

23 September 2021

24 September 2021

25 September 2021

10:00 - 11:30 CET

SESSION 1A

## Current status of robot-assisted rehabilitation and assistive robotics: scientific and technological challenges for the next decade

*Moderator: Stefano Mazzoleni, Italy*

Arm Therapy Robot ARMin: Transfer to Clinics and Industry, **Robert Riener, Switzerland**  
 Robot-assisted treatments and neuromodulation for restoration of movements in persons affected by stroke, **Stefano Mazzoleni, Italy**  
 Why hybrid neuroprostheses and robotics?, **Alessandra Pedrocchi, Italy**  
 Neuro-robotics to assist and restore upper limb and hand functions, **Silvestro Micera, Switzerland/Italy**

10:00 - 11:30 CET

SESSION 9A

## Rehabilitation and Assistive Robotics

*Moderator: Tijana Jevtic Vojinovic, UK*

The Myoshirt: A Textile Exomuscle That Assists the Shoulder in Everyday Life, **Anna-Maria Georgarakis, Switzerland**  
 Mirror robotic therapy rehabilitation of wrist and forearm: Pilot study, **Nicolas Garcia-Aracil, Spain**  
 Preliminary Results in Partial Gait Assistance Using the lower Limb Exoskeleton autonomy, **Zeynep Ozge Orhan, Switzerland**  
 Novel end-effector device for patient-in-charge model-based progressive gait rehabilitation, **Marco Maddalena, UK**  
 Human-in-the-Loop Optimization of Hip and Knee Assistance for Downhill Walking with the Myosuit, **Lukas Bergmann, Germany**

10:00 - 11:30 CET

SESSION 17A

## Poster Session: Asia/Europe

12:45 - 14:15 CET

SESSION 5A  
JOINT SESSION

## Virtual Site Visit: Hobbs Rehabilitation

*Moderator: Jen Mellows, UK*

12:45 - 14:15 CET

SESSION 13A

## Robotics for Clinical Practice

*Moderator: Mohamed Bouri, Switzerland*

Combined use of LOKOMAT and RYSEN for gait training in spinal cord injury, **Javier Sanchez Aguilar, Spain**  
 Serious game based training using an assistive device at home may provide long term improvement in the upper limb function of patients in the chronic phase of stroke, **Samantha G. Rozevink, The Netherlands**  
 Functional Real-world Robotic Assisted Training: The EMU Feasibility Study, **Vincent Crocher, Australia**  
 Comparison of Walking with a Knee-Ankle-Foot-Orthosis (KAFO) and a Powered Knee Exoskeleton in People with Spinal Cord Injury: A Randomized Crossover Clinical Trial, **Antonio Rodriguez, Spain**  
 The Longitudinal Evolution of Proprioceptive, Motor, and Sensorimotor Hand Impairments in the Sub-Acute Phase After Stroke, **Monika Zbytniewska, Switzerland**

12:45 - 14:15 CET

SESSION 21A

## Human-machine interfaces in rehabilitation

*Moderator: Rui Loureiro, UK*

Extracting Human-Robot Interaction Torque Based on A Novel Cable-Driven Upper-Limb Exoskeleton Equipped with Torque Sensors, **Yansong Wang, China**  
 An Adaptive Filter for Low-Tolerance SEMG-Based Intention Prediction, **Marek Sierotowicz, Germany**  
 Case Study to explore the benefit of virtual reality interface combined with robotic facilitated movement to reduce supernumerary phantom limbs occurring after traumatic high-level tetraplegia (C2 AIS C), **Peter Snow, UK**  
 Adaptive Virtual Reality-based Rehabilitation in Children with Cerebral Palsy: A proof-of-concept, **Ilaria Bortone, Italy**  
 The effect of feedback modality on learning a novel wrist visuomotor transformation, **Giulia Aurora Albanese, Italy**

18:00 - 19:00 CET

SESSION 1B/2B  
JOINT SESSION

## Hybrid systems based on robotics and FES, Transdisciplinary training for a full deployment of technologies in rehabilitation

*Moderator: Jules Dewald, USA & Mike Ellis, USA*

Smart use of mechatronics and brain imaging approaches to study movement impairments post unilateral brain injury, **Jules Dewald, USA**  
 Science based Robotic interventions post hemiparetic stroke, **Mike Ellis, USA**  
 Smart use of FES for the paretic hand in chronic hemiparetic stroke, **Jun Yao, USA**  
 Development of a new home-based measure of hypertonia and kinematics using AI, **Hongchul Sohn, USA**

19:00 - 19:30 CET

## Transdisciplinary training for a full deployment of technologies in rehabilitation

*Moderator: Emilia Ambrosini, Italy*

Why rehabilitation medicine requires transdisciplinary competences, **Franco Molteni, Italy**  
 Transdisciplinary education in rehab technologies, **Alessandra Pedrocchi, Italy**

18:00 - 19:30 CET

SESSION 9B

## Computational Neurorehabilitation

*Moderator: Ana Luisa Trejos, UK*

Forward Dynamics-based Simulation Algorithm for Robotic Rehabilitation Purposes, **Denis Mosconi, Brazil**  
 A Locomotor Cat Model for Restoring Walking after Complete Spinal Cord Injury: Assessing the Capability of a Predictive Control Algorithm, **Pouria Faridi, Canada**  
 Operant conditioning of monosynaptic spinal reflexes: a simulated environment approach, **Kyoungsoon Kim, USA**  
 Changes in Resting State Functional Connectivity Associated with Dynamic Adaptation of the Wrist, **Andria Jean Farrens, USA**  
 Training Somatosensation with Proprioceptive Robots and Propriopixels, **David Reinkensmeyer, US**

18:00 - 19:30 CET

SESSION 17B

## Poster Session: Europe/Americas

20:45 - 22:15 CET

SESSION 21B  
JOINT SESSION

## Meet the Entrepreneurs

*Moderator: Martina Spiess, Switzerland*

**Gery Colombo, Switzerland**  
**David Fried, Spain**  
**Zen Koh, Singapore**  
**Alfons Carnicero, Spain**  
**Anne Vivian-Scott, Canada**  
**Alexander Kollreider, Austria**

20:45 - 22:15 CET

SESSION 5B  
JOINT SESSION

## The triangle of user centered design: users, clinicians, engineers

*Moderator: Robert Riener, Switzerland*

**Verena Klamroth-Marganska, Switzerland**

20:45 - 22:15 CET

SESSION 13B

## Wearable Devices

*Moderator: Peter Snow, UK*

An SEMS-Based Force Feedback Device for Teleoperation and Rehabilitation, **Marek Sierotowicz, Germany**  
 Survey-based Identification of Design Requirements and Constraints for a Wearable Tremor Suppression Device, **Yue Zhou, Canada**  
 Considering the Human Form and its Influence on the Moment- and Power-Generating Abilities of Soft Hip-Flexion Exosuits: Effects of Wearer BMI and Sex, **Ross Michael Neuman, USA**  
 Feasibility of Using Low-End Wearable Armbands and Unsupervised Transfer Learning for Seamless Myoelectric Control, **Yuxiao (Sonia) Lai, USA**  
 Comprehensive Kinematic Model of a Tendon-Driven Wearable Tremor Suppression Device, **Parisa Daemi, Canada**