transradial Prosthesis<br>Christian Cipriani* , Marco Controzzi , Maria Chiara Carrozza<br>Scuola Superiore Sant'Anna [Italy]  | 33  |
|  |                                |            |  |     |



|  |                                     |            |   |     |
|--|-------------------------------------|------------|---|-----|
| Interactive Session, INT4<br>16:00–17:30 | Robotics for Human–Motion Analysis2 | ThDINT4.15 | Tracking Target Motion under Combined Visual and Kinesthetic Disturbance<br>Lorenzo Masia*, Valentina Squeri , Maura Casadio , Pietro Giovanni Morasso , Vittorio Sanguineti , Giulio Italian Institute of Technology [Italy]                                   | 125 |
|  |                                     | ThDINT4.16 | The Development of an Assistive Robot for Improving the Joint Attention of Autistic Children<br>Ravindra Senarathna De Silva* , Katsunori Tadano , Azusa Saito , Stephen G. Lambacher , Masatake Higashi<br>Toyota Technological Institute [Japan]              | 77  |
|  |                                     | ThDINT4.17 | Dynamical Role Division between Two Subjects in a Crank–Rotation Task<br>Ryohei Ueha* , Hang Pham , Hiroaki Hirai , Fumio Miyazaki<br>Osaka University [Japan]  | 78  |
|  |                                     | ThDINT4.18 | An Artificial Reflex Improves the Perturbation–Resistance of Normal and Spastic Walking – a Simulation Study<br>Yu Ikemoto* , Wenwei Yu , Jun Inoue<br>Chiba University [Japan]   | 112 |
|  |                                     | ThDINT4.19 | Adaptation to Knee Flexion Torque During Gait<br>James Sulzer* , Keith Edward Gordon , T. George Hornby , Michael Peshkin , James Patton<br>Northwestern University/Rehabilitation Institute of Chicago [USA]   | 174 |
|  |                                     | ThDINT4.20 | Torque Estimation System for Human Leg in Passive Motion Using Parallel–Wire Driven Mechanism and Iterative Learning Control<br>Hitoshi Kino* , Kenichi Saisyo , Yasuhiko Hatanaka , Sadao Kawamura<br>Fukuoka Institute of Technology [Japan]                  | 55  |
|  | Assistive Robotics2                 | ThDINT4.21 | Fuzzy Logic Based Regenerative Braking Control System of Electric Wheelchair for Senior Citizen<br>Yoshiaki Takahashi* , Hirokazu Seki<br>Chiba Institute of Technology [Japan]   | 70  |
|  |                                     | ThDINT4.22 | Adaptive Collaborative Assistance for Wheelchair Driving Via CBR Learning<br>Cristina Urdiales* , Jose Manuel Peula Palacios , Manuel Fernandez–Carmona , Roberta Annicchiarico , Francisco Sandoval , Carlo Caltagirone<br>Universidad de Málaga [Spain]       | 86  |
|  |                                     | ThDINT4.23 | Efficiency Based Collaborative Control Modulated by Biometrics for Wheelchair Assisted Navigation<br>Manuel Fernandez–Carmona* , Blanca Fernández–Espejo , Jose Manuel Peula Palacios , Cristina Urdiales , Francisco Sandoval<br>Universidad de Málaga [Spain] | 88  |
|  |                                     | ThDINT4.24 | Controlling an Automated Wheelchair Via Joystick/Head–Joystick Supported by Smart Driving Assistance<br>Thomas Röfer* , Christian Mandel , Tim Laue<br>Deutsches Forschungszentrum für Künstliche Intelligenz [Germany]   | 168 |
|  |                                     | ThDINT4.25 | Detection Mechanism of Manipulation Torque for One Hand Drive Wheelchair with a Triple Ring<br>Kazuaki Sakai* , Toshihiko Yasuda , Katsuyuki Tanaka<br>Northeastern Industrial Research Center [Japan]  | 212 |
|  | Therapeutic Robotics4               | ThDINT4.26 | Reach & Grasp Therapy: Effects of the Gentle/G System Assessing Sub–Acute Stroke Whole–Arm Rehabilitation<br>Rui C. V. Loureiro* , Bob Lamperd , Christine Collin , William Harwin<br>The University of Reading [United Kingdom]                                | 161 |
|  |                                     | ThDINT4.27 | Developing a whole–arm exoskeleton robot with Hand Opening and Closing Mechanism for Upper Limb Stroke Rehabilitation<br>Yupeng Ren , Hyung–Soon Park , Li–Qun Zhang*<br>Rehabilitation Institute of Chicago/Northwestern University [USA]                      | 204 |

|  |   |   |  |  |
|--|---|---|--|--|
| Interactive Session, INT4<br>16:00–17:30 |   | ThDINT4.28                                | Enhancing Exploratory Learning Behaviour in People with Stroke Undertaking Ipam Robot Assisted Upper Limb<br>Peter Robert Culmer* , Andrew Edward Jackson , Sophie Makower , Robert Richardson , Alastair Cozens ,<br>Martin Levesley , Bipin Bhakta<br>University of Leeds [United Kingdom] | 106  |
|  |   | ThDINT4.29                                | Assessment and Training of Synergies with an Arm Rehabilitation Robot<br>Marco Guidali* , Mark Schmiedeskamp , Verena Klamroth , Robert Riener<br>ETH Zurich [Switzerland]   | 155  |
|  |   | ThDINT4.30                                | Interactive Rehabilitation Robot for Hand Function Training<br>Mo Chen , S.K. Ho , H.F. Zhou , P.M.K. Pang , Xiaoling Hu , David T.W. Chan , Kai Yu Tong*<br>The Hong Kong Polytechnic University [China]  | 101  |
|  |   | ThDINT4.31                                | Hybrid-“PLEMO”, Rehabilitation System for Upper Limbs with Active / Passive Force Feedback, and Its<br>Application for Facilitation Techniques ”<br>Takehito Kikuchi* , Takuya Ozawa , Hiroki Akai , Junji Furusho<br>Osaka University [Japan]   | 67   |
|  |   | ThDINT4.32                                | Development of Rehabilitation Support Robot for Personalized Rehabilitaion of Upper Limbs<br>Yuichi Furuhashi* , Yoshifumi Morita<br>Nagoya Institute of Technology [Japan]  | 145  |
|  |   |   |  |  |
| Interactive Session, INT5<br>11:00–12:30 | Robotics for<br>Human-Motion<br>Analysis3 | FrBINT5.1                                 | Impact of Visual Error Augmentation Methods on Task Performance and Motor Adaptation<br>Ozkan Celik* , Dane Powell , Marcia O'Malley<br>Rice University [USA]  | 17   |
|  |   | FrBINT5.2                                 | Validation of a Smooth Movement Model for a Human Reaching Task<br>Joel C. Huegel* , Andrew Lynch , Marcia O'Malley<br>Rice University [USA]   | 15   |
|  |   | FrBINT5.3                                 | Shoulder, Elbow and Wrist Stiffness in Passive Movement and Their Independent Control in Voluntary<br>Movement Post Stroke<br>Li-Qun Zhang* , Hyung-Soon Park , Yupeng Ren<br>Rehabilitation Institute of Chicago/Northwestern University [USA]  | 189  |
|  |   | FrBINT5.4                                 | Characterization of Multi-Finger Twist Motion Toward Robotic Rehabilitation<br>Reinhold Scherer* , Sujata Pradhan , Daniel Kim , Brian Dellon , Roberta Klatzky , Yoky Matsuoka<br>University of Washington [USA]  | 216  |
|  |   | FrBINT5.5                                 | An Approach to Sensor Fusion in Medical Robots<br>John Avor* , Thompson Sarkodie-Gyan<br>University of Texas at El Paso [USA]  | 188  |
|  |   | FrBINT5.6                                 | Gait Variability While Walking with Three Different Speeds<br>Huiying Yu* , Jody L. Riskowski , Thompson Sarkodie-Gyan<br>University of Texas at El Paso [USA]   | 196  |
|  |   | FrBINT5.7                                 | Optimization of Diagnosis and Therapy in Human Gait<br>Thompson Sarkodie-Gyan*<br>University of Texas at El Paso [USA]   | 190  |
|  |   | Evaluation<br>and Clinical<br>Experience3 | FrBINT5.8  | Rehabilitation Robotics in Robotics for Healthcare; a Roadmap Study for the European Commission<br>Gert Jan Gelderblom* , Monique de Wilt , Ger Cremers , Arjan Rensma<br>Vilans [Netherlands] |

|  |            |  |     |
|--|------------|--|-----|
| Interactive Session, INT5<br>11:00–12:30                             | FrBINT5.9  | Walking Speed and Slope Estimation Using Shank–Mounted Inertial Measurement Units<br>Qingguo li* , Mei Young , Veronica Naing , Max Donelan<br>Queen’s University [Canada]   | 63  |
|  | FrBINT5.10 | Effect of Different Training Modes on Ground Reaction Forces During Robot Assisted Floor Walking and Stair<br>Sami Hussein* , Henning Schmidt , Stefan Hesse , Jörg Krüger<br>TU Berlin [Germany]  | 194 |
|  | FrBINT5.11 | Walking Analysis of a Dual–Track Treadmill Using a Foot–Platform Locomotion Interface<br>Jungwon Yoon* , Jaha Ryu<br>Gyeongsang National University [Korea, South]   | 213 |
|  | FrBINT5.12 | Intelligently Controllable Ankle Foot Orthosis (I–AFO) and Its Application for a Patient of Guillain–Barre<br>Sosuke Tanida* , Takehito Kikuchi , Taigo Kakehashi , Kikuko Otsuki , Takuya Ozawa , Takamitsu Fujikawa ,<br>Takashi Yasuda , Junji Furusho , Shoji Morimoto , Yasunori Hashimoto<br>Osaka University [Japan]  | 71  |
|  | FrBINT5.13 | Clinical Evaluation of a Low–Cost Alternative for Stroke Rehabilitation<br>Luis Enrique Sucar* , Ronald Leder<br>Instituto Nacional de Astrafisica, Optica y Electraonica [Mexico]   | 141 |
|  | FrBINT5.14 | An Explorative Study into Changes in Reach Performance after Gravity Compensation Training in Chronic<br>Stroke Patients<br>G.B. (Gerdienke) Prange* , Thijs Krabben , G.J. Renzenbrink , Jacintha de Boer , Hermie J Hermens , Michiel<br>J.A. Jannink<br>Roessingh Research & Development [Netherlands]                    | 129 |
|  | FrBINT5.15 | Initial Clinical Tests for Assessment Models of Synergy Movements of Stroke Patients Using PLEMO System<br>with Sensor Grip Device<br>Takuya Ozawa* , Takehito Kikuchi , Kazuki Fukushima , Fukuda Takahiro , Sosuke Tanida , Takamitsu Fujikawa ,<br>Shigeaki Kano , Hirokiakai , Junji Furusho<br>Osaka University [Japan] | 74  |
|  | FrBINT5.16 | Developing a User Interface for the iPAM Stroke Rehabilitation System<br>Stephanie Kemna* , Peter Robert Culmer , Andrew Edward Jackson , Sophie Makower , Justin Francis<br>Gallagher , Ray Holt , Fokie Cnossen , Alastair Cozens , Martin Levesley , Bipin Bhakta<br>University of Groningen [Netherlands]                | 163 |
|  | FrBINT5.17 | Relation between Ability to Track Force During Dual Tasking and Function in Individuals with Parkinson’s<br>Sujata Pradhan* , Bambi Brewer , George Carvell , Patrick Sparto , Anthony Delitto , Yoky Matsuoka<br>University of Washington [USA]   | 140 |
|  | FrBINT5.18 | Audio Image Rendering for the Severely Visually Impaired<br>Sepideh Hajipour , Niloufar Babapour Khosravi , Edmond Zahedi*<br>Sharif University of Technology [Iran]   | 29  |
| the Use of<br>Robots in<br>Play for<br>Children with<br>Disabilities | FrBINT5.19 | Modular Playware as a Playful Diagnosis Tool for Autistic Children<br>Henrik Hautop Lund*<br>Technical University of Denmark [Denmark]   | 51  |
|  | FrBINT5.20 | Supporting Narrative Understanding of Children with Autism: A Story Interface with Autonomous Autobiographic<br>Agents<br>Wan Ching Ho* , Megan Davis , Kerstin Dautenhahn<br>University of Hertfordshire [United Kingdom]   | 82  |
|  | FrBINT5.21 | A Unified, Neuro–Physio Platform to Facilitate Collaborative Play in Children with Learning Disabilities<br>Subhasis Banerji , Kok Hui, John Heng*<br>Nanyang Technological University [Singapore]   | 127 |

|  |                                     |   |  |     |
|--|-------------------------------------|---|--|-----|
| Interactive Session, INT5<br>11:00–12:30 |                                     | FrBINT5.22  | A Robotic Toy for Children with Special Needs: From Requirements to Design<br>Patrizia Marti , Leonardo Giusti , Claudio Moderini , Alessandro Pollini*<br>University of Siena [Italy]   | 175 |
|  | Companion<br>Robots in<br>Eldercare | FrBINT5.23  | The Use of Socially Assistive Robots in the Design of Cognitive Therapies for People with Dementia<br>Adriana Tapus* , Cristian Tapus , Maja Mataric<br>University of Southern California [USA]  | 172 |
|  |                                     | FrBINT5.24  | Long-Term Robot Therapy in a Health Service Facility for the Aged – a Case Study for 5 Years –<br>Kazuyoshi Wada* , Takanori Shibata , Yukitaka Kawaguchi<br>Tokyo Metropolitan University [Japan]   | 180 |
|  |                                     | FrBINT5.25  | Investigation of Differences on Impressions of and Behaviors Toward Real and Virtual Robots between Elder<br>People and University Students<br>Tatsuya Nomura* , Miyuki Sasa<br>Ryukoku University [Japan]   | 26  |
|  | Therapeutic<br>Robotics5            | FrBINT5.26  | Safe Robot Therapy: Adaptation and Usability Test of a Three-Position Enabling Device for Use in Robot<br>Mediated Physical Therapy of Stroke<br>Andras Toth* , David Nyitrai , Mihaly Jurak , Istvan Merksz , Gabor Fazekas , Zoltán Dénes<br>Budapest University of Technology and Economics [Hungary] | 203 |
|  |                                     | FrBINT5.27  | Setting of Training Load Using Theory of Functional Effective Muscle<br>Yosuke Murakami* , Satoshi Komada , Junji Hirai<br>Mie University [Japan]  | 46  |
|  |                                     | FrBINT5.28  | A Performance Evaluation Method of a Passive Type Force Display and Rehabilitation System with Redundant<br>Junji Furusho , Ying Jin* , Kunihiko Oda , Makoto Haraguchi , Takehito Kikuchi , Hiroki Akai<br>Osaka University [Japan]   | 171 |
|  |                                     | FrBINT5.29  | Remote Rehabilitation – the NeXOS Project: Lessons Learnt and Questions Raised<br>David Bradley* , Camilo Acosta-Marquez , Mark Hawley , Simon Brownsell , Pam Enderby , Sue Mawson<br>University of Abertay Dundee [United Kingdom]   | 12  |
|  |                                     | FrBINT5.30  | A Virtual Environment-Based Paradigm for Improving Attention in TBI<br>Assaf Dvorkin* , Felise Zollman , Kathleen Beck , Eric Larson , James Patton<br>Rehabilitation Institute of Chicago [USA]   | 18  |
|  |                                     | FrBINT5.31  | Virtual Reality Tasks to Enhance the Therapeutic Options of the Single Joint Rehabilitation Robot<br>Imre Cikajlo* , Zlatko Matjačić<br>Institute for Rehabilitation [Slovenia]  | 49  |
| FrBINT5.32                               |                                     | Virtually Offloading Body Mass for Rehabilitation: A Simulation Study<br>Qi Lu , Ou Ma , Bing Qiao*<br>Nanjing University of Aeronautics and Astronautics [China] | 183  |     |