

# **3° European R<sup>2</sup>S<sup>2</sup>** **Robotic Rehabilitation Summer School** **13-14-15/20-21-22/27 September 2021**

**Now  
Virtual!**

**Pediatric rehabilitation activities with the use of technologically advanced and robotic equipment.**

*Promoted and organized by ESPRM - Robotic and new Technologies Committee under the auspices of the European Board of PRM, Simfer and SIRN. In cooperation with Santo Stefano Rehabilitation Group and International Industry Society for Advanced Rehabilitation technology.*



We are supporting an innovative educational approach for rehabilitation specialists sharing and taking advantage of a concrete clinical European experiences in robotic treatments.

Promoted and organized by ESPRM - Robotic and new Technologies Committee under the auspices of PRM-UEMS Section and Board (which are in charge to select from all Europe the young and free PRM participants) and in cooperation with Simfer and SIRM in Italy.

Santo Stefano Rehabilitation and Kos Group are working for the organization and management as in previous edition.

IISART International Industry Society for Advanced Rehabilitation technology supports the international diffusion.

This 2021 edition will focus on the themes of pediatric rehabilitation activities with the use of technologically advanced and robotic equipment and it will allow the interpretation of very innovative experiences in this sector, in order to underline the essential role of the figure of the PRM specialist also in this very important clinical field.

The school will be online, with six sessions set up for educational activities and with a seventh session, set up to present the European Robotic Rehabilitation Community, a community born alongside and for merit of the activities of the school itself, which has the objective of carrying out the didactic activities in clinical comparison and research in this area.

All the activities will be in English and will include, as always, educational aspects of theoretical and practical content made in prerecorded and online video materials (which will then be accessible on the school website), in any case for the participants to interact with the teachers.

The event will be virtual on the GoToWebinar platform.

## Day 1: Monday, September 13

### PRESENTATION OF THE VIRTUAL 3<sup>rd</sup> EDITION OF THE ER<sup>2</sup> SCHOOL

- 8:<sup>30</sup> a.m.    **Registration/Connection**  
*Chairman: Nikolaos Barotsis*
- 9:<sup>00</sup> a.m.    **Opening: ESPRM/UEMS Section and Board Perspectives, clinical and educational aims**  
*Speakers: Mauro Zampolini, Nicolas Christodolou, Alessandro Giustini*
- 9:<sup>30</sup> a.m.    **Pediatric rehabilitation**  
Epidemiology, analyzing frequent problems and emerging ones.  
Disabled person becoming adult  
*Speaker: Ivana Petronic Markovic*
- 10:<sup>00</sup> a.m.    **Changes in expectations and approaches**  
From conventional aids to advanced technologies and compensative/ dispensative tools in child growth  
*Speaker: Elena Ilieva*
- 10:<sup>30</sup> a.m.    **Robot-integrated rehabilitation: assessment of new technologies in terms of setting, investments and outcomes**  
*Speaker: Daiana Popa*
- 11:<sup>00</sup> a.m.    **Q&A**
- 11:<sup>20</sup> a.m.    **Robotic Rehabilitation - Criticisms in educational needs and training programs for Health professionals**  
*Speaker: Thierry Lejeune*
- 11:<sup>40</sup> a.m.    **Competence Centre for Rehabilitation Engineering and Science RESC - ETH Zürich, Switzerland**  
*Speaker: Oliver Stoller*
- 12:<sup>10</sup> p.m.    **Closing remarks**

## Day 2: Tuesday, September 14

### MOVEMENT ANALYSIS

8<sup>:30</sup> a.m. **Registration/Connection**  
**Chairman: Massimo Vallasciani**

9<sup>:00</sup> a.m. **The role of the Movement Analysis Laboratory: equipment, crawling and data processing**  
*Speakers: Massimo Vallasciani, Antonio Ruggiero, Francesca Tombolini, Rita Marconi*

9<sup>:30</sup> a.m. **Gait analysis as an outcome assessment used for the pediatric rehabilitation**  
*Speakers: Gabriella Di Girolamo, Marco Franceschini*

10<sup>:00</sup> a.m. **Movement Analysis: presentations and experiences from different Laboratories**

**Movement Analysis and Robotics: a strategic marriage for innovative therapeutic solutions**  
Bambino Gesù Children's Hospital  
*Speaker: Maurizio Petrarca*

10<sup>:30</sup> a.m. **Gait Analysis in cerebral palsy: the lessons we have been learning in twelve years of lab activity**  
La Nostra Famiglia, *Speaker: Davide Conte*

11<sup>:00</sup> a.m. **The network of Movement Analysis Labs of the Don Carlo Gnocchi Foundation: experiences and applications in pediatric populations**  
Fondazione Don Gnocchi  
*Speakers: Irene Aprile, Anna Castagna, Guido Pasquini, Joel Pollet, Maurizio Ferrarin*

11<sup>:30</sup> a.m. **Gait analysis in children with neurological diseases: influence on treatment decision making and clinical research**  
Fondazione Centri di Riabilitazione Padre Pio Onlus, Gli Angeli di Padre Pio  
*Speaker: Filoni Serena*

12<sup>:00</sup> p.m. **Q&A**

## Day 3: Wednesday, September 15

### MOTOR REHABILITATION

- 8:<sup>30</sup> a.m.    **Registration/Connection**  
*Chairman: Antonio De Tanti*
- 9:<sup>00</sup> a.m.    **Using the REAplan robot for cognitive and motor neurorehabilitation**  
*Speaker: Martin Edwards*
- 9:<sup>30</sup> a.m.    **Robotic Rehabilitation of upper limb: Experiences with Armeo Spring, Gloreha, Motore**  
*Speakers: Enrico Castelli, Elena Beretta*
- 10:<sup>30</sup> a.m.    **Robotic rehabilitation: experience at Bambino Gesù Children's Hospital (Rome, Italy) with Lokomat, Re-Walk, In-Motion Arm and Wrist, HIROB**  
*Speakers: Flaminia Frascarelli, Giampietro Cordone*
- 11:<sup>45</sup> a.m.    **Q&A**



## Day 4: Monday, September 20

### VIRTUAL AND AUGMENTED REALITY FOR MOTOR REHABILITATION

- 8:<sup>30</sup> a.m.    **Registration/Connection**  
*Chairman: Marco Franceschini*
- 9:<sup>00</sup> a.m.    **Virtual reality: basics, evidences and perspectives. Applications in National Rehabilitation Services**  
*Speaker: Antonio De Tanti*
- 9:<sup>50</sup> a.m.    **Children motor rehabilitation through virtual reality tools: clinical experiences (Nirvana, Khymeia)**  
*Speaker: Donatella Saviola*
- 10:<sup>30</sup> a.m.    **Robotic rehabilitation with support of virtual reality: experiences**  
*Speaker: Sanaz Pournajaf*
- 11:<sup>10</sup> a.m.    **A wide-ranging experience: the GRAIL in Italy, for walking and balance ability improvements in engaging virtual reality environments**  
*Speakers: Cristina Maghini, Daniele Panzeri*
- 12:<sup>00</sup> p.m.    **Virtual reality and exergames: rehabilitation experiences in childhood with a specific tool (Bobo Balance)**  
*Speakers: Gadi Nir, Giulia Mazza*
- 12:<sup>30</sup> p.m.    **Q&A**

## Day 5: Tuesday, September 21

### COMMUNICATION DISORDERS AND TECHNOLOGIES FOR ENSURING CONTINUITY OF CARE AND PATIENT EMPOWERMENT

- 8:<sup>30</sup> a.m.    **Registration/Connection**  
*Chairman: Enrico Castelli*
- 9:<sup>00</sup> a.m.    **Autism spectrum disorder**  
**Epidemiology, the global patient take-charge (engagement and territory), ICF (activity and participation). Which rehabilitation program?**  
*Speaker: Rita Marconi, Michela Sara Palmieri*
- 9:<sup>30</sup> a.m.    **Augmentative and alternative communication for children with autism spectrum disorder. From scientific research to clinical practice**  
*Speakers: Chiara Glucini, Federica Salerno*
- 10:<sup>00</sup> a.m.    **General introduction to complex communication needs in children, regardless of the specific pathology. Principles of augmentative alternative communication. Low-tech clinical case**  
*Speaker: Clementina Antenore*
- 10:<sup>30</sup> a.m.    **Multidisciplinary evaluation and user needs assessment. Assistive technology solution implementation. Clinical case with high technology aid**  
*Speaker: Francesca Schettini*
- 11:<sup>00</sup> a.m.    **Technological and visual aids to support sight**  
*Speaker: Matteo Cantoni*
- 11:<sup>30</sup> a.m.    **Practice and training: LiMiX**  
*Speakers: Elisa Contini, Francesco Pezzuoli*
- 12:<sup>00</sup> p.m.    **Q&A**

## Day 6: Wednesday, September 22

### TELEREHABILITATION

- 8:<sup>30</sup> a.m.    **Registration/Connection**  
*Chairman: Mauro Zampolini*
- 9:<sup>00</sup> a.m.    **Advantages and disadvantages of the telerehabilitation; scientific evidences**  
*Speakers: Michela Goffredo, Marco Franceschini*
- 9:<sup>30</sup> a.m.    **Teleconsultation, Telecare, Telerehabilitation within a community network. New methodology and new training contents and outcomes**  
*Speaker: Giuseppina Sgandurra*
- 10:<sup>00</sup> a.m.    **Clinical assessment in order to set up a project of telerehabilitation Devices, software and sensors; users' point of view about usability in order to project an independent life**  
*Speaker: Massimo Vallasciani*
- 10:<sup>30</sup> a.m.    **Growth of telerehabilitation: success and risks**  
*Speaker: Paolo Tonin*
- 11:<sup>00</sup> a.m.    **Domestic life: Home automation (SMART HOUSE)**  
*Speakers: Ester Stefoni, Stefania Pepegna, Francesca Tombolini*
- 11:<sup>30</sup> a.m.    **Q&A**



## Day 7: Monday, September 27

### ER<sup>2</sup> COMMUNITY

- 8:<sup>30</sup> a.m.    **Registration/Connection**  
*Chairman: Alessandro Giustini*
- 9:<sup>00</sup> a.m.    **ER<sup>2</sup> Community: Presentation of project**  
*Alessandro Giustini, Francesca Tombolini, Antonio Ruggiero*
- 9:<sup>30</sup> a.m.    **Experiences by the ER2 Community Groups**  
Armeo Group - *Michela Goffredo*  
Gloreha Group - *Luciano Bissolotti*  
Lokomat Group - *Rocco Salvatore Calabrò*  
Khymeia Group - *Giovanni Morone*
- 11:<sup>00</sup> a.m.    **Research perspectives. General discussion**  
**Take home message**
- 12:<sup>30</sup> p.m.    **Closing remarks**

Each speech includes a final moment for questions and discussion.

Practice sessions will be online, with interactive video-demonstrations.

## SCIENTIFIC COMMITTEE

Alessandro Giustini, Nikolaos Barotsis, Daiana Popa, Elena Ilieva, Thjerry Lejeune, Ivana Petronic Markovic, Mauro Zampolini, Enrico Castelli, Antonio De Tanti, Marco Franceschini, Massimo Vallasciani.

Clementina Antenore, *Psychotherapist and expert in neuropsychology at the Childhood Rehabilitation Service of the Santa Lucia Foundation*

Luciano Bissolotti, *Director, Laboratory of Neuromuscular Rehabilitation and adapted Physical activity, Domus Salutis*

Irene Aprile, MD, PhD, *Head of rehabilitation department "S. Maria della Provvidenza", IRCCS Don Gnocchi Foundation*

Nikolaos Barotsis, *President of the European Board of PRM*

Elena Beretta, *PRM specialist, IRCCS Eugenio Medea*

Rocco Salvatore Calabrò, *Medical Director, Neurologist, IRCCS Centro Neurolesi "Bonino Pulejo"*

Matteo Cantoni, *Occupational Therapist, Santo Stefano Rehabilitation Group*

Anna Castagna, *Neurology specialist, IRCCS Don Gnocchi Foundation*

Enrico Castelli, *Director, Department of Intensive Neurorehabilitation and Robotics - Bambino Gesù Children's Hospital*

Davide Conte, *Bioengineer at IRCCS Eugenio Medea*

Elisa Contini, *Speech Therapist - Santo Stefano Rehabilitation Group*

Giampietro Cordone, *PRM specialist, Bambino Gesù Children's Hospital*

Nicolas Christodolou, *ESPRM President*

Antonio De Tanti, *PRM specialist, Santo Stefano Rehabilitation Group*

Gabriella Di Girolamo, *PRM specialist, IRCCS San Raffaele*

Martin Gareth Edwards, *Coordinator, Psy-NAPS group - Psychological Sciences Research Institute and affiliated to the Institute of Neuroscience and Louvain Bionics*

Maurizio Ferrarin, *Manager, Technological Pole of the Don Gnocchi Foundation*

Serena Filoni, *Medical Director, Padre Pio Onlus Rehabilitation Centers Foundation, Gli Angeli di Padre Pio*

Marco Franceschini, *Full Professor in Physical Medicine and Rehabilitation, San Raffaele University - Rome*

Flaminia Frascarelli, *PRM specialist - Bambino Gesù Children's Hospital*

Alessandro Giustini, *School Scientific Director - Chair of ESPRM Committee "Robotic in Rehabilitation". PRM Specialist - Santo Stefano Rehabilitation Group*

Chiara Glucini, *Speech Therapist - Santo Stefano Rehabilitation Group*

Michela Goffredo, *Biomedical Engineer, Neurorehabilitation Research Laboratory, Department of Neurological and Rehabilitation Sciences - IRCCS San Raffaele*

Elena Ilieva, *MD, PhD Head of Department of Physical and Rehabilitation Medicine Medical University of Plovdiv Vice Dean of Medical Faculty Plovdiv, Bulgaria*

Thierry Lejeune, *Médecine Physique et Réadaptation - Cliniques universitaires Saint-Luc*

Rita Marconi, *PRM specialist, Santo Stefano Rehabilitation Group*

Cristina Maghini, *PRM Specialist, Head of Neuromotor Pathologies Unit IRCCS Eugenio Medea*

Giulia Mazza, *Physioterapist/ TNPEE Santo Stefano Rehabilitation Group*

Giovanni Morone, *PRM SPecialist, IRCSS Fondazione Santa Lucia*

Gadi Nir, *Physioterapist - Specialist*

Michela Sara Palmieri, *Psychotherapist psychologist, bcba, Santo Stefano Rehabilitation Group*

Daniele Panzeri, *PRM Specialist, IRCCS Eugenio Medea*

Guido Pasquini, *PRM Specialist, IRCSS Fondazione Don Gnocchi Firenze*

Stefania Pepegna, *Professional Educator, Santo Stefano Rehabilitation Group*

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Ivana Petronic Markovic, *Pediatric PRM Specialist*

Francesco Pezzuoli, *CEO and Founding Partner - LiMiX Srl*

Joel Pollet, *Doctor of Physical Therapy, IRCCS Fondazione Don Carlo Gnocchi*

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Ester Stefoni, *Social Worker - Santo Stefano Rehabilitation Group*

Oliver Stoller, *Executive Director - Competence Center for Rehabilitation Engineering and Science (RESC)*

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Paolo Tonin, *Scientific Director, Sant'Anna Institute Crotone*

Massimo Vallasciani, *PRM Specialist, Santo Stefano Rehabilitation Group*

Mauro Zampolini, *Uems Section President, Director - Foligno Rehabilitation Department Usl Umbria 2*



**Prof. Alessandro Giustini**  
***ESPRM Robotic SISC -RRSS***

Cristina Gamberini  
*Kos Santo Stefano ERRS Secretary*

**Prof. Enrico Castelli**  
***Bambino Gesù Children's Hospital***

**Dr. Massimo Vallasciani**  
**L.A.M.PO. (Movement Analysis Laboratory)**

Antonio Ruggiero  
*Bioengineer - Training Tutor*

Francesca Tombolini  
*Bioengineer - Training Tutor*

Francesco Spigarelli  
*Data Scientist*

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