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TAR 2020

TECHNICALLY ASSISTED REHABILITATION
7TH EUROPEAN CONFERENCE

May 14-15, 2020 in Leipzig, Germany

PROGRAM

www.ot-world.com/tar-conference and www.tar-conference.eu

Inhaltsverzeichnis

1 Welcome

Dear Colleague,

Innovative approaches to technically assisted rehabilitation will once again be on the agenda at the TAR 2020 conference. The TAR conferences continue their progress as the European forum for presentation and discussion of the latest technological innovations in rehabilitation. TAR will bring together experts from a broad range of disciplines and institutions working on Technically Assisted Rehabilitation. We cordially invite you to take part at the 7th Technically Assisted Rehabilitation (TAR) Conference, to be held in Leipzig, Germany, from 14 to 15 May 2020.

The last TAR Conference took place in Berlin in 2017 and was a great success, bringing together about 80 delegates from different countries, representing experts from a broad range of disciplines and institutions working on Technically Assisted Rehabilitation.
As world leader, OTWorld trade show, with over 570 exhibitors, is the largest sector get-together for all manufacturers, dealers and service providers in the field of modern medical aids and equipment. The interdisciplinary World Congress of OTWorld combines science and research with education and practical experience in P&O. The combination of TAR and OTWorld gives you a global and unique overview of the latest technological innovations in rehabilitation - join the progress.

Accepted abstracts and conference papers will be published online in the open access journal ‘Current Directions in Biomedical Engineering’ by de Gruyter publishing house.

The TAR Team

- Initiator and scientific organisation: Technische Universität Berlin, Fraunhofer IBMT, DGBMT | info@tar-conference.eu
- TAR Conference President: Marc Kraft | TU Berlin, Medical Engineering, Berlin
- TAR Program Chair: Klaus-Peter Hoffmann | Fraunhofer IBMT, Sulzbach
- Organiser conference: Confairmed GmbH | tar-conference@confairmed.de
- Organiser exhibition: Leipziger Messe GmbH | tar-exhibition@leipziger-messe.de

2 General Information

2.1 Venue

Leipziger Messe
Congress Center OTWorld (CCO)
Messe-Allee 1
04356 Leipzig, Germany

2.2 Program at a Glance

Thursday, 14.05.2020, Congress Center OTWorld (CCO)		
12:00 - 12:15	Room 5, CCO	Welcome and Opening Ceremony
12:15 - 12:45	Room 5, CCO	Keynote K1: Target Muscle Reinnervation (TMR) Oskar C. Aszmann
13:15 - 14:15	Foyer CCL	Poster Session
14:30 - 15:00	Room 5, CCO	Keynote K2: The quest for a bionic hand: recent achievements and future perspectives. Silvestro Micera
15:15 - 16:30	Room 5, CCO	Session A: Assistive Technologies
16:45 - 18:00	Room 5, CCO	Session B: Prosthetics
19:30 - 23:30	Room Finca	Get Together Café Madrid, Klostergasse 3-5, 04109 Leipzig
Friday, 15.05.2020, Messehaus		
10:30 - 11:45	Room M23 Messehaus	Session C: Rehabilitation Robotics and Orthotics
12:00 - 12:30	Room M23 Messehaus	Keynote K3: Towards a long-term communication with the brain in the blind: Challenges and future prospects. Eduardo Fernández Jover
13:00 -14:15	Room M23 Messehaus	Session D: Innovation Clusters INOPRO and INTAKT
14:30 - 15:45	Room M23 Messehaus	Session E: Human Technology Interaction

2.3 Program Committee

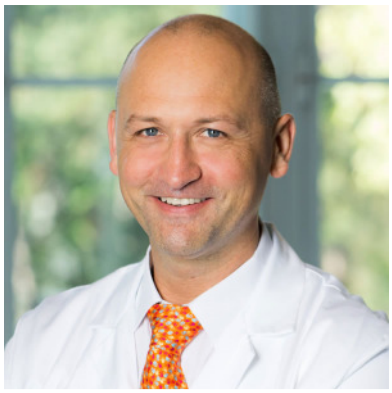
Becher, Kai | Baden-Wuerttemberg Cooperative State University, Mannheim
Bellmann, Malte | Otto Bock HealthCare, Goettingen
Blumentritt, Siegmar | PFH Private University of Applied Sciences, Goettingen
Braatz, Frank | UMG University Medical Center Goettingen, PFH Private University of Applied Sciences, Goettingen
Disselhorst-Klug, Catherine | RWTH Aachen University, Aachen
Hochmann, David | University of Applied Sciences, Muenster
Hoffmann, Klaus-Peter | Fraunhofer IBMT, Sulzbach
Keller, Thierry | Tecnalia Research and Innovation, San Sebastian
Kraft, Marc | TU Berlin, Medical Engineering, Berlin
Matjačić, Zlatko | University Rehabilitation Institute, Ljubljana
Mehrholz, Jan | University of Applied Health Sciences, Gera
Möller, Knut | Furtwangen University, Furtwangen
Rupp, Rüdiger | Heidelberg University Hospital, Heidelberg
Schauer, Thomas | TU Berlin, Control Systems, Berlin
Schmidt, Henning | Fraunhofer IPK, Berlin
Sigmund, Axel | Bundesinnungsverband für Orthopädietechnik, Dortmund
Stieglitz, Thomas | University of Freiburg, Freiburg
Wahl, Michael | Humboldt-Universität zu Berlin, Berlin
Zagler, Wolfgang | Tetragon, Vienna

2.4 Paper Reviewers

Bellmann, Malte | Otto Bock HealthCare, Goettingen
Blumentritt, Siegmar | PFH Private University of Applied Sciences, Goettingen
Braatz, Frank | UMG University Medical Center Goettingen, PFH Private University of Applied Sciences, Goettingen
Disselhorst-Klug, Catherine | RWTH Aachen University, Aachen
Hochmann, David | University of Applied Sciences, Muenster
Hoffmann, Klaus-Peter | Fraunhofer IBMT, Sulzbach
Keller, Thierry | Tecnalia Research and Innovation, San Sebastian
Kraft, Marc | TU Berlin, Medical Engineering, Berlin
Krüger, Thilo | inomed Medizintechnik GmbH, Emmendingen
Matjačić, Zlatko | University Rehabilitation Institute, Ljubljana
Mehrholz, Jan | University of Applied Health Sciences, Gera
Möller, Knut | Furtwangen University, Furtwangen
Rupp, Rüdiger | Heidelberg University Hospital, Heidelberg
Schauer, Thomas | TU Berlin, Control Systems, Berlin
Sigmund, Axel | Bundesinnungsverband für Orthopädietechnik, Dortmund
Stieglitz, Thomas | University of Freiburg, Freiburg
Tetzlaff, Ronald | TU Dresden, Dresden
Velten, Thomas | Fraunhofer IBMT, Sulzbach
Wahl, Michael | Humboldt-Universität zu Berlin, Berlin
Wiemer, Maik | Fraunhofer ENAS, Chemnitz
Zagler, Wolfgang | Tetragon, Vienna

3 Keynote Lectures

3.1 Oskar C. Aszmann



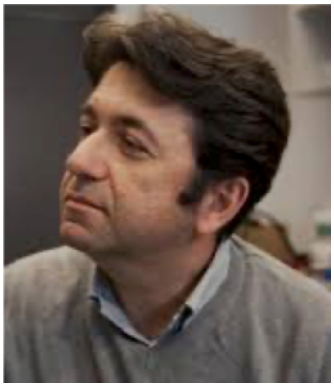
Dr. Oskar C. Aszmann, born in Vienna, Austria. After a two year excursion into philosophy and biology Dr. Aszmann entered Medical School at the medical faculty of the University of Vienna.

From the very outset he discovered his love for anatomy. Early on he enrolled as tutor and scientific assistant at the Department of Anatomy and Cell biology with a major interest in neuroanatomy. The entrance into the fascinating world of plastic and reconstructive surgery he found via the fascinating subject of peripheral nerve reconstruction by Prof. Hanno Millesi. He went on to receive part of his training at the Johns Hopkins Hospital in Baltimore, Maryland where he learned the trade of peripheral nerve surgery from Prof. Lee Dellon and the basic science of peripheral nerve regeneration from Prof. Thomas Brushart.

He then joined the Division of Plastic Surgery in Vienna, Austria in 1998 where he now holds the position of Associate Professor of Plastic and Reconstructive Surgery. Both his research and clinical focus have always been peripheral nerve reconstruction and extremity/hand rehabilitation. Since 2006 he has entered a close collaboration with the company Otto Bock to explore the possibilities and limits of bionic reconstruction which has now led to the establishment of a Center for Extremity Reconstruction and Rehabilitation. This Center has at its core interest the recovery and rehabilitation patients with impaired extremity function.

This goal is accomplished with a wide variety of surgical techniques of neuromuscular reconstruction alone or in combination with complex mechatronic devices.

3.2 Silvestro Micera

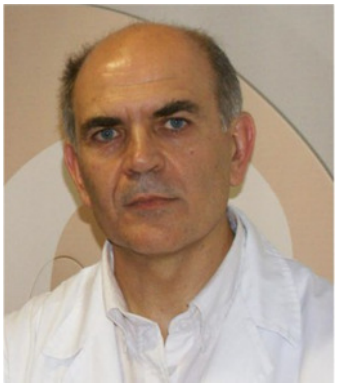


Silvestro Micera is currently Professor of Biomedical Engineering at the Scuola Superiore Sant'Anna (SSSA, Pisa, Italy) and at the Ecole Polytechnique Federale de Lausanne (Lausanne, Switzerland) where he is holding the Bertarelli Foundation Chair in Translational NeuroEngineering. He received the University degree (Laurea) in Electrical Engineering from the University of Pisa, in 1996, and the Ph.D. degree in Biomedical Engineering from the Scuola Superiore Sant'Anna, in 2000. From 2000 to 2009, he has been an Assistant Professor of BioRobotics at the Scuola Superiore Sant'Anna. In 2007, he was a Visiting Scientist at the Massachusetts Institute of Technology, Cambridge, USA with a Fulbright Scholarship. From 2008 to 2011 he was the Head of the Neuroprosthesis Control group and Adjunct Professor at the Institute for Automation, Swiss Federal Institute of Technology, Zurich, CH. In 2009, he was the recipient of the "Early Career Achievement Award" of the IEEE Engineering in Medicine and Biology Society.

Dr. Micera's research interests include the development of neuroprostheses based on the use of implantable neural interfaces with the central and peripheral nervous systems to restore sensory and motor function in disable persons. In particular, he is currently involved in translational experiments for hand prosthesis control in amputees, and the restoration of vestibular function, grasping and locomotion in different neurological disorders.

He is author of more than 250 WoS peer-reviewed papers and several international patents. He is currently Associate Editor of IEEE Transactions on Neural Systems and Rehabilitation Engineering and of IEEE Transactions on Medical Robotics and Bionics. He is also member of the Editorial Boards of the Journal of Neuroengineering and Rehabilitation, of Journal of Neural Engineering, and Scientific Reports.

3.3 Eduardo Fernández Jover



Dr. Fernandez received a M.D. degree from the University of Alicante (1986) and a Ph.D. in Neuroscience with honors in 1990. He is currently Professor and Chairman of the Department of Histology and Anatomy of the University Miguel Hernández (Spain), Director of the Neural Engineering Group of the Centro de Investigación Biomédica en Red (CIBER) in the subject area of Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN, Spain), and Adjunct Professor at John Moran Eye Center (University of Utah, USA). He is a qualified MD who combines biomedicine (molecular and cellular biology, biochemistry, anatomy, physiology and regenerative medicine) with the physical sciences and engineering to develop innovative solutions to the problems raised by interfacing the human nervous system. In the latest years he has been coordinating several National and International projects to demonstrate the feasibility of a visual neuroprosthesis, interfaced with the occipital cortex, as a means through which a limited but useful sense of vision could be restored to profoundly blind. Furthermore, he is also working on brain plasticity and brain reorganization in severe vision loss.

4 Oral Sessions

4.1 A: Assistive Technologies

Chair: Rupp, Rüdiger | Heidelberg University Hospital, Heidelberg
Co-Chair: Sigmund, Axel | Bundesinnungsverband für Orthopädietechnik, Dortmund

A 01: Predicting exoskeleton support torques based on human lifting motions using optimal control
Marinou, Giorgos* | Heidelberg University, Computer Science and Mathematics, Heidelberg (Germany)
Mombaur, Katja | Heidelberg University, Heidelberg (Germany)

A 02: Reduction of Back Injuries in Caregivers using Collaborative Robotics: Requirement Analysis and Concept Design
Siebert, Maximilian* | RWTH Aachen University, Rehabilitation and Prevention Engineering, Aachen (Germany)
Disselhorst-Klug, Catherine | RWTH Aachen University, Rehabilitation and Prevention Engineering, Aachen (Germany)

A 03: Designing a tangible solution to encourage playful hand usage for children with cerebral palsy
Mittag, Christina* | Technische Universität Berlin, Medical Engineering, Berlin (Germany)
Leiss, Regina | Technische Universität Berlin, Medical Engineering, Berlin (Germany)
Lorenz, Katharina | Technische Universität Berlin, Medical Engineering, Berlin (Germany)
Siebold, Dagmar | Praxis für neurologische Rehabilitation, Berlin (Germany)

A 04: Mobil4Park: Development of a sensor-stimulator network for the therapy of freezing of gait in Parkinson patients
Dvorani, Ardit* | SensorStim Neurotechnology GmbH, Berlin (Germany)
Wiesener, Constantin | SensorStim Neurotechnology GmbH, Berlin (Germany)
Valtin, Markus | University of Technology Berlin, Control Systems Group, Berlin (Germany)
Voigt, Hanno | SensorStim Neurotechnology GmbH, Berlin (Germany)
Kühn, Andrea | Charié Universitätsmedizin Berlin, Department of Neurology, Berlin (Germany)
Wenger, Nikolaus | Charié Universitätsmedizin Berlin, Department of Neurology, Berlin (Germany)
Schauer, Thomas | TU Berlin, Control Systems Group, Berlin (Germany)

A 05: Developing a socially assistive robot that matches the needs and expectations of older adults with MCI and their caregivers
Van Assche, Maaike* | University Ghent, Faculty of Medicine and Health Sciences, Ghent (Belgium)
Van de Velde, Dominique | University Ghent, Faculty of Medicine and Health Sciences, Ghent (Belgium)
Werner, Franz | FH Campus University of Applied Sciences Vienna, Vienna (Austria)
Rettinger, Lena | FH Campus University of Applied Sciences Vienna, Vienna (Austria)

4.2 B: Prosthetics

Chair: Bellmann, Malte | Otto Bock HealthCare, Goettingen
Co-Chair: Kraft, Marc | TU Berlin, Medical Engineering, Berlin

B 01: Socket Design and Socket Adduction – How Ischium or Ramus Containment and Prosthetic Alignment help Reducing Upper Body Compensatory Movements
Bellmann, Malte | Otto Bock HealthCare, Research Biomechanics, Geottingen (Germany)
Köhler, Thomas Maximilian | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Kraft, Marc | TU Berlin, Medical Engineering, Berlin (Germany)
Blumentritt, Siegmar | Private University, Biomechanics, Goettingen (Germany)

B 02: SocketSense (Advanced sensor-based design and development of wearable prosthetic socket for amputees)
Suárez-Mejías, Cristina* | Virgen del Rocío University Hospital, Seville (Spain)
Fernández Torrico, Juan Manuel | Virgen del Rocío University Hospital, Seville (Spain
Parra-Calderón, Carlos Luis | Virgen del Rocío University Hospital, Seville (Spain

B 03: Mechanical characterization of the adaptability of prosthetic feet in the frontal plane.
Ernst, Michael* | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Altenburg, Björn | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Bellmann, Malte | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Schmalz, Thomas | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)

B 04: The integration of a pressure force sensor system in prosthetic sockets
Brinkfeldt, Klas* | RISE, Mölndal (Sweden)
Dejke, Valter | RISE, Mölndal (Sweden)
Eng, Matthias | RISE, Mölndal (Sweden)
Andersson, Dag | RISE, Mölndal (Sweden)
Charley, Josephine | Lusstech, Northallerton (UK)
Lussey, David | Lusstech, Northallerton (UK)
Lussey, Chris | Lusstech, Northallerton (UK)
Oddason, Magnús | Össur, Reykjavik (Iceland)
Ko, Siu-Teing | Össur, Reykjavik (Iceland)
Becker, Matthias | KTH, Stockholm (Sweden)
Lu, Zhonghai | KTH, Stockholm (Sweden)

B 05: Effects on ankle power and sound limb load with an active prosthetic foot
Pröbsting, Eva* | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Altenburg, Björn | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Schmalz, Thomas | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Krug, Kerstin | University of Applied Sciences, Muenster (Germany)

4.3 C: Rehabilitation Robotics and Orthotics

Chair: Disselhorst-Klug, Catherine | RWTH Aachen University, Aachen
Co-Chair: Hochmann, David | University of Applied Sciences, Muenster

C 01: Design of a 3D printed hybrid mechanical structure of a hand exoskeleton for stroke survivors to facilitate donning and doffing
Vertongen, Jens* | Delft University of Technology, Department of BioMechanical Engineering, Delft (Netherlands)
Kamper, Derek | University of North Carolina at Chapel Hill and North Carolina State University, Joint Department of Biomedical Engineering, Raleigh (USA)

C 02: The effect of different orthotic principles on biomechanical gait parameters
Schmalz, Thomas* | Otto Bock HealthCare, Research Biomechanics, Goettingen (Germany)
Drewitz, Heiko | Otto Bock HealthCare, Competence Centre, Goettingen (Germany)

C 03: Development and testing of an artificial multi-layer soft-tissue model for the testing of orthopaedic devices
Mücke, Steven* | Technische Universität Berlin, Medical Engineering, Berlin (Germany)
Gutierrez Canelon, Maximiliano | Technische Universität Berlin, Medical Engineering, Berlin (Germany)

C 04: A musculoskeletal model for individualized neuromuscular training and rehabilitation on a robotic resistive exercise device
Goell, Fabian* | German Sport University Cologne, Biomechanics and Orthopaedics, Cologne (Germany)
Braunstein, Bjoern | German Sport University Cologne, Biomechanics and Orthopaedics, Cologne (Germany)
Ketelhut, Maike | RWTH Aachen University, Institute of Automatic Control, Aachen (Germany)
Abel, Dirk | RWTH Aachen University, Institute of Automatic Control, Aachen (Germany)
Albracht, Kirsten | German Sport University Cologne, Biomechanics and Orthopaedics, Cologne (Germany), Aachen University of Applied Science, Aachen (Germany)

C 05: Long-term changes in technology acceptance of a robotic system in stroke treatment: A pilot study
Jankowski, Natalie* | Humboldt-Universität zu Berlin, Institut für Rehabilitationswissenschaften, Berlin (Germany)
Ivanova, Ekaterina | TU Berlin, Industrial Automation, Berlin (Germany)
Wiehe, Lea | Humboldt-Universität zu Berlin, Institut für Rehabilitationswissenschaften, Berlin (Germany
Wahl, Michael | Humboldt-Universität zu Berlin, Institut für Rehabilitationswissenschaften, Berlin (Germany)

4.4 D: Innovation Clusters INOPRO and INTAKT

Chair: Russold, Michael | Otto Bock HealthCare, Wien
Co-Chair: Hoffmann, Klaus-Peter | Fraunhofer IBMT, Sulzbach

D 01: Intelligent orthotics and prosthetics for an effective and intuitive man-machine interaction: The innovation cluster INOPRO
Gonzalez-Vargas, Jose* | Otto Bock HealthCare, Duderstadt (Germany)
Russold, Michael | Otto Bock HealthCare, Wien (Austria)

D 02: A multi-channel implantable system to restore natural sensory feed-back in amputees
Kiele, Patrick* | University of Freiburg, IMTEK, Freiburg (Germany)
Braig, David | University Freiburg, Medical Center, Freiburg (Germany)
Weiss, Jakob | University Freiburg, Medical Center, Freiburg (Germany)
Pasluosta, Cristian | University of Freiburg, IMTEK, Freiburg (Germany)
Stieglitz, Thomas | University of Freiburg, IMTEK, Freiburg (Germany)

D 03: Intermuscular coupling analysis during upright standing after a uni-lateral transfemoral amputation
Pasluosta, Cristian* | University of Freiburg, IMTEK, Freiburg (Germany)
Krauskopf, Thomas | University of Freiburg, IMTEK, Freiburg (Germany)
Lauck, Torben | University of Freiburg, IMTEK, Freiburg (Germany)
Klein, Lukas | University Freiburg, Medical Center, Freiburg (Germany)
Mueller Marc | Sanitätshaus Pfänder Freiburg (Germany)
Herget, Georg W. | University Freiburg Medical Center, Freiburg (Germany)
Stieglitz, Thomas | University of Freiburg, IMTEK, Freiburg (Germany)

D 04: Interactive Implants in a Network – the Innovation Cluster INTAKT
Hoffmann, Klaus-Peter* | Fraunhofer IBMT, Sulzbach (Germany)
Ruff, Roman | Fraunhofer IBMT, Sulzbach (Germany)

D 05: Electrical stimulation of five parts of the gastrointestinal tract: preclinical study
Stumm, Karen* | Johannes Gutenberg-University, Medical Center, Mainz (Germany)
Schiemer, Jonas Friedrich | Johannes Gutenberg-University, Medical Center, Mainz (Germany)
Baumgart, Jan | Johannes Gutenberg-University, Medical Center Translational, Mainz (Germany)
Somerlik-Fuchs, Karin H. | inomed Medizintechnik GmbH, Research and Development, Emmendingen (Germany)
Hoffmann, Klaus-Peter | Fraunhofer IBMT, Sulzbach (Germany)
Kneist, Werner | St. Georg Klinikum Eisenach, Clinic for General and Visceral Surgery and Coloproctology, Eisenach (Germany)

4.5 E: Human Technology Interactions

Chair: Braatz, Frank | UMG University Medical Center Goettingen, PFH Private University of Applied Sciences, Goettingen
Co-Chair: Schauer, Thomas | TU Berlin, Control Systems, Berlin

E 01: Comparative study on the effectiveness of an electric versus conventional rollator during rehabilitation of apoplectic stroke patients
Knaack, Franziska* | University Medicine Rostock, Orthopaedics, Rostock (Germany)
Jacksteit, Robert | University Medicine Rostock, Orthopaedics, Rostock (Germany)
Engelmann, Hagen | Fachklinik Waldeck, Center of Medical Rehabilitation, Schwaan (Germany)
Mach, Heike | Fachklinik Waldeck, Center of Medical Rehabilitation, Schwaan (Germany)
Bader, Rainer | University Medicine Rostock, Orthopaedics, Rostock (Germany)

E 02: Software Platform for Network of the Intelligent Implants
Cardona-Audí Josep Marcel* | Fraunhofer IBMT, Sulzbach (Germany)
Amelin, Dmitry | Fraunhofer IBMT, Sulzbach (Germany)
Ruff, Roman | Fraunhofer IBMT, Sulzbach (Germany)

E 03: Wireless retina implant with optical energy supply
Velten, Thomas* | Fraunhofer IBMT, Sulzbach (Germany)
Knoll, Thorsten | Fraunhofer IBMT, Sulzbach (Germany)
Stracke, Frank | Fraunhofer IBMT, Sulzbach (Germany)
Le Harzic, Ronan | Fraunhofer IBMT, Sulzbach (Germany)
Jäger, Tino | PREMA Semiconductor GmbH, Mainz (Germany)
Rammensee, Michael | PREMA Semiconductor GmbH, Mainz (Germany)
Kurz, Oliver | PREMA Semiconductor GmbH, Mainz (Germany)
Klesy, Stephan | PREMA Semiconductor GmbH, Mainz (Germany)
Januschowski, Kai | Augenklinik Sulzbach, Sulzbach (Germany)
Sermeus, Loic | Augenklinik Sulzbach, Sulzbach (Germany)
Szurman, Peter | Augenklinik Sulzbach, Sulzbach (Germany)
Hoffmann, Klaus-Peter | Fraunhofer IBMT, Sulzbach (Germany)

E 04: Comparison of six different marker sets to analyze knee kinematics and kinetics during landings
Kerkhoff, Annette* | University of Applied Sciences Muenster, Engineering Physics, Muenster (Germany)
Wagner, Heiko | University of Muenster, Institute of Sports and Exercise Sciences, Muenster (Germany)
Peikenkamp, Klaus | University of Applied Science Muenster, Engineering Physics, Muenster (Germany)

E 05: Validation method for body-mounted sensor attachments
Schmidt*, Katharina | University of Applied Sciences, Biomechatronics, Muenster (Germany)
Hochmann, David | University of Applied Sciences, Biomechatronics, Muenster (Germany)

5 Poster Session

5.1 P: Technically Assisted Rehabilitation

Chair: Kraft, Marc | TU Berlin, Medical Engineering, Berlin
Co-Chair: Wahl, Michael | Humboldt-Universität zu Berlin, Berlin

P 01: Design of a surface electromyography sensor system for attuning the support by robotic assistance in stroke rehabilitation
Cooper, Sean Steven* | RWTH Aachen University, Rehabilitation and Prevention Engineering, Aachen (Germany)
Disselhorst-Klug, Catherine | RWTH Aachen University, Rehabilitation and Prevention Engineering, Aachen (Germany)

P 02: Benchmarking textile-based soft wearable actuators
Nassour, John* | TU Chemnitz, Computer Science, Chemnitz (Germany)

P 03: Comprehensive development, implementation and evaluation of industrial exoskeletons
Bornmann, Jonas* | Otto Bock HealthCare, Global Research & Innovation, Duderstadt (Germany)
Schirrmeister, Benjamin | Otto Bock HealthCare, Duderstadt (Germany)
Gonzalez-Vargas, Jose | Otto Bock HealthCare, Duderstadt (Germany)
Parth, Torsten | Otto Bock HealthCare, Duderstadt (Germany)

P 04: INTAKT microimplants for grasp restoration in people with high spinal cord injury
Kogut, Andreas | Heidelberg University Hospital, Spinal Cord Injury Center, Heidelberg (Germany)
Böttrich, Marcel | TU Ilmenau, Biomedical Engineering and Informatics, Ilmenau (Germany)
Diercks, Kai | Soventec GmbH, Dannewerk (Germany)
Merchel, Dana | Wilddesign GmbH, Gelsenkirchen (Germany)
Ruta, Marc | Wilddesign GmbH, Gelsenkirchen (Germany)
Ruff, Roman | Fraunhofer IBMT, Sulzbach (Germany)
Hoffmann, Klaus-Peter | Fraunhofer IBMT, Sulzbach (Germany)
Rupp, Rüdiger* | Heidelberg University Hospital, Spinal Cord Injury Center, Heidelberg (Germany)

P 05: Experimental Stimulation Platform for Electrophysiological Applications and Interactive Implants
Krüger, Thilo B.* | inomed Medizintechnik GmbH, Emmendingen (Germany)
Somerlik-Fuchs, Karin H. | inomed Medizintechnik GmbH, Emmendingen (Germany)

P 06: Advances in electrical stimulation-based therapy for tinnitus
Olze, Heidi* | Charité Universitätsmedizin Berlin, Otorhinolaryngology, Head and Neck Surgery, Berlin (Germany)
Vater, Jana | Charité Universitätsmedizin Berlin, Otorhinolaryngology, Head and Neck Surgery, Berlin (Germany)
Szczepek, Agnieszka | Charité Universitätsmedizin Berlin, Otorhinolaryngology, Head and Neck Surgery, Berlin (Germany)
Reich, Uta | Charité Universitätsmedizin Berlin, Otorhinolaryngology, Head and Neck Surgery, Berlin (Germany)
Gräbel, Stefan | Charité Universitätsmedizin Berlin, Otorhinolaryngology, Head and Neck Surgery, Berlin (Germany)
Uecker, Florian Cornelius | Charité Universitätsmedizin Berlin, Otorhinolaryngology, Head and Neck Surgery, Berlin (Germany)

P 07: BrailleRing: A flexible Braille display with the potential to be easy-to-clean by its users
Treml, Michael* | Tetragon, Vienna (Austria)
Busse, Dominik | Tetragon, Munich (Germany)
Dünser, Andreas | Tetragon, Vienna (Austria)
Busboom, Mike | Tetragon, Vienna (Austria)
Zagler, Wolfgang L. | Tetragon, Vienna (Austria)

P 08: Motion Classification for a Passive Lower Limb Exoskeleton Based on Derived Features
Patzer, Isabel* | Karlsruhe Institute of Technology, Anthropomatics and Robotics, Karlsruhe (Germany)
Beil, Jonas | Karlsruhe Institute of Technology, Anthropomatics and Robotics, Karlsruhe (Germany)
Asfour, Tamim | Karlsruhe Institute of Technology, Anthropomatics and Robotics, Karlsruhe (Germany)

P 09: Avatar Rehabilitation Feedback for Skeleton Based Assisted Animation Control with Specialised Training Equipment
Lehmann, Lars* | TU Chemnitz, Electrical Engineering and Information Technology Chemnitz (Germany)

P 10: Dynamic balancing responses following outward perturbations to the pelvis during walking in people with unilateral trans-tibial amputation
Matjačić, Zlatko* | University Rehabilitation Institute, Research and Development Unit, Ljubljana (Slovenia)
Zadravec, Matjaz | University Rehabilitation Institute, Research and Development Unit, Ljubljana (Slovenia)
Olensek, Andrej | University Rehabilitation Institute, Research and Development Unit, Ljubljana (Slovenia)
Burger, Helena | University Rehabilitation Institute, Research and Development Unit, Ljubljana (Slovenia)

P 11: The Impact of Different Gait Scenarios on the Interaction between Residual Limb and Socket in Lower Limb Prostheses
Noll, Veronika* | TU Darmstadt, Mechatronic Systems in Mechanical Engineering, Darmstadt (Germany)
Rinderknecht, Stephan | TU Darmstadt, Mechatronic Systems in Mechanical Engineering, Darmstadt (Germany)

P 12: Camera-based Climbing Analysis for a Therapeutic Training System
Richter, Julia* | TU Chemnitz, Information Technology, Chemnitz (Germany)
Beltrán, Raul | TU Chemnitz, Information Technology, Chemnitz (Germany)
Heinkel, Ulrich | TU Chemnitz, Information Technology, Chemnitz (Germany)

P 13: Bioresorbable interface for implant electronics
Welsch, Christine* | Fraunhofer IBMT, Sulzbach (Germany)
Krob, Marc-Oliver | Fraunhofer IBMT, Sulzbach (Germany)
Sossalla, Adam | Fraunhofer IBMT, Sulzbach (Germany)
Ruff, Roman | Fraunhofer IBMT, Sulzbach (Germany)
Hoffmann, Klaus-Peter | Fraunhofer IBMT, Sulzbach (Germany)

P 14: Biodegradable thin film transistors for active implants
Hoffmann, Michael* | Fraunhofer FEP, Dresden (Germany)
Schreiber, Stephanie | Fraunhofer FEP, Dresden (Germany)

P 15: Real-Time Classification of Hand Movements as a Basis for Intuitive Control of Grasp Neuroprostheses
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P 16: A test device for prosthetic sockets: installation, calibration and first tests with two re-useable mounting adaptors
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P 17: The REX Bionics lower limb exoskeleton can improve function and levels of independence, and is an acceptable treatment modality to patients with neurological conditions
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P 18: Perturbation-based robotic balance training during walking after stroke: Preliminary results of a pilot randomized control trial
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P 19: Rehabilitation Robots in the German Healthcare Sector: Added Value and Experience
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P 20: Actuated ankle exoskeleton for children with crouch gait
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