

# Wednesday 17 Oct

8:30 - 8:50 Welcome speech

8:30 - 8:50

8:50 - 9:40

ICNR-WeRob Plenary #2- Prof. Michael Goldfarb: Low-Power Approaches to Wearable Robotics for Minimizing Physical Disability

ICNR Sessions

WeRob Sessions

INBOTS Sessions

9:40 - 11:10

T1- SS1. Bayesian models for motor rehabilitation and control

T2 - SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications

T3 - SS13. Neural Signal Analysis: Novel Approaches to Understanding Brain Diseases

WeR5. Benchmarking wearable robots

INBOTS6 Promote societal and socio-economic uptake of robotics

11:10- 11:30

Coffee break - Project demo: AIDE

11:30- 13:00

T4 - SS22. Pattern Recognition Techniques for assessment, training and rehabilitation

T2 - SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications

T3 - SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation

WeR12. Exoskeleton Research in Europe

INBOTS6 Promote societal and socio-economic uptake of robotics

13:00- 14:10

Lunch

14:10- 15:00

ICNR-WeRob Plenary #3 - Prof. Marcia K O'Malley: Enhancing Human Performance with Wearable Haptics

15:00- 16:30

T3 - SS13. Neural Signal Analysis: Novel Approaches to Understanding Brain Diseases

T2 - SS6. Increasing the exercise intensity during gait trainin

WeR9. Human modeling and simulation for neurorehabilitation engineering

WeR12. Exoskeleton Research in Europe

15:18.30 - INBOTS4 Standardization - Challenges and needs of

16.30-  
18:00

Coffee break and poster session - Project demo: XoSoft

Interactive  
Robots in the  
industry,  
healthcare and  
service domain

18:00-  
22:00

Social Events (City Tour)

### ICNR - T1 - SS1. Bayesian models for motor rehabilitation and control

Authors	Title
Camilla Pierella, Christian Giang, Elvira Pirondini, Nawal Kinany, Martina Coscia, Jenifer Miehlabradt, Cecile Magnin, Pierre Nicolo, Adrian Guggisberg and Silvestro Micera	Personalizing exoskeleton-based upper limb rehabilitation using a statistical model: a pilot study
Sohail Siadatnejad, Francesco Negro and Luca Citi	Hybrid Gaussian Point-Process Model for Finer Control of Myoelectric Robotic Hands
Johannes Zajc, Markus Puchinger, Michael Russold and Margit Gfoehler	Comparison of three control strategies for an upper arm rehabilitation device
Matteo Bianchi	Human hand sensing and motor control: from postural synergies to dynamic integration of touch and proprioception

### ICNR - T2 - SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications

Authors	Title
Giacomo Severini	A Perspective on the Use of Error Augmentation in Robot-Assisted Gait Training of Stroke Survivors
Simone Benatti, Fabio Montagna, Victor Javier Kartsch Morinigo, Abbas Rahimi and Luca Benini	Towards Versatile Fast Training for Wearable Interfaces in Prosthetics
Massimo Sartori, Guillaume Durandau, Herman van der Kooij and Dario Farina	Multi-scale modelling of the human neuromuscular system for symbiotic human-machine motor interaction
Ivan Vujaklija	Novel Control Strategies for Upper Limb Prosthetics
Krithika Swaminathan, Sangjun Lee, Richard Nuckols, Dheepak Revi, Puneet Singh, Rob Howe, Maurice Smith and Conor Walsh	Biomechanics Underlying Subject-Dependent Variability in Motor Adaptation to Soft Exosuit Assistance
Demy Kremers, Justin Fong, Vincent Crocher, Ying Tan and Denny Oetomo	Sensorless Force Estimator in Rehabilitation Robotics
Conor Walsh	Recent Results from Evaluation of Soft Wearable Robots in Clinical Populations
Michele Barsotti, Fabio Stroppa, Nicola Mastronicola, Simone Marcheschi and Antonio Frisoli	Teleoperated bilateral-arm rehabilitation with ALEX Rehab Station
Stefano Mazzoleni, Rossella Crecchi and Federico Posteraro	Timing of motor recovery in subacute and chronic stroke patients during upper limb robot-assisted rehabilitation
Jaeyoung Kim, Minsu Chang and Doyoung Jeon	The AI supervisor for the effective treadmill training system of rehabilitation and exercise
Nicola Lotti, Davide Piscopiello and Vittorio Sanguineti	An user model for adaptation of task parameters in robot-assisted exercise
Mine Sarac, Daniele Leonardis, Massimiliano Gabardi, Massimiliano Solazzi and Antonio Frisoli	Bilateral Rehabilitation of Hand Grasping with an Underactuated Hand Exoskeleton

**ICNR - T2 - SS6. Increasing the exercise intensity during gait training**

<b>Authors</b>	<b>Title</b>
Eric Kerckhofs	Theoretical models in rehabilitation psychology to increase the active participation of the patient
Nina Lefeber	What is the exercise intensity? Energy Consumption and Cardiorespiratory Load during (robot-assisted) gait
Emma De Keersmaecker and Eva Swinnen	How to increase the exercise intensity? The use of virtual reality during gait training
Carlos Rodriguez-Guerrero & Drs. David Rodriguez Cianca	New developments in the technology for gait rehabilitation

**ICNR - T3 - SS13. Neural Signal Analysis: Novel Approaches to Understanding Brain Diseases**

<b>Authors</b>	<b>Title</b>
Babak Afsharipour, Sourav Chandra, William Rymer and Nina Suresh	Effect of Botulinum Toxin Injections on Stretch Reflex Responses of Spastic Elbow Flexors in Hemispheric Stroke Survivors: Case study
Fabio Baselice, Antonietta Sorriso, Rosaria Rucco and Pierpaolo Sorrentino	A novel brain functional connectivity measurement based on phase similarity
Saúl J. Ruiz-Gómez, Carlos Gómez, Jesús Poza, Pablo Núñez, Víctor Rodríguez-González, Aarón Maturana-Candelas and Roberto Hornero	Analysis of Information Flux in Alzheimer's Disease and Mild Cognitive Impairment by Means of Graph-Theory Parameters
Pablo Núñez, Jesús Poza, Carlos Gómez, Víctor Rodríguez-González, Saúl J. Ruiz-Gómez, Aarón Maturana-Candelas and Roberto Hornero	Characterizing Non-stationarity in Alzheimer's Disease and Mild Cognitive Impairment by Means of Kullback-Leibler Divergence
Aarón Maturana-Candelas, Carlos Gómez, Jesús Poza, Saúl J. Ruiz-Gómez, Pablo Núñez, María Rodríguez, Manuel Figueruelo, Carmen Pita, Nádia Pinto, Sandra Martins, Alexandra Lopez, Iva Gomes and Roberto Hornero	Analysis of spontaneous EEG activity by means of multiscale spectral entropy for early detection of Alzheimer's disease

Ioannis Delis, Robin Ince, Paul Sajda and Qi Wang

Information-theoretic characterization of the neural mechanisms of active multisensory decision making

**ICNR - T3 - SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation**

<b>Authors</b>	<b>Title</b>
Marco Iosa, Daniela De Bartolo, Gabriella Antonucci and Stefano Paolucci	Movement and numbers: the mathematics behind motor actions
Francesca Lunardini, Federico Matteo, Matteo Cesari, Nunzio Alberto Borghese and Simona Ferrante	Exergame for Continuous and Transparent Monitoring of Handgrip Strength and Endurance
Fabrizio Patane	Measurement accuracy in movement analysis technology
Giovanni Morone, Simone Grandi, Sheyda Ghanbari Ghoshchi, Marco Iosa and Stefano Paolucci	Wearable devices and virtual reality for neurorehabilitation: an opportunity for home rehabilitation
Maurizio Petrarca	The Development of Gait Analysis in Developmental Age
Pietro Picerno, Pietro Caliandro, Chiara Iacovelli, Chiara Simbolotti, Michele Crabolu, Danilo Pani, Giuseppe Vannozzi and Andrea Cereatti	Assessing reach-to-grasp movements in the stroke unit: validity of an inertial sensor-based approach

**ICNR - T4 - SS22. Pattern Recognition Techniques for assessment, training and rehabilitation**

<b>Authors</b>	<b>Title</b>
Michela Balconi, Davide Crivelli, Giulia Fronda and Irene Venturella	Neuro-rehabilitation and neuro-empowerment by wearable devices. Applications to well-being and stress management

Sara Invitto, Antonio Della Torre and Ross Rinaldi	Neuroprosthetic haptic interface and haptic stimulation: neuromorphic microtransduction and EEG alpha variations
Lucia Billeci, Alessandro Tonacci, Daniela Marino, Laura Insana, Giampaolo Vatti and Maurizio Varanini	A machine learning approach for epileptic seizure prediction and early intervention
Claudio Del Percio	Classification of healthy subjects and Alzheimer's disease patients with dementia from cortical sources of resting state EEG rhythms: comparing different approaches
Marina de Tommaso, Eleonora Gentile, Katia Ricci, Anna Montemurno, Marianna Delussi, Eleonora Vecchio, Giancarlo Logroscino, Antonio Brunetti and Vitoantonio Bevilacqua	Bioelectrical Correlates of Emotional Changes Induced by Environmental Sound and Colour: from Virtual Reality to Real Life

**WeR5. Benchmarking wearable robots**

<b>Organizers</b>	<b>Diego Torricelli, Cajal Institute, Jan Veneman, Hocoma AG, Simona Crea, Scuola Superiore Sant'Anna</b>
<b>Authors</b>	<b>Title</b>
Jule Bessler, Leendert Schaake, Catherine Bidard, Jaap Buurke, Aske Lassen, Kurt Nielsen, José Saenz and Federico Vicentini	COVR – Towards simplified evaluation and validation of collaborative robotics applications across a wide range of domains based on robot safety skills
Matteo Lancini, Simone Pasinetti, Valeria Montini and Giovanna Sansoni	Monitoring upper limbs during exoskeleton-assisted gait outdoors
Roberto Conti, Francesco Giovacchini, Lorenzo Saccares, Nicola Vitiello, Jose Louis Pons and Diego Torricelli	What do people expect from robotic benchmarking? Preliminary results of the EUROBENCH survey
Myunghee Kim, Ye Ding, Charles Liu, Jinsoo Kim, Sangjun Lee, Nikolaos Karavas, Conor Walsh and Scott Kuindersma	Human-in-the-loop Bayesian Optimization of a Tethered Soft Exosuit for Assisting Hip Extension
Diego Torricelli, David Pinto-Fernandez, Roberto Conti, Nicola Vitiello and Jose Luis Pons	A review of performance metrics for lower limb wearable robots: preliminary results

Erik Prinsen and Jaap Buurke

Human likeliness as a benchmarker for wearable robotics

### WeR9. Human modeling and simulation for neurorehabilitation engineering

**Organizers**

**J.M. Font-Llagunes, F.J. Alonso, J. Cuadrado.**

**Authors**

**Title**

Francisco Mouzo, Urbano Lugris, Javier Cuadrado, Josep Maria Font-Llagunes and Francisco Javier Alonso

Calibration and validation of a skeletal multibody model for leg-orthosis contact force estimation

Matthew Millard, David Franklin and Walter Herzog

A continuous and differentiable mechanical model of muscle force and impedance

Friedl De Groot, Lorenzo Pitto, Hans Kainz, Antoine Falisse, Eirini Papageorgiou, Mariska Wesseling, Sam Van Rossom, Kaat Desloovere and Ilse Jonkers

SimCP: A Simulation Platform to Predict Gait Performance Following Orthopedic Intervention in Children with Cerebral Palsy

Renaud Ronsse

Bio-inspired walking: from humanoids to assistive devices

Peter Ferguson, Brando Dimapasoc, Yang Shen and Jacob Rosen

Design of a Hand Exoskeleton for Use with Upper Limb Exoskeletons

Marta Lorenzini, Wansoo Kim, Elena De Momi and Arash Ajoudani

A Real-time Graphic Interface for the Monitoring of the Human Joint Overloadings with Application to Assistive Exoskeletons

### WeR12. Exoskeleton Research in Europe

**Organizers**

**Katja Mombaur, Jan Babic**

Authors	Title
Loris Roveda, Tito Dinon, Filippo Lucetti, Nicola Pedrocchi and Lorenzo Molinari Tosatti	H2020 CleanSky 2 EURECA: Design and Control of a Cooperative Manipulator for Industrial Installation Tasks
Jesús Ortiz, Christian Di Natali and Darwin G. Caldwell	XoSoft - Iterative design of a modular soft lower limb exoskeleton
Marco Caimmi, Ilaria Carpinella, Rachele Di Giovanni, Dario Ellena, Lorenzo Molinari Tosatti, Davide Cattaneo, Maurizio Ferrarin and Claudio Solaro	Preliminary Usability and Efficacy Tests in Neurological Patients of an Exoskeleton for Upper-Limb Weight Support
Herman van der Kooij	Symbitron: Symbiotic man-machine interactions in wearable exoskeletons to enhance mobility for paraplegics
Jesus Ortiz, Stefano Toxiri and Darwin Caldwell	Beyond Robo-Mate: Towards the next generation of industrial exoskeletons in Europe
Cristina Piazza, Manuel Giuseppe Catalano, Matteo Bianchi, Emiliano Ricciardi, Domenico Prattichizzo, Sami Haddadin, Andreas Luft, Olivier Lambercy, Roger Gassert, Eike Jakobowitz, Herman Van Der Kooij, Frederick Tonis, Fabio Bonomo, Benjamin de Jonge, Tomas Ward, Kristin D. Zhao, Marco Santello and Antonio Bicchi	The Softpro project: Synergy-based Open-source Technologies for Prosthetics and Rehabilitation
Diego Torricelli and Jose Luis Pons	EUROBENCH: Preparing Robots for the Real World
Hannes Bleuler	An Absolute MUST for Exoskeletons: Personalization of Design, Actuation, Control
Jan Babič, Idsart Kingma, Jonas Bornmann, Katja Mombaur, Matthias Näf, Tadej Petrič, Han Houdijk, Jose Gonzalez-Vargas, Saskia Baltrusch and Nejc Šarabon	SPEXOR: Design and development of passive spinal exoskeletal robot for low back pain prevention and vocational reintegration



Authors	Title
Saskia Maresch, DIN e. V./ Germany/ National Standardization Body	<ul style="list-style-type: none"> <li>• Standardization in the R&amp;D phase – how can this support SMEs?</li> </ul>
Saskia Maresch, DIN e. V./ Germany/ National Standardization Body	<ul style="list-style-type: none"> <li>• Inclusive robots for a better society (Inbots) – what is being done in relation to standardization</li> </ul>
Prof. Gurvinder Singh Virk (InnoTecUK and CLAWAR, United Kingdom/ ISO TC 299	<ul style="list-style-type: none"> <li>• ISO Safety and modularity standards for service robots</li> </ul>
Francesco Ferro (PAL Robotics/ Spain/ SME)	<ul style="list-style-type: none"> <li>• Certification process for service robots – CE mark and challenges</li> </ul>
Arantxa Renteria (TECNALIA/ Spain/ R&D)	<ul style="list-style-type: none"> <li>• Medical robotics and the daunting certification process</li> </ul>
Andras Toth (Budapest University of Technology and Economics/Hungary / R&D)	<ul style="list-style-type: none"> <li>• Attitudes in standards management at start-up and developing SMEs – analysis of case studies from the wearable robot domain</li> </ul>
Massimo Di Pardo (Centro Ricerche Fiat/ Italy/ R&D)	<ul style="list-style-type: none"> <li>• Human robot collaboration criteria for the implementation in the shop floor</li> </ul>
Prof. Michiel de Looze (TNO/ the Netherlands/ R&D)	<ul style="list-style-type: none"> <li>• Need for evaluation standards in relation to industrial exoskeletons</li> </ul>
Jule Bessler (Roessingh Research and Development/ the Netherlands/ R&D)	<ul style="list-style-type: none"> <li>• COVR – towards simplified evaluation and validation of collaborative robotics applications across a wide range of domains based on robot safety skills</li> </ul>
Prof. Gurvinder Singh Virk, Andras Toth, Jan Veneman, Prof. Michiel de Looze	<ul style="list-style-type: none"> <li>• Panel Standardization - Challenges and needs of Interactive Robots in the industry, healthcare and service domain</li> </ul>

**INBOTS6: Promote societal and socio-economic uptake of robotics**

**Authors**

**Title**

Prof. Robert Riener, ETH Zurich

Rehabilitation 4.0: What robots will change!

Domenico Prattichizzo, Monica Malvezzi, Gionata Salvietti, UNISI

Supernumerary Robotic Fingers to Compensate and Augment Human Manipulation Abilities

Thomas Ryberg, Robotics Care AB

Challenges and opportunities of robotic innovations in elderly care

Kilian Baur, Florian L. Haufe, Roland Sigrist, Katrin Dorfschmid, and Robert Riener, ETH Zurich

The Cybathlon - Bionic Olympics to benchmark assistive technologies

Dimitris Alimisis, Dimitrios Loukatos, Emmanouil Zoulias, Rene Alimisi

The Role of Education for the Social and Economic Uptake of Robotics: the Case of the eCraft2Learn Project

## Wednesday 17 Oct -Poster Session

Bertine M. Fleerkotte, Jaap Buurke, Edwin H. F. Van Asseldonk and Johan. S. Rietman	The effect of assist-as-needed support on energy expenditure during gait training of chronic stroke patients in LOPESII	SS10. The use of ambulant technology in stroke rehabilitation
Gabriel Aguirre Ollinger, Ashwin Narayan, Francisco Anaya Reyes, Hsiao-Ju Cheng and Haoyong Yu	An Integrated Robotic Mobile Platform and Functional Electrical Stimulation System for Gait Rehabilitation Post-Stroke	SS10. The use of ambulant technology in stroke rehabilitation
Rahul Kumar Singh, Rejin John Varghese, Jindong Liu, Zhiqiang Zhang and Benny Lo	A Multi-sensor Fusion Approach for Intention Detection	SS11. Redundancy and modularity in motor control: neuroscience, prosthetic, rehabilitative and assistive approaches
Jonas Schröder, Sara Kenis, Kris Goos, Steven Truijen and Wim Saeys	The effects of exoskeleton-assisted overground gait training in chronic stroke – a pilot study	SS11. Redundancy and modularity in motor control: neuroscience, prosthetic, rehabilitative and assistive approaches
Silvia E. Rodrigo and Claudia N. Lescano	The possible role of foot sole mechanoreceptors for gait neurorehabilitation. I – A review	SS11. Redundancy and modularity in motor control: neuroscience, prosthetic, rehabilitative and assistive approaches
Claudia N. Lescano and Silvia E. Rodrigo	The possible role of foot sole mechanoreceptors for gait neurorehabilitation. II – A dynamometric map of the foot sole	SS11. Redundancy and modularity in motor control: neuroscience, prosthetic, rehabilitative and assistive approaches
N. Alberto Borghese, Jacopo Essenziale, Manuel Pezzera, Alessandro Tironi, Renato Mainetti, Roberta Cazzaniga, Barbara Reggiori, Simone Mercurio and Paolo Confalonieri	Design and development of a web-based platform for comprehensive autonomous home rehabilitation management in multiple sclerosis	SS11. Redundancy and modularity in motor control: neuroscience, prosthetic, rehabilitative and assistive approaches
Tamaya Van Criekinge, Wim Saeys, Kyra Blankaert, Zoë Maebe, Charlotte van der Waal, Marijke Vink, Willem De Hertogh and Steven Truijen	The effect of trunk training on trunk control, standing balance and gait: A systematic review and meta-analysis	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Tamaya Van Criekinge, Wim Saeys, Ann Hallemans and Steven Truijen	Trunk kinematics during walking after sub-acute stroke	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Cristian Camardella, Luis Pelaez Murciego, Shangjie Tang, Federica Bertolucci, Carmelo Chisari, Michele Barsotti and	Simple tool for functional and physiological stroke patients assessment	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation

Antonio Frisoli		
Erika D'Antonio, Gaetano Tieri, Stefano Paolucci, Fabrizio Patané and Marco Iosa	Postural sway responses to 3D virtual dynamic visual stimulation in post-stroke patients	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Serena Ricci, Aaron Bruce Nelson, Elisa Tatti, Giulio Tononi, Chiara Cirelli and M. Felice Ghilardi	The neural effects of extended practice and the benefits of a nap	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Elisa Galofaro, Robert A Scheidt, Ferdinando A. Mussa-Ivaldi and Maura Casadio	Testing the ability to represent and control a contact force	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Paolo Meriggi, Elena Brazzoli, Tecla Piacente, Marcella Mazzola and Ivana Olivieri	Smart Objects in Pediatric Rehabilitation: some Preliminary Results from a Research Protocol	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Mattia Corzani, Alberto Ferrari, Pieter Ginis, Alice Nieuwboer and Lorenzo Chiari	Analysis of Biofeedback Effects in Parkinson's disease at Multiple Time-Scales	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Daniele Coraci, Marco Paoloni, Massimiliano Mangone, Chiara Iacovelli, Francesco Ruggeri, Valter Santilli and Luca Padua	Proposal of a method supporting the interpretation of gait analysis kinematic data.	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Alice Mantoan, Stefano Lai, Lucia Moro, Alessandro Pietro Bardelli, Michela Ugazzi, Andrea Turolla and Luca Ascari	A preliminary study on quantitative assessment of functional tasks on stroke patients using a novel wearable platform	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Andrea Zonnino and Fabrizio Sergi	Model-based estimation of individual muscle force given an incomplete set of muscle activity measurements	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Raffaele Conte, Alessandro Tonacci, Francesco Sansone, Gianluca Diodato, Maria Cristina Scudellari, Andrea Grande, Anna Paola Pala, Guja Astrea, Silvia Frosini and Filippo Maria Santorelli	PhysioTest: a dedicated module to collect data from physiotherapy assessments in neuromuscular diseases	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Hamidreza Barnamei	Effect of motor nerve on lower limb coordination variability during high-heel and barefoot gait	SS14. New Frontiers in Movement Analysis: from assessment to rehabilitation
Oscar I. Caldas, Oscar F. Avilés, Mauricio Mauledoux and Carlos Rodriguez	Closed-loop system with biofeedback for engagement control in virtual rehabilitation	SS22. Pattern Recognition Techniques for assessment, training and rehabilitation
Ilaria Bortone, Domenico Buongiorno, Giuseppina Lelli, Andrea Di Candia, Giacomo Donato Cascarano, Gianpaolo Francesco Trotta, Pietro Fiore and Vitoantonio Bevilacqua	Gait Analysis and Parkinson's Disease: Recent trends on main applications in healthcare	SS22. Pattern Recognition Techniques for assessment, training and rehabilitation
Jichai Jeong and Sunghee Dong	Intra-Subject Invariant Classification Modeling for Spectral Features in EEG signals using Decision Fusion Method	SS22. Pattern Recognition Techniques for assessment, training and rehabilitation
Aitziber Mancisidor, Asier Brull, Asier Zubizarreta, Itziar Cabanes, Ana Rodriguez and Je Hyung Jung	Measurement of complementary trunk movement in robot-mediated upper limb rehabilitation	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications

Ana Cignal de La Rica, Rubén Alonso Alonso, Javier P. Turiel, Juan-Carlos Fraile Marinero, Víctor Lobo Granado and Víctor Moreno San Juan	EMG based bio-cooperative direct force control of an exoskeleton for hand rehabilitation: A preliminary study	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Fiorenzo Artoni, Elena Massai and Silvestro Micera	EEG decoding of rest and overground walking: a feasibility study	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Christopher Bitikofer, Parker Hill, Eric Wolbrecht and Joel Perry	Analysis of Shoulder Displacement During Activities of Daily Living and Implications on Design of Exoskeleton Robotics for Assessment	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Parker Hill, Christopher Bitikofer, Shawn Trimble, Eric Wolbrecht and Joel Perry	PANDORA: Design of a 2 DOF Scapulohumeral Exoskeleton Device to Support Translation of the Glenohumeral Joint	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Yijun Niu, Zhibin Song and Jiansheng Dai	A Novel Parallel Mechanism for Self-aligning Knee Exoskeleton	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Mostafa Mohammadi, Romulus Lontic, Thomas B. Moeslund, Hendrik Knoche, Thomas Bak, Michael Gaihede, Bo Bentsen and Lotte N. Strojik Andreasen	Controlling a Drone by the Tongue – A Pilot Study on Drone Based Facilitation of Social Activities and Sports for People with Complete Tetraplegia	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Javier Gil, Andrea Ortiz, Antonio Del-Ama, José Luis Pons and Juan C. Moreno	Testing FES of ankle plantarflexor and dorsiflexor muscles to support unilateral gait disorders	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Stefano Mazzoleni, Elena Battini, Alessandro Rustici and Giulia Stampacchia	An overground robotic exoskeleton gait training in complete spinal cord injured patients	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Matti Itkonen, Shotaro Okajima, Hiroshi Yamasaki, Alvaro Costa and Shingo Shimoda	Orchestration of Sensors and Actuators in Neuro-rehabilitation Experiments and Practice	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications SS7. Shaping robotic training to maximize patient outcome: new trends and perspectives
Kadir Ozlem, Ozgur Atalay, Asli Atalay and Gokhan Ince	Textile Based Sensing System for Lower Limb Motion Monitoring	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Joel Perry, Rene Maura, Christopher Bitikofer and Eric Wolbrecht	BLUE SABINO: development of a bilateral exoskeleton instrument for comprehensive upper-extremity neuromuscular assessment	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications

Suncheol Kwon and Won-Kyung Song	Inference of Proprioception using Kinematics in Robot Assisted Reach Exercise for Chronic Stroke Survivor	SS5. Improving Strategies for Human-Robot Interaction for Rehabilitation Robotics applications
Pablo Lopez Garcia, Stein Crispel, Tom Verstraten, Elias Saerens, Bryan Convens, Bram Vanderborght and Dirk Lefeber	Automotive Methods and Principles in the Development of New Transmissions for Wearable Robotics	WeR5. Benchmarking wearable robots
María Carmen Sánchez-Villamañán, Diego Torricelli and José L. Pons	Modeling Human-Exoskeleton Interaction: Preliminary Results	WeR5. Benchmarking wearable robots