Robotics and Technology in Rehabilitation Symposium

Friday, April 29 and Saturday, April 30, 2022

Location: Mayer Family Conference Center
MossRehab, 60 Township Line Road
Elkins Park, PA 19027
With Virtual Option

Hosted by:

MossRehab
EINSTEIN HEALTHCARE NETWORK

MRRI
MOSS REHABILITATION
RESEARCH INSTITUTE

Robotics and Technology in Rehabilitation Symposium

Presentation Overview

This course represents the state of the science and clinical practice in rehabilitation robotics applied in neurorecovery. It spans robot design history to present day soft-robotics, as well as clinical integration and practicalities, and robotic devices as assessment tools. Finally, hands-on practical sessions with the latest devices used clinically will be included. Limitations and future directions in the field of rehabilitation robotics will be discussed. The symposium includes world leading clinicians and scientists in neurorehabilitation as well as engineering and human motor control experts.

Program Objectives: At the conclusion of this activity, participants should be able to:

1. describe the rationale for using robotic devices in neurorehabilitation
2. describe basic design features and operation of rehabilitation robotic devices
3. list several current devices used in neurorehabilitation
4. differentiate between an exoskeleton device and an end-effector device
5. list (2) examples of how robotic devices can be used to assess human function
6. list (2) examples of present limitations of robotic devices in neurorehabilitation applications

Contact Hours: 12.5

Course Level: Intermediate

Target Audience

Rehabilitation Scientists, Allied Health Professionals, Occupational Therapists, Occupational Therapy Assistants, Physical Therapists, Physical Therapy Assistants, Rehabilitation Engineers, Physicians, Clinical Administrators.

Fee: **$400 in person**
$350 online

Student: **$100** (Please include Name of School and Student ID# when registering

Venue:

Moss Rehab
Mayer Conference Center
60 Township Line Road
Elkins Park, PA 19027
With Virtual Option via Zoom

Refreshments:

Complimentary Continental Breakfast and Lunch will be provided. Hors d'oeuvres and cocktails will be served at the Social Mixer on Friday.

COVID-19 Information: As a healthcare facility, MossRehab follows all CDC guidelines for COVID-19. In the interest of protecting the health and safety of those who will be attending the conference, we are asking that all attendees be fully vaccinated, and show proof of vaccination upon arrival.

Accommodations, Directions and Parking: For a listing of recommended hotels in the area, directions, and parking information visit: **www.mossrehab.com/continuingeducation**

DAY 1: Friday, April 29, 2022

8:00 am **Registration and Continental Breakfast**

8:30 am **Introductory Remarks**
Dylan Edwards, PhD and Alberto Esquenazi, MD, Conference Co-Chairs

8:45 am **Rehabilitation Robotics, From Development to Marketing**
Hermano Igo Krebs, PhD

9:30 am **Propulsion-augmenting Soft Robotic Exosuits for Gait Assistance and Rehabilitation after Stroke**
Louis Awad, PT, DPT, PhD

10:15 am **Break**

10:30 am **Back to the Future—the Use of Advanced Virtual Reality Technology in Rehabilitation**
Moshe Bondi, MD

11:15 am **Integrating Technology in Neurorehabilitation Clinical Trials**
Gerard Francisco, MD

12:00 pm **Lunch** (*please visit Exhibitor tables in person or virtually*)

1:00 pm **Robots for Fall Prevention in the Orthopaedic Patient**
Jess Lonner, MD

1:45 pm **Break**

2:15 pm **Clinical Application of Lower Extremity Devices**
Ning Cao, MD and Andrew Packel, PT, NCS

3:00 pm **Clinical Application of Upper Extremity Devices**
Jaun May, OTR/L and Casey McKee, OTR/L

Clinical Demonstrations led by MossRehab Clinicians: *Samantha Adams, OTR/L, BCPR, Erika Harold, PT, DPT, NCS, Elizabeth Marcy, PT, DPT, NCS, Casey McKee, OTR/L, Megan McKelvey, PT, Samantha Snapp, MS, OTR/L, Stephanie Stein, MS, OTR/L, Matthew Vnenchak, PT, MS, NCS, Joseph Woltemate, MOT, OTR/L.*

Demonstrations led by MossRehab Clinicians: *Hocoma Armeo Spring, C-Mill, Andago, Heaxel Icone, Tyromotion Amadeo, Diego, Myro, THERA-Trainer Lyra, Ekso Bionics EksoNR*

3:45 pm **Clinical Demonstration /Lab—Small groups**

4:30 pm **Panel Discussion—*Clinical Application of Robotics in Neurorehabilitation***
Facilitated by Shailesh Kantak, PT, PhD

Social Mixer—Friday (*immediately following Panel Discussion*):

Join your fellow colleagues and exhibitors for a social gathering to network and relax in the beautiful Alice & Herbert Sachs Therapeutic Conservatory and outside garden. CDC COVID-19 guidelines will be observed.

DAY 2: Saturday, April 30, 2022

8:00 am	**Continental Breakfast**
8:30 am	**Gait Training in Motor Incomplete Spinal Cord Injury Using Exoskeleton Robotics** *Dylan Edwards, PhD*
9:00 am	**From Assessing Impairment to Tailored Intervention: How Technology Can Benefit Rehabilitation Research.** *Amanda Therrien, PhD*
9:45 am	**Tele-Rehabilitation for Stroke** *Steven C. Cramer, MD, MMSc, FAAN, FAHA*
10:30 am	**Break**
11:00 am	**Robot-aided Recovery after Stroke: Role of Sensation, Synergies and Success** *David Reinkensmeyer, PhD*
11:45 am	**Lunch** (*please visit Exhibitor tables in person or virtually*)
	Clinical Demonstrations led by MossRehab Clinicians: *Samantha Adams, OTR/L, BCPR, Erika Harold, PT, DPT, NCS, Elizabeth Marcy, PT, DPT, NCS, Megan McKelvey, PT, Alexey Nastaskin, MS, OTR/L, Samantha Snapp, MS, OTR/L, Stephanie Stein, MS, OTR/L, Matthew Vnenchak, PT, MS, NCS, Joseph Woltemate, MOT, OTR/L.*
	Demonstrations led by MossRehab Clinicians: *Hocoma Armeo Spring, C-Mill, Andago, Heaxel Icone, Tyromotion Amadeo, Diego, Myro, THERA-Trainer Lyra, Ekso Bionics EksoNR*
1:00 pm	**Clinical Demonstration /Lab—Small groups**
1:45 pm	**Clinical Demonstration /Lab—Small groups**
2:30 pm	**Clinical Demonstration /Lab—Small groups**
3.15 pm	**Panel Discussion—*Robotics for Research, Assessment and Clinical Care*** **Facilitated by Alberto Esquenazi, MD**
4:00 pm	**Concluding Remarks**

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Meet the Faculty

Dylan Edwards, PhD, *Director, Moss Rehabilitation Research Institute, Director, Laboratory for Stroke Motor Recovery*
Dr. Edwards' research focuses on recovery of motor function following stroke and spinal cord injury. His work uses rehabilitation robotics to standardize high-dose physical therapy of the arm and gait function. Non-invasive brain stimulation is used as an experimental treatment tool in combination with robotic therapy, as well as an outcome predictor.

Alberto Esquenazi, MD, *John Otto Haas Chair of the Department of Physical Medicine and Rehabilitation, Director, Gait and Motion Analysis Laboratory and Clinical Director of the Regional Amputee Center, MossRehab*
Dr. Esquenazi is also Professor of PM&R at Temple University and the Jefferson School of Medicine and Adjunct Professor of Bioengineering at Drexel University. His research focuses on gait analysis, prosthetics, orthotics, spasticity management and robotics and technology in rehabilitation.

Hermano Igo Krebs, PhD, *Principal Research Scientist and Lecturer, Mechanical Engineering Department, MIT; Adjunct Professor, University of Maryland School of Medicine, Department of Neurology*
Internationally recognized in the field of Robotics, Dr. Krebs acts as a Visiting Professor at Universities in Japan and the UK. He founded Motion Technologies & 4Motion Robotics to revolutionize the way rehabilitation medicine is practiced today by applying robotics & information technology to assist, enhance, & quantify rehabilitation.

Louis Awad, PT, DPT, PhD, *Director, Neuromotor Recovery Laboratory, Assistant Professor, Physical Therapy and Rehabilitation Sciences, Boston University, Boston, MA*
Dr. Awad is also a Research Faculty Member at Spaulding Rehabilitation Hospital, Founding Faculty Member of the Harvard Assistive Technology Initiative, Associate, Department of Physical Medicine & Rehabilitation at Harvard Medical School and Associate, Paulson School of Engineering & Applied Sciences at Harvard University. He is a member of the Scientific Advisory Boards for ReWalk Robotics and MedRhythms.

Moshe Bondi, MD, *Director, Neurological Rehabilitation and National Spinal Cord Injury Rehabilitation Program at the Sheba Medical Center, Israel*
Following his PM&R residency at Sheba Medical Center, Dr. Bondi completed a dual fellowship in Spinal Cord Injury and Chronic Pain management at UHN Toronto Rehabilitation Institute, Canada. The use and development of new technologies is one of his main interests, for enhancing CNS plasticity and functioning among populations with neurological impairments.

Meet the Faculty

Gerard Francisco, MD, *The Wulfe Family Chair of PM&R, Professor, McGovern Medical School, University of Texas Health Science Center, Chief Medical Officer and Clinical Scientist, TIRR Memorial Hermann, Director UTHealth Neurorecovery Research Center at TIRR Memorial Hermann*
Dr. Francisco's research focuses on the integration of technology in enhancing recovery. Including investigation of non-invasive brain-robot interface for stroke, vagal nerve stimulation to augment post-stroke upper limb rehabilitation, and lower limb wearable exoskeletons for stroke, spinal cord injury and multiple sclerosis.

Jess Lonner, MD, *Professor, Department of Orthopedic Surgery, Rothman Institute, Sidney Kimmel Medical College, Thomas Jefferson University Hospital, Philadelphia, PA, Founder, Ambulatus Robotics, Wynnewood, PA*
Dr. Lonner specializes in robotic techniques for knee replacement surgery at the Rothman Orthopaedic Institute. He is currently developing a robot for gait training and fall prevention in Orthopaedic patients.

Ning Cao, MD, *Co-Director, Stroke Rehabilitation, MossRehab*
Dr. Cao has worked as a clinician, researcher and educator in the area of stroke rehabilitation and recovery. Dr. Cao is a member of the Association of Academic Physiatrists, the American Academy of PM&R and the International Spine Intervention Society.

Andrew Packel, PT, NCS, *Physical Therapist, Stroke Rehabilitation, MossRehab*
Andy is a board-certified specialist in neurologic physical therapy and is currently the Locomotor Coordinator at MossRehab. His primary areas of interest are optimizing interventions to improve walking, including the use of robotics and technology; and enhancing clinical reasoning in therapy practice through explicit consideration of the components of therapy.

Jaun May, OTR/L, *Occupational Therapist, Team Leader, Inpatient Stroke Program, MossRehab*
Jaun is an occupational therapist at MossRehab with 18 years of experience. She is practicing clinician on the inpatient stroke program. Jaun participates in various research projects with MRRI such as home-based mirror therapy, Transport II, and telerehab.

Casey McKee, OTR/L, *Occupational Therapist, MossRehab*
Casey has been a practicing occupational therapist for 7 years, the majority in outpatient neurorehabilitation. Her treatment is heavily involved in robotic training. She has published research regarding robotic training and is currently a treatment provider in an ongoing telerehabilitation computer-based study.

Meet the Faculty

David Reinkensmeyer, PhD, *Professor, Mechanical & Aerospace Engineering, School of Engineering, Univ. of CA, Irvine*
Dr. Reinkensmeyer is a co-inventor of the ArmeoSpring arm training exoskeleton and the MusicGlove finger training device. He is a fellow of the AIMBE. His research activities focus on movement control, neuro-rehabilitation and robotics.

Amanda Therrien, PhD, *Institute Scientist, Director of the Sensorimotor Learning Lab, Moss Rehabilitation Research Institute*
Dr. Therrien is interested in understanding the precise mechanisms through which damage to different brain areas disrupts sensorimotor function and motor learning. The main focus of her work is understanding mechanisms of sensory and motor impairment caused by damage to the cerebellum.

Steven Cramer, MD, MMSc, FAAN, FAHA, *Susan and David Wilstein Endowed Chair in Rehabilitation, Professor, Department of Neurology, David Geffen School of Medicine at UCLA, Medical Director of Research, California Rehabilitation Institute, Los Angeles, CA*
Dr. Cramer is a stroke neurologist whose research focuses on neural repair after central nervous system injury in humans, with an emphasis on stroke and on the recovery of movement. A major emphasis is utilizing robotic devices to reduce disability after stroke, and on individualizing therapy for each person's needs .

Shailesh Kantak, PhD, PT, *Institute Scientist, Director, Neuroplasticity and Motor Behavior Laboratory, Moss Rehabilitation Research Institute*
Dr. Kantak's research goal is to harness the understanding of motor learning and neuroplasticity to design and test novel interventions in patients with neurologic injuries.

Meet MossRehab Clinicians

Samantha Adams, OTR/L, BCPR, Occupational Therapist, Drucker Brain Injury Outpatient Center

Samantha is an Occupational Therapist on the Outpatient Brain Injury service. She completed the MossRehab Occupational Therapy Residency Program and received Board Certification in Physical Rehabilitation.

Erika Harold, PT, DPT, NCS, Physical Therapist, Stroke Rehabilitation

Erika works on the CVA acute inpatient rehab team and is certified level 3 Ekso Trainer through EksoBionics. She completed MossRehab's PT Neurological Residency in 2017-2018 and received her NCS in 2019.

Elizabeth Marcy, PT, DPT, NCS, Physical Therapist, Drucker Brain Injury Center and Stroke Rehabilitation

Elizabeth is the physical therapy team leader for the Stroke and Brain Injury Programs at MossRehab. She is a board certified neurologic specialist, has served as a mentor in the MossRehab Neurologic Residency Program and as adjunct faculty to local physical therapy programs.

Megan McKelvey, PT, DPT, Physical Therapist, Comprehensive Rehabilitation Unit

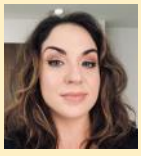
Megan McKelvey is a physical therapist with 10+ years experience with a specialty in ICU acquired weakness and was one of the leading therapists on Moss Rehab's Core+ Covid Unit.

Alexey Nastaskin, OTR/L, Occupational Therapist, Outpatient Clinic

With 15 years experience working with the neurologic based population, Alex's specialties include: Intervention models for Right Hemisphere Stroke Population, Upper Extremity Robotic Rehabilitation, & Neurorehabilitation. He is certified in Kinesiotaping, specializing in splinting & casting for spastic & flaccid hemiparesis

Samantha Snapp, OTR/L, Occupational Therapist, Stroke Rehabilitation

Samantha has 10 years experience and currently works on the inpatient stroke program at MossRehab. She has a special interest in neurologic upper extremity rehabilitation and participates in the TRANSPORT II research project with Moss Rehabilitation Research Institute.



Stephanie Stein, OTR/L, Occupational Therapist, Stroke Rehabilitation

In her practice, Stephanie has worked with patients who have sustained a stroke, traumatic brain injury, and other neurological conditions for over 10 years. Her clinical interests include robotics and upper extremity motor recovery after stroke or traumatic brain injury.

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Speaker Disclosures can be found on the website

www.mossrehab.com/continuingeducation.

Meet MossRehab Clinicians

Matthew Vnenchak, MS, PT, NCS, *Physical Therapist, Stroke Rehabilitation—Matt is a physical therapist with over 20 years' experience who specializes in neurorehabilitation and vestibular rehabilitation. He actively incorporates technology and robotics into his clinical care and lectures on translation of technology to the clinic.*

Joseph Woltemate, MOT, OTR/L, *Occupational Therapist, Spinal Cord Injury Program, MossRehab*
Joe is an occupational therapist working with the spinal cord injury population at MossRehab for the past three years. He also works as a Homecare OT for Einstein Montgomery Home Health and Hospice.

Registration

Registration and payment can be made online at
www.mossrehab.com/continuingeducation (search for Robotics and Technology in Rehabilitation Symposium and click the Register button);

Deadline to register: **Wednesday, April 20, 2022**

If you have any special needs that we can address to make your participation more meaningful and enjoyable, please contact us at 215-663-6457.

Fees: $400 in person $350 online $100 Student

Discounts for Full-time/Part-time MossRehab Employees and MossRehab Per Diems—virtual attendance only

Cancellation Policy: All cancellations must be submitted to MossRehab at **WallacSh@einstein.edu.** Requests received 3 days or 72 hours prior to course start will result in a full refund. Requests received less than 3 days (72 hours) prior to the course start will result in a non-refundable administration processing fee of $50. No shows or cancellations within 24 hours of the course start will be ineligible for a refund.

⇒ Advanced registration is required due to space limitations. Registration is on a first-come, first-served basis.

⇒ For questions about the program or registration, please contact **Sheila Wallace, WallacSh@einstein.edu or by phone 215-663-6457.**

Continuing Education Credits

Requirement for successful course completion: Satisfactory completion of the continuing education units consists of monitored sign in and sign out forms and completion of a course feedback form that includes self-assessment of learning outcomes and full participation of demonstrations. Online attendance will be tracked and completion of an evaluation form and test will be required.

CME Accreditation Statements: Einstein Medical Center Philadelphia is accredited by the Pennsylvania Medical Society to provide Continuing Medical Education for physicians.

CME Credit Designation Statement: Einstein Medical Center Philadelphia designates this live educational activity for a maximum of 11.0 *AMA PRA Category 1 Credit(s)*™. Physicians should only claim credit commensurate with the extent of their participation in the educational activity.

Conflict of Interest Statement: Faculty and all others who have the ability to control the content of continuing medical education activities sponsored by Einstein Medical Center Philadelphia are expected to disclose to the audience whether they do or do not have any real or apparent conflict(s) of interest or other relationships related to the content of their presentation(s).

Accreditation Statement For Psychologists: Einstein Healthcare Network is approved by the American Psychological Association to sponsor continuing education for psychologists. Einstein Healthcare Network maintains responsibility for this program and its content.

Credit Designation Statement: This program offers up to Eleven (11) Continuing Education credits. **CE Program Administrator:** Brian Gallagher, Psy.D., Phone: 215.456.9850 Email: gallagbr@einstein.edu,

Physical Therapy CEUs: Application has been submitted for 12.5 contact hours to Pennsylvania State Board of Physical Therapy and New Jersey State Board of Physical Therapy Examiners. MossRehab is an approved provider of Physical Therapy through the New York State Education Department.

American Occupational Therapy Association (AOTA):

AOTA American Occupational Therapy Association Approved Provider

MossRehab is an approved provider of continuing education. Course Approval # 2998. This Blended/Hybrid format is offered at .125 CEUs Intermediate level and Occupational Therapy Service Delivery, Professional Issues, Foundational Knowledge categories. The assignment of AOTA CEUs does not imply endorsement of specific course content, products or clinical procedures by AOTA.

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US Postage
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LISTMASTERS

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