

AMERICAN SOCIETY OF **NEUROREHABILITATION**

*Annual Meeting*



**NOVEMBER 10 - 11, 2016 • MARRIOTT MISSION VALLEY - SAN DIEGO, CA**

ASNR

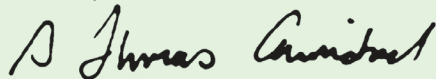
AMERICAN SOCIETY OF NEUROREHABILITATION

RE - GENERATE  
- CONNECT  
- EDUCATE

## WELCOME TO THE 2016 ASNR ANNUAL MEETING

On behalf of the American Society of Neurorehabilitation (ASNR), we are excited that you are joining us for the 2016 Annual Meeting. Our meeting provides interactions among neurorehabilitation clinicians, basic scientists, industry representatives, foundations and funders in a dynamic environment of presentations and discussion. The program this year features a broad range of topics, from brain-machine interface technologies to overcome paralysis to the use of big data in neurorehabilitation clinical trials. Two symposia will focus on the role of neurorehabilitative activity in shaping neuroplasticity in stroke recovery and in Parkinson's disease outcomes. These symposia are led by recognized leaders in scientific fields of neuroengineering, motor learning, synaptic plasticity and exercise physiology from clinical fields of neurology, physical therapy and occupational therapy. The meeting concludes with a bang in the Controversies in Neurorehabilitation session, where a panel debates what we mean as a field in the term "neurorehabilitation", how each clinical specialty may see this differently and how this term relates to both the biology of nervous system recovery and to the way in which the clinical services in this field are reimbursed. Along the way in this meeting will have other important events, such as the Foundation Reception, mentorship breakfast, poster sessions and awards and a cocktail hour to provide many opportunities to interact, collaborate and share with colleagues in this growing field.

Sincerely,



S. Thomas Carmichael  
Program Chair

### ON BEHALF OF THE PROGRAM COMMITTEE:

Cathrin Buetefisch, MD, PhD  
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Steven Wolf, PhD, PT, FASNR  
Steve Zeiler, MD, PhD



S. Thomas Carmichael, MD, PhD  
2016 ASNR Program  
Committee Chair (2015-2016)  
David Geffen School of Medicine  
at UCLA Neurology

### ASNR MISSION STATEMENT

The mission of the ASNR is to promote the medical and social wellbeing of persons with disabling neurological disorders, to advance training and research in the basic and clinical sciences that can lead to functional recovery of neurologically impaired persons, and to disseminate the knowledge of this research among professionals and the general public.

The ASNR promotes:

- Specialty training and identification of those with expertise in neurorehabilitation
- Professional and public education
- Basic science and clinical research in neurorehabilitation
- Communication and collaboration with people with neurological disorders and related organizations
- Mission of Neurorehabilitation Research



# GENERAL INFORMATION

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## HANDOUTS

All attendees will receive a link to available meeting handouts. The link will be sent from [info@asnr.com](mailto:info@asnr.com). There will not be any hard copies of handouts made available unless provided by the speaker.

## ABSTRACTS

Abstract titles and presenters can be found on pages 8-15. Full text abstracts can be found online at [www.asnr.com](http://www.asnr.com).

## ANNUAL MEETING WIFI

Complimentary wifi will be available in the Annual Meeting space. Please use the password **ASNR16** to join the network.

## ONSITE ASNR ANNUAL MEETING SURVEY

Please complete and return the Annual Meeting survey you received in your email prior to the meeting before you leave the meeting on Friday. Your responses will prove crucial to the future success of ASNR. Thank you!

## ASNR TRAVEL FELLOWSHIPS FOR DIVERSITY

ASNR would like to thank the National Institute of Neurological Disorders and Stroke (NINDS) and National Institutes of Health (NIH) for their generous support of our Annual Meeting and in particular for support of the Diversity Travel Fellowship program. We had many excellent applications to this program this year. We congratulate Catherine Norise and Daniela Junckes da Silva Mattos on their travel awards. The purpose of this award is to help offset travel expenses for under-represented individuals interested in the field of neurorehabilitation. Awardees are selected according to their academic background, experience, and research interests.

## JOIN THE DISCUSSION!

This year ASNR will be using Slido as our Automated Response System (ARS). Download the Slido App and enter **#5256** to ask your questions of the presenters.

## EXECUTIVE COMMITTEE

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# PROGRAM AT A GLANCE

## THURSDAY, NOVEMBER 10

**7:00 am – 8:30 am**

*Rio Pavilion/Rio Foyer*

### Exhibits and Registration

**8:30 am – 10:00 am**

*Rio Ballroom*

### Brain Machine Interface for Neural Prosthetics and Recovery of Function

Organized by:

*Leigh Hochberg, MD, PhD*

Speakers:

*Tyson Aflalo, PhD*

*Karunesh Ganguly, MD, PhD*

*Leigh Hochberg, MD, PhD*

**10:00 am – 12:00 pm**

*Rio Pavilion*

### Poster Session I & Exhibits

**12:00 pm – 1:00 pm**

### Lunch

(on your own)

**1:00 pm – 2:00 pm**

*Rio Ballroom*

### ASNR Oral Abstracts

Introduction by:

*S. Thomas Carmichael, MD, PhD*

(The Oral Abstract Session is comprised of the highest scored abstracts.)

Learned-Subordinant Use of the Paretic Forelimb after Motor Cortical Infarcts in Rats: Effects of Prior Task Experience

- *Khanghy Truong*

Cervical Electrical Stimulation for SCI and ALS

- *Noam Harel, MD, PhD*

Successful Self-Monitoring of Speech Errors Depends on Frontal White Matter Tracts

- *Ayan Mandal*

Creating Flexible Motor Memories in Human Walking

- *Kristan Leech, PhD, DPT*

Cognitively Challenging Exercise to Induce Neural Plasticity in Parkinson's Disease.

- *Brett Fling, PhD*

**2:00 pm – 2:30 pm**

*Rio Pavilion*

### Break

**2:30 pm – 4:30 pm**

*Rio Ballroom*

### Providing Very Early Rehabilitation after Acute Stroke: From Neurophysiology

Organized by:

*Steven Zeiler, MD, PhD*

Speakers:

*Tomoko Kitago, MD*

*John Krakauer, MD*

*S. Thomas Carmichael, MD, PhD*

*Steven Zeiler, MD, PhD*

**4:30 pm – 5:30 pm**

*Rio Pavilion*

### Reception and Exhibits

All Attendees Welcome!

**5:30 pm – 6:30 pm**

*Rio Ballroom*

### ASNR Business Meeting

**6:30 pm – 7:30 pm**

*Rio Ballroom*

### ASNR Education Foundation Event

Featuring *Kip Thorne, PhD*

*American Theoretical Physicist and Executive Producer of the motion picture Interstellar.*

Poolside Reception to follow. (Purchase tickets at the Registration Desk.)

## FRIDAY, NOVEMBER 11

**7:00 am – 8:30 am**

*Rio Pavilion/Rio Foyer*

### Exhibits and Registration

**7:00 am – 8:30 am**

*Rio Ballroom F-H*

### ASNR Mentoring Breakfast

(This is a ticketed event that required pre-registration)

**8:30 am – 10:30 am**

*Rio Ballroom*

### From Bench to Bedside to Community: Activity-Dependent Brain and Behavioral Recovery in Parkinson's Disease

Organized by:

*Beth Fisher, PT, PhD, FAPTA*

Speakers:

*Daniel Corcos, PhD*

(Discussant)

*Terry Ellis, PT, PhD, NCS*

*Beth Fisher, PT, PhD, FAPTA*

*Michael Jakowec, PhD*

**10:30 am – 12:30 pm**

*Rio Pavilion*

### Poster Session II & Exhibits

**12:30 pm – 1:30 pm**

Lunch (on your own)

**1:30 pm – 3:30 pm**

*Rio Ballroom*

### 'Big Data' for Rehabilitation: Promises, Pitfalls, and Future Potential

Organized by:

*Sook-Lei Liew PhD, OTR/L*

& *Steven Cramer, MD*

Speakers:

*Steven Cramer, MD*

*Liam Johnson, PhD*

*Sook-Lei Liew, PhD, OTR/L*

*Keith Lohse, PhD*

*Kenneth Ottenbacher, PhD, OT*

**3:30 pm – 4:00 pm**

*Rio Foyer*

### Break

**4:00 pm – 5:15 pm**

*Rio Ballroom*

### 2016 ASNR Award Ceremony

Presented by:

*Krish Sathian, MD,*

*PhD, FANA-ASNR*

*Foundation President*

Recognition of 2016 ASNR Fellows

*Alexander Dromerick, MD & Randolph Nudo, PhD*

Recognition of 2016 ASNR Poster Awards

*Fletcher H. McDowell Award (Clinical)*

*Presidential Award (Basic)*

Outstanding Neurorehabilitation Clinician-Scientist Award Lecture

Presented by the

2016 Award Recipient

*V.S. Ramachandran,*

*PhD, MBBS, FRCP*

*Kenneth Viste, Jr., MD*

*Memorial Lectureship*

Presented by the 2016

Award Recipient *Steven Wolf,*

*PhD, PT, FAPTA, FASNR*

**5:15 pm – 7:15 pm**

*Rio Ballroom*

### Controversies in Neurorehabilitation. Just What is

### "Neurorehabilitation"?

Organized by:

*Steven Wolf, PhD, PT,*

*FAPTA, FASNR*

Speakers (Basic):

*Pablo Celnik, MD*

*Catherine Lang, PT, PhD*

Speakers (Applied):

*Dale Corbett, PhD*

*Nick Ward, MD*

**7:15 pm – 8:00 pm**

*Courtyard Pool*

### Closing Poolside Reception

All Attendees Welcome!



# MEETING PROGRAM

## BRAIN MACHINE INTERFACE FOR NEURAL PROSTHETICS AND RECOVERY OF FUNCTION

Thursday, November 10 • 8:30 am - 10:00 am • Rio Ballroom

Organized by Leigh Hochberg, MD, PhD

Brain-computer interfaces, and particularly BCIs that harness information-rich signals from epicortical/ intracortical recordings, hold promise as powerful, flexible platforms for motor rehabilitation and sensorimotor restoration. Such BCI systems not only benefit from the remarkable plasticity that follows acute CNS injury, but also provide rare, fundamental human neuroscience insights that can inform future strategies for neurorehabilitation. To kick off our 2016 ASNR Annual Meeting, this Symposium will highlight the excitement of this ongoing BCI research and will include a panel

discussion and audience Q&A to highlight recent data, controversies, and hopes for BCI research and clinical translation.



Leigh Hochberg, MD, PhD



Karunesh Ganguly, MD, PhD



Tyson Alfalo, PhD

## ORAL ABSTRACTS

Thursday, November 10 • 1:00 pm - 2:00 pm • Rio Ballroom

1:00 pm -1:05 pm

### Introduction by S. Thomas Carmichael, MD, PhD

The Oral Abstract Session is comprised of the highest scored abstracts.

1:05 pm -1:15 pm

### O1: Learned-Subordinant Use of the Paretic Forelimb after Motor Cortical Infarcts in Rats: Effects of Prior Task Experience

Khanghy Truong<sup>1</sup>, Dallas Miller<sup>1</sup>, Evan Nudi<sup>1</sup>, Theresa Jones<sup>1,2</sup>

<sup>1</sup>Univ. of Texas at Austin, Austin, United States, <sup>2</sup>Inst. for Neuroscience, Austin, United States

1:15 pm -1:25 pm

### O2: Cervical Electrical Stimulation for SCI and ALS

Lok Yung<sup>1</sup>, Angelica Romero<sup>1</sup>, Tiffany Santiago<sup>1</sup>, Kenneth Guber<sup>1</sup>, Shivani Kastuar<sup>2</sup>, Nhuquynh Nguyen<sup>1</sup>, Yu-Kuang Wu<sup>1,2</sup>, Ann Spungen<sup>1,2</sup>, William Bauman<sup>1,2</sup>, Jason Carmel<sup>3</sup>, Noam Harel<sup>1,2</sup>

<sup>1</sup>James J. Peters VAMC, Bronx, NY, United States, <sup>2</sup>Icahn School of Medicine at Mount Sinai, New York, NY, United States, <sup>3</sup>Burke Medical Research Inst., White Plains, NY, United States

1:25 pm -1:35 pm

### O3: Successful Self-Monitoring of Speech Errors Depends on Frontal White Matter Tracts

Ayan Mandal<sup>1</sup>, Laura Skipper-Kallal<sup>1</sup>, Shihui Xing<sup>1,3</sup>, Mackenzie Fama<sup>1</sup>, Elizabeth Lacey<sup>1,2</sup>, Peter Turkeltaub<sup>1,2</sup>  
<sup>1</sup>Neurology Dept., Georgetown Univ. Medical Center, Washington, DC, United States, <sup>2</sup>Research Division, MedStar National Rehabilitation Hospital, Washington, DC, United States, <sup>3</sup>Department of Neurology, First Affiliated Hospital of Sun Yat-Sen Univ., Guangzhou, China

1:35 pm -1:45 pm

### O4: Creating Flexible Motor Memories in Human Walking

Kristan Leech<sup>1,2</sup>, Ryan Roemmich<sup>1,2</sup>, Amy Bastian<sup>1</sup>  
<sup>1</sup>Kennedy Krieger Inst., Baltimore, MD, United States, <sup>2</sup>Johns Hopkins Univ., Baltimore, MD, United States

1:45 pm -1:55 pm

### O5: Cognitively Challenging Exercise to Induce Neural Plasticity in Parkinson's Disease

Brett Fling<sup>1,2</sup>, Martina Mancini<sup>1</sup>, Patricia Carlson-Kuhta<sup>1</sup>, Laurie King<sup>1</sup>, Katrijn Smulders<sup>1</sup>, John Nutt<sup>1</sup>, Fay Horak<sup>1</sup>  
<sup>1</sup>Oregon Health & Science Univ., Portland, OR, United States, <sup>2</sup>Colorado St. Univ., Fort Collins, CO, United States



Khanghy Truong



Noam Harel, MD, PhD



Ayan Mandal



Kristan Leech, PhD, DPT



Brett Fling, PhD

## PROVIDING VERY EARLY REHABILITATION AFTER ACUTE STROKE: FROM NEUROPHYSIOLOGY

Thursday, November 10 • 2:30 pm - 4:30 pm • Rio Ballroom

Organized by Steven Zeiler, MD, PhD

Most recovery from motor impairment after stroke occurs in the first month and is largely complete by 3 months. In humans, data suggest that this improvement occurs independently of rehabilitative interventions, which predominantly target function through compensatory strategies. Thus, there is a powerful recovery mechanism that is currently not the focus of rehabilitative interventions. Animal models, which also show the existence of a post-stroke “sensitive period” (SP), provide the opportunity to better define as well as test approaches to augment and prolong this period of heightened recovery. There is an urgent need to develop innovative new approaches to rehabilitation because despite improvements in acute stroke care, up to sixty percent of stroke survivors suffer motor disability. Presenters will explore four areas using both animal and human data. First, we will explore data showing that almost all recovery from impairment occurs in the first months after stroke. Second, we will explore the effectiveness of post-stroke training with respect to impairment and how it diminishes as a function of time. Third, we will explore the associated molecular and physiologic mechanisms which define the SP. Finally, we will explore data suggesting novel approaches to take advantage of the SP. This last point will include the experimental notions that the SP may be prolonged and/or reopened at some later time.

Speakers: Tomoko Kitago, MD; John Krakauer, MA, MD; S. Thomas Carmichael, MD, PhD; Steven Zeiler, MD, PhD



Steven Zeiler, MD, PhD



Tomoko Kitago, MD



John Krakauer, MA, MD



S. Thomas Carmichael, MD, PhD

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## FROM BENCH TO BEDSIDE TO COMMUNITY: ACTIVITY-DEPENDENT BRAIN AND BEHAVIORAL RECOVERY IN PARKINSON'S DISEASE

Friday, November 11 • 8:30 am - 10:30 am • Rio Ballroom

Organized by Beth Fisher, PT, PhD, FAPTA

Parkinson's disease (PD) is a progressive neurodegenerative disorder affecting over 1.5 million people in the US. While epidemiological studies have suggested that physical activity over a lifespan protects against PD, new data reveal that exercise can also positively impact patients living with PD. In this symposium we will present a bench to bedside trilogy from animal models, to clinical studies, to community care. For example, animal models of dopamine depletion are revealing the underlying molecular mechanisms in activity-dependent neuroplasticity, synaptogenesis, and the establishment of new motor circuits including those that link cognitive and motor regions. Clinical studies in PD utilizing a variety of different interventions show improvement in motor performance and motor learning leading to improved function and reduced disability. We will present findings in both approaches that demonstrate key ingredients of different forms of exercise that have the greatest impact on disease symptomology and possibly modify disease progression. Finally, we will address the challenges and barriers associated with integrating exercise in daily life among those with PD. Importantly, we will share results from a recent trial providing evidence regarding strategies to overcome these barriers to facilitate long-term engagement in exercise. This evidence-based symposium seamlessly integrates data from animal models, clinical and community studies - providing a strong basis for the integration of exercise into the standard care of patients with PD.

Speakers: Terry Ellis, PT, PhD, NCS; Beth Fisher, PT, PhD, FAPTA; Michael Jakowec, PhD; Daniel Corcos, PhD (Discussant)



Beth Fisher, PT, PhD, FAPTA



Terry Ellis, PT, PhD, NCS



Michael Jakowec, PhD



Daniel Corcos, PhD (Discussant)

## 'BIG DATA' FOR REHABILITATION: PROMISES, PITFALLS, AND FUTURE POTENTIAL

Friday, November 11 • 1:30 pm - 3:30 pm • Rio Ballroom

Organized by Sook-Lei Liew, PhD, OTR/L & Steven Cramer, MD

A persistent challenge in rehabilitation research is the vast heterogeneity within clinical populations. This inter-individual variability makes it difficult to establish significance and reliably replicate findings of rehabilitation studies across smaller sample sizes. Large, diverse datasets (aka "big data"; e.g., n>1000) have the potential to drive rehabilitation research forward by providing the greater statistical power needed for robustly evaluating clinical hypotheses and validating findings from smaller studies. However, collecting, organizing, and analyzing such large amounts of data comes with a number of limitations and considerations. Here we present current applications of 'big data' approaches for rehabilitation research across both retrospective and prospective collections of behavioral, neuroimaging, and clinical outcomes data. In each talk, we provide a balanced approach to this topic, highlighting both the potential of 'big data' approaches for driving the rehabilitation field forward, as well as the challenges associated with properly implementing, analyzing and interpreting the results. In doing so, we aim to educate attendees about current methodologies and available tools for conducting big data analyses in rehabilitation. We also hope to provide a tempered, realistic view of the limitations of these approaches and ways to complement this approach with experimental approaches. While several of the applications presented here focus on stroke rehabilitation, we emphasize general methodologies and applications that can be related to many rehabilitation populations. Attendees will not only gain big picture insights into how large datasets can be used to further rehabilitation research, but they will also learn practical knowledge regarding what types of information are contained in various databases, how to access or contribute to them, and how to use these resources for their own questions and purposes.

Speakers: Steven Cramer, MD; Liam Johnson, PhD; Sook-Lei Liew, PhD, OTR/L; Keith Lohse, PhD; Kenneth Ottenbacher, PhD, OT



Sook-Lei Liew,  
PhD, OTR/L



Steven Cramer,  
MD



Liam Johnson,  
PhD



Keith Lohse, PhD



Kenneth  
Ottenbacher, PhD,  
OT

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## 2016 ASNR AWARD CEREMONY

Friday, November 11 • 4:00 pm - 5:15 pm • Rio Ballroom

Presented by Krish Sathian, MD, PhD, FANA - ASNR Foundation President

Recognition of the 2016 ASNR Poster Awards

Fletcher H. McDowell Award (Clinical)

Presidential Award (Basic)

Recognition of  
2016 ASNR Fellows



Alexander  
Dromerick, MD



Randolph Nudo,  
PhD

Outstanding Neurorehabilitation  
Clinician-Scientist (ONCS)  
Award Lecture



V.S.  
Ramachandran,  
PhD, MBBS, FRCP

Kenneth Viste, Jr., MD  
Memorial Lectureship



Steven Wolf, PhD,  
PT, FAPTA, FASNR



**CONTROVERSIES IN NEUROREHABILITATION**

Friday, November 11 • 5:15 pm - 7:15 pm • Followed by Closing Reception (poolside)

Neurorehabilitation, Brain Plasticity, Recovery, and Compensation: What is “NeuroRehab” when we do it?

*Moderated by Steven Wolf, PhD, PT, FAPTA, FAHA, FASNR*

There are many ways to understand what “Neurorehabilitation” might mean. Our perception can be influenced by our professional training and experience. At one level, neurorehabilitation may be seen as a clinical process that fosters recovery of function in the presence of neurological disease. The frame of reference becomes the process of intervention. Scientific rigor might suggest that neurorehabilitation is biological brain plasticity promoted through either spontaneous changes and/or induced changes neuronal circuits. A third perspective might define neurorehabilitation as how we measure one or more aspects of recovery. Alternatively, the concept may embody more than one of these definitions.

This symposium brings together scientific leaders who have devoted considerable time to exploring these notions in the laboratory with animal and human participants or through clinical intervention and observation. They will elucidate their perceptions with an effort at determining the genesis of a pervasive and acceptable definition. Participant engagement will be encouraged.



Steven Wolf, PhD,  
PT, FAPTA, FAHA,  
FASNR



Dale Corbett, PhD  
Basic



Pablo Celnik, MD  
Basic



Catherine Lang,  
PT, PhD  
Applied



Nick Ward, MD  
Applied



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# POSTER SESSION I

THURSDAY, NOVEMBER 10 • 10 - 12 PM • RIO PAVILION

**T1: Structural Changes in Descending Motor Tracts Correlate with Improvements in Motor Impairment in Chronic Stroke Patients Undergoing a Trial of Non-Invasive Brain-Stimulation and Occupational/Physical Therapy** (Motor Rehabilitation)

Gottfried Schlaug, Xin Zheng

*Beth Israel Deaconess Medical Center, Boston, MA, United States*

**T2: Clinically Relevant Levels of 4-Aminopyridine (4-AP) Strengthen Physiological Responses in Intact Motor Circuits in Rats, Especially after Pyramidal Tract Injury** (Movement Disorders)

Anil Sindhurakar<sup>1</sup>, Asht Mishra<sup>1</sup>, Disha Gupta<sup>1</sup>, Jennifer Iaci<sup>2</sup>, Tom Parry<sup>2</sup>, Jason Carmel<sup>1</sup>

*<sup>1</sup>Burke Medical Research Institute, White Plains, NY, United States, <sup>2</sup>Acorda Therapeutics, Ardsey, NY, United States, <sup>3</sup>Depts of Neurology and Pediatrics and Brain Mind Research Institute, Weill Cornell Medicine, New York, NY, United States*

**T3: An Automated Test of Rat Forelimb Supination Quantifies Motor Function Loss and Recovery after Corticospinal Injury** (Motor Rehabilitation)

Anil Sindhurakar<sup>1</sup>, Samuel Butensky<sup>1</sup>, Joshua Santos<sup>1</sup>, Thelma Bethea<sup>1</sup>, Ashley Khalili<sup>1,3</sup>, Andrew Sloan<sup>3</sup>, Robert Rennekar<sup>3</sup>, Jason Carmel<sup>1</sup>

*<sup>1</sup>Burke Medical Research Institute, White Plains, NY, United States Minor Outlying Islands, <sup>2</sup>Erik Jonsson School of Engineering and Computer Science, The Univ. of Texas, Dallas, TX, United States Minor Outlying Islands, <sup>3</sup>Dept. of Physiology and Pharmacology, Sophie Davis School of Biomedical Education, City Univ. of New York Medical School, New York, NY, United States, <sup>4</sup>Brain and Mind Research Institute and Dept.s of Neurology and Pediatrics, Weill Cornell Medical College, New York, NY, United States*

**T4: Factors Predictive of the Type of Powered Mobility Received by Veterans with Disability** (Other)

Meheroz H. Rabadi, Andrea S Vincent

*OKC VAMC, OKC, OK, United States*

**T5: Whole Body Vibration Therapy with Exercise Enhances Motor Function and Improves Quality of Life in Parkinson's Disease** (Motor Rehabilitation)

Drucilla Edmonston<sup>1</sup>, Olivia Gruder<sup>1</sup>, Garrett Barr<sup>2</sup>, Eric Haung<sup>2</sup>, Charles G. Maitland<sup>2,1</sup>, Leonard LaPointe<sup>3</sup>, Michael Ormsbee<sup>4</sup>

*<sup>1</sup>Florida St. Univ. College of Medicine, Tallahassee, FL, United States, <sup>2</sup>Tallahassee Memorial Hospital, Balance and Movement Disorders Clinic, Tallahassee, FL, United States, <sup>3</sup>Florida St. Univ. College of Communication Science & Disorders, Tallahassee, FL, United States, <sup>4</sup>Fitness & Movement Clinic, Wellness Center at Florida St. Univ., Tallahassee, FL, United States*

**T6: The Effect of Unilateral Balance Training on Postural Control of the Contralateral Limb** (Motor Rehabilitation)

Christian Schlenstedt<sup>1,3</sup>, Michel Arnold<sup>2</sup>, Martina Mancini<sup>3</sup>, Günther Deuschl<sup>1</sup>, Burkhard Weisser<sup>2</sup>

*<sup>1</sup>Dept. of Neurology, Christian-Albrechts-Univ., Kiel, Germany, <sup>2</sup>Dept. of Sport Science, Christian-Albrechts-Univ., Kiel, Germany, <sup>3</sup>Dept. of Neurology, Oregon Health & Science Univ., Portland, United States*

**T7: Proportional Stroke Recovery in the Rat: Evidence for a Cross-Species Biological Recovery Process that Incorporates Initial Impairment, Infarct Volume and Rehabilitation Intensity** (Motor Rehabilitation)

Matthew Jeffers<sup>1,2</sup>, Sudhir Karthikeyan<sup>1,2</sup>, Dale Corbett<sup>1,2</sup>

*<sup>1</sup>Univ. of Ottawa, Ottawa, Canada, <sup>2</sup>Canadian Partnership for Stroke Recovery, Ottawa, Canada*

**T8: Effects of an Aerobic Exercise Intervention on Aging Related Changes in Interhemispheric Inhibition** (Motor Rehabilitation)

Keith McGregor<sup>1,2</sup>, Joe Nocera<sup>1,2</sup>, Bruce Crosson<sup>1,2</sup>, Andrew Butler<sup>1,3</sup>

*<sup>1</sup>Atlanta VA Center for Visual and Neurocognitive Rehabilitation, Decatur, GA, United States, <sup>2</sup>Emory Univ., Dept. of Neurology, Decatur, GA, United States, <sup>3</sup>Georgia St. Univ., Dept. of Physical Therapy, Atlanta, GA, United States*

**T9: Neural Correlates of Dual-Task Walking: Influence of Priority on Attentional Demands** (Stroke)

Samir Sangani<sup>1</sup>, Taichi Kurayama<sup>2</sup>, Joyce Fung<sup>1,3</sup>

*<sup>1</sup>Jewish Rehabilitation Hospital of CISSS Laval, Laval, Quebec, Canada, <sup>2</sup>Uekusa Gakuen Univ., Chiba, Japan, <sup>3</sup>McGill Univ., Montreal, Quebec, Canada*

**T10: Does Transcranial Direct Current Stimulation Plus Concurrent Activity Lessen Dual Task Cost in People with Parkinson's Disease?** (Movement Disorders)

Christina Criminger, Chad Swank, Jyutika Mehta

*Texas Woman's Univ., Dallas, TX, United States*

**T11: Effects of Unilateral Real-Time Gait Biofeedback on Propulsive Forces During Walking** (Stroke)

Christopher Schenck<sup>1</sup>, Steven Eicholtz<sup>2</sup>, Steven Wolf<sup>2</sup>, Trisha Kesar<sup>2</sup>

*<sup>1</sup>Georgia Institute of Technology, Atlanta, Georgia, United States, <sup>2</sup>Emory Univ., Atlanta, Georgia, United States*

**T12: Effects of Antagonist Activation on Motor Cortical Excitability of the Tibialis Anterior** (Motor Rehabilitation)

Trisha Kesar, Steven Eicholtz, Steven Wolf, Michael Borich

*Emory Univ., Atlanta, Georgia, United States*

**T13: Acute Improvements in Lower Extremity Motor Control of Chronic Stroke Survivors Following Assisted Cycling Therapy** (Motor Rehabilitation)

Simon D. Holzapfel<sup>1</sup>, Shannon D. R. Ringenbach<sup>1</sup>, Pamela R. Bosch<sup>2</sup>

<sup>1</sup>Arizona St. Univ., Phoenix, United States, <sup>2</sup>Northern Arizona Univ., Phoenix, United States

**T14: The Performance and Retention of a Skilled Walking Task Among People with an Incomplete Spinal Cord Injury** (Spinal Cord Injury)

Amanda E. Chisholm<sup>1,2</sup>, Alison M.M. Williams<sup>1,2</sup>, Gevorg Eginyan<sup>1,2</sup>, Tania Lam<sup>1,2</sup>

<sup>1</sup>Univ. of British Columbia, Vancouver, BC, Canada,

<sup>2</sup>International Collaboration on Repair Discoveries, Vancouver, BC, Canada

**T15: Can Arm Cycle Training Affect Postural Control and Voluntary Trunk Muscle Activation in People With Spinal Cord Injury?** (Spinal Cord Injury)

J. Megan Brousseau<sup>1,2</sup>, Raza Malik<sup>1,2</sup>, Amanda E. Chisholm<sup>1,2</sup>, Andrea Lynn<sup>1</sup>, Alison Williams<sup>1,2</sup>, Tania Lam<sup>1,2</sup>

<sup>1</sup>Univ. of British Columbia, Vancouver, BC, Canada, <sup>2</sup>ICORD, Vancouver, BC, Canada

**T16: Revisiting Interhemispheric Imbalance in Chronic Stroke: a tDCS study** (Stroke)

Winston Byblow<sup>1</sup>, Alana McCambridge<sup>1,2</sup>, James Stinear<sup>1</sup>

<sup>1</sup>Univ. of Auckland, Auckland, New Zealand, <sup>2</sup>Univ. of Technology Sydney, Sydney, Australia

**T17: The Contribution of Intact Hemisphere Dorsal Premotor Cortex to Paretic Arm Motor Performance After Severe Stroke** (Motor Rehabilitation)

Rachael Harrington<sup>1,5</sup>, Evan Chan<sup>2,5</sup>, Amanda Rounds<sup>3,5</sup>, Clinton Wutzke<sup>4,5</sup>, Alexander Dromerick<sup>1,5</sup>, Peter Turkeltaub<sup>1,5</sup>, Michelle Harris-Love<sup>3,5</sup>

<sup>1</sup>Georgetown Univ. Medical Center, Washington, DC, United States, <sup>2</sup>MedStar Health Research Institute, Washington, DC, United States, <sup>3</sup>George Mason Univ., Fairfax, VA, United States, <sup>4</sup>Washington DC Veterans Affairs Medical Center, Washington, DC, United States Minor Outlying Islands, <sup>5</sup>MedStar National Rehabilitation Hospital, Washington, DC, United States

**T18: Changes in Inter- and Intra-Limb Coordination Following Locomotor Training in People with Spinal Cord Injury** (Spinal Cord Injury)

Raza Malik<sup>1,2</sup>, Katherine Pauhl<sup>1,2</sup>, Tania Lam<sup>1,2</sup>

<sup>1</sup>Univ. of British Columbia, Vancouver, BC, Canada,

<sup>2</sup>International Collaboration On Repair Discoveries, Vancouver, BC, Canada

**T19: The Effect of Rehabilitation on the Reorganization of Corticospinal Tract after Spinal Cord Injury in Mice** (Neural Repair Mechanisms)

Toru Nakanishi, Yuki Fujita, Toshihide Yamashita  
Dept Mol Neurosci, Grad Sch. Med, Osaka Univ., Osaka, Japan

**T20: The Relationship Between Fatigue and Quality of Life after Stroke** (Stroke)

Hui-Ting Goh<sup>1</sup>, Mohanasuntharaam Nadarajah<sup>2</sup>, Mazlina Mazlan<sup>2</sup>, Lydia Abdul-Latif<sup>2</sup>

<sup>1</sup>Texas Woman's Univ., Dallas, TX, United States, <sup>2</sup>Univ. of Malaya, Kuala Lumpur, Kuala Lumpur, Malaysia

**T21: Changes in Corticospinal Tract Microstructure are Associated with Motor Performance Improvement in Chronic Stroke** (Stroke)

Bokkyu Kim<sup>1</sup>, Dorsa Kay<sup>2</sup>, Nicolas Schweighofer<sup>1,2</sup>, Justin Haldar<sup>3,4</sup>, Richard Leahy<sup>3,4</sup>, Beth Fisher<sup>1,5</sup>, Carolee Winstein<sup>1,5</sup>

<sup>1</sup>Division of Biokinesiology and Physical Therapy, Univ. of Southern California, Los Angeles, CA, United States,

<sup>2</sup>Neuroscience Graduate Program, Univ. of Southern California, Los Angeles, CA, United States, <sup>3</sup>Ming Hsieh

Dept. of Electrical Engineering, Univ. of Southern California, Los Angeles, CA, United States, <sup>4</sup>Brain and

Creativity Institute, Univ. of Southern California, Los Angeles, CA, United States, <sup>5</sup>Dept. of Neurology, Univ. of Southern California, Los Angeles, CA, United States

**T22: Trunk Muscle Activation Patterns during Walking with Robotic Exoskeletons in People with High Thoracic Motor-complete SCI** (Spinal Cord Injury)

Raed Alamro<sup>1,2</sup>, Amanda Chisholm<sup>1,2</sup>, Tania Lam<sup>1,2</sup>

<sup>1</sup>Univ. of British Columbia, Vancouver, Canada,

<sup>2</sup>International Collaboration On Repair Discoveries, Vancouver, Canada

**T23: PREP2: A Refined Algorithm for Predicting Recovery Potential of Upper Limb Function After Stroke** (Stroke)

Cathy Stinear, Winston Byblow, Marie-Claire Smith, Suzanne Ackerley, Alan Barber

Univ. of Auckland, Auckland, New Zealand

**T24: Acupuncture in the Treatment of Fatigue in Parkinson's Disease: A Pilot Randomized Controlled Study** (Movement Disorders)

Keng Kong<sup>1</sup>, Louis Tan<sup>2</sup>, Wing Au<sup>2</sup>, Kay Tay<sup>2</sup>

<sup>1</sup>Tan Tock Seng Hospital, Singapore, Singapore, <sup>2</sup>National Neuroscience Institute, Singapore, Singapore

**T25: Kinect-Based Individualized Upper Extremity Rehabilitation is Effective in Stroke: Outcomes and Participants' Perspective** (Stroke)

Wan-wen Liao<sup>1</sup>, Sandy McCombe Waller<sup>1</sup>, Rebecca Feldman<sup>1</sup>, Jill Whittall<sup>1,2</sup>

<sup>1</sup>Physical Therapy Rehabilitation Science, Univ. of Maryland Baltimore, Baltimore, United States, <sup>2</sup>Health Sciences, Univ. of Southampton, Southampton, UK

**T26: Deficits in Automatic Postural Responses are Related to Cerebellar Involvement in People with Multiple Sclerosis** (Multiple Sclerosis)

Geetanjali Gera<sup>1</sup>, Brett Fling<sup>1</sup>, Fay Horak<sup>1,2</sup>

<sup>1</sup>Oregon Health & Science Univ., Portland, OR, United States, <sup>2</sup>Veterans Affairs Portland Health Care System, Portland, OR, United States



**T27: An Algorithm to Predict Recovery of Independent Ambulation after Stroke** (Stroke)  
Marie-Claire Smith, James W. Stinear, P. Alan Barber, Cathy M. Stinear  
*Univ. of Auckland, Auckland, New Zealand*

**T28: Preliminary Evidence of Interlimb Transfer after Locomotor Training in Individuals with Chronic Spinal Cord Injury** (Spinal Cord Injury)  
Peter Jo, Jared Gollie, Gino Panza, Andrew Guccione  
*George Mason Univ., Fairfax, VA, United States*

**T29: Measuring Mirror Movements in Children with Unilateral Cerebral Palsy** (Motor Rehabilitation)  
Ellen Jaspers<sup>1</sup>, Katrijn Klingels<sup>2</sup>, Cristina Simon Martinez<sup>2</sup>, Hilde Feys<sup>2</sup>, Daniel Woolley<sup>1</sup>, Nici Wenderoth<sup>2</sup>  
<sup>1</sup>*Dept. Of Health Sciences And Technology, ETH Zurich, Zurich, Switzerland*, <sup>2</sup>*Dept. Of Rehabilitation Sciences, KU Leuven, Leuven, Belgium*

**T30: Efficacy and Safety of AbobotulinumtoxinA (Dysport®) in Adult Hemiparetic Patients with Upper Limb Spasticity Previously Treated with Botulinum Toxins** (Movement Disorders)  
Christina Marciniak<sup>1</sup>, Allison Brashear<sup>2</sup>, Peter McAllister<sup>3</sup>, Bruce Rubin<sup>4</sup>, Peter Hedera<sup>5</sup>, Stuart Isaacson<sup>6</sup>, Philippe Picaut<sup>7</sup>, Jean-Michel Gracies<sup>8</sup>  
<sup>1</sup>*Northwestern Univ. and the Rehabilitation Institute of Chicago, Chicago, IL, United States*, <sup>2</sup>*Wake Forest Univ. School of Medicine, Dept. of Neurology, Winston-Salem, NC, United States*, <sup>3</sup>*New England Institute for Neurology and Headache, Stamford, CT, United States*, <sup>4</sup>*Design Neuroscience Center, Miami Gardens, FL, United States*, <sup>5</sup>*Vanderbilt Univ., Dept. of Neurology; Division of Movement Disorders, Nashville, TN, United States*, <sup>6</sup>*Parkinson's Disease & Movement Disorders Center of Boca Raton, Boca Raton, FL, United States*, <sup>7</sup>*Ipsen Innovation, Les Ulis, France*, <sup>8</sup>*Hospital Albert Chenevier, Service de Rééducation Neurolocomotrice, Créteil, France*

**T32: Manipulating Chronic Inflammation and Neural Plasticity away from the Site of Rodent Spinal Cord Injury** (Neural Repair Mechanisms)  
Keith Tansey<sup>1,2</sup>, Joon Lee<sup>2</sup>, Jumi Chung<sup>2</sup>, Malu Tansey<sup>3</sup>  
<sup>1</sup>*Methodist Rehabilitation Center, Jackson, MS, United States*, <sup>2</sup>*U Mississippi Medical Center, Jackson, MS, United States*, <sup>3</sup>*Emory Univ., Atlanta, GA, United States*

**T33: Does Task-Specific Training Improve Upper Limb Performance in Daily Life Post-Stroke?** (Motor Rehabilitation)  
Kimberly Waddell<sup>1</sup>, Michael Strube<sup>1</sup>, Ryan Bailey<sup>1</sup>, Joseph Klaesner<sup>1</sup>, Rebecca Birkenmeier<sup>1</sup>, Alexander Dromerick<sup>2,3</sup>, Catherine Lang<sup>1</sup>  
<sup>1</sup>*Washington Univ., St. Louis, MO, United States*, <sup>2</sup>*Georgetown Univ., Washington DC, United States*, <sup>3</sup>*MedStar National Rehabilitation Hospital, Washington DC, United States*

**T35: Evaluation of a Unique Approach to Balance and Mobility Training Poststroke: Falls Based Training (FBT) Protocol** (Motor Rehabilitation)  
Adam Wiekert<sup>1</sup>, Avantika Naidu<sup>1</sup>, David Brown<sup>1</sup>, Elliot Roth<sup>2</sup>  
<sup>1</sup>*PhD in Rehabilitation Science Program, Univ. of Alabama at Birmingham, Birmingham, Alabama, United States*, <sup>2</sup>*Rehabilitation Institute of Chicago, Chicago, Illinois, United States*

**T36: Effectiveness of a Robot-aided Somatosensory Training Program on Proprioception in Chronic Stroke** (Sensory Rehabilitation)  
I-Ling Yeh<sup>1</sup>, Naveen Elangovan<sup>1</sup>, Jessica Holst-Wolf<sup>1</sup>, Anna Vera Cuppone<sup>2</sup>, Jürgen Konczak<sup>1</sup>  
<sup>1</sup>*Univ. of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Istituto Italiano di Tecnologia, Genoa, Italy*

**T37: Combined Cortical and Spinal Direct Current Stimulation in Incomplete Spinal Cord Injury: Case series** (Spinal Cord Injury)  
Nuray Yozbatiran<sup>1</sup>, Zafer Keser<sup>1</sup>, Jessica Beardsley<sup>1</sup>, Radha Korupolu<sup>1</sup>, Argyrios Stampas<sup>1</sup>, Marcia K. O'Malley<sup>2</sup>, Khader Hasan<sup>3</sup>, Gerard E. Francisco<sup>1</sup>  
<sup>1</sup>*Dept. of Physical Medicine and Rehabilitation at UTHealth McGovern Medical School and TIRR Memorial Hermann NeuroRecovery Research Center, Houston/Texas, United States*, <sup>2</sup>*Dept. of Mechanical Engineering and MAHI Lab, Rice Univ., Houston/Texas, United States*, <sup>3</sup>*Dept. of Radiology at UTHealth McGovern Medical School, Houston/Texas, United States*

**T38: Treatment Characteristics of Post-Stroke Adults Diagnosed with Spasticity Among Commercially and Medicare Insured Populations** (Other)  
Savreet Bains<sup>1</sup>, Martin Taylor<sup>2</sup>, Sonia Pulgar<sup>1</sup>, Liisa Palmer<sup>3</sup>, Michael Liang<sup>3</sup>, Dominic Marchese<sup>1</sup>, David Charles<sup>4</sup>  
<sup>1</sup>*Ipsen Biopharmaceuticals, Basking Ridge, NJ, United States*, <sup>2</sup>*South Central Ohio Neurologic Osteopathic Associates, OrthoNeuro, Columbus, OH, United States*, <sup>3</sup>*Truven Health Analytics, Cambridge, MA, United States*, <sup>4</sup>*Vanderbilt Univ. Medical Center, Nashville, TN, United States*

**T41: Microdermabrasion Facilitates Direct Current Stimulation by Lowering Skin Resistance** (Neural Repair Mechanisms)  
Pratik Chhatbar, Shimeng Liu, Wuwei Feng  
*Medical Univ. of South Carolina, Charleston, SC, United States*

**T42: Optimizing Extraction of the Corticospinal Tract Using Diffusion-Weighted Imaging** (Stroke)  
Samantha Feldman<sup>1</sup>, Lara Boyd<sup>4,5</sup>, Sue Peters<sup>4,6</sup>, Kathryn Hayward<sup>2,4</sup>

<sup>1</sup>Graduate Program in Neuroscience, Faculty of Medicine, Univ. of British Columbia, Vancouver, B.C., Canada, <sup>2</sup>Stroke Division, Florey Institute of Neuroscience and Mental Health, Univ. of Melbourne, Melbourne, VIC, Australia, <sup>3</sup>NHMRC Center of Research Excellence in Stroke Rehabilitation and Brain Recovery, Melbourne, VIC, Australia, <sup>4</sup>Dept. of Physical Therapy, Faculty of Medicine, Univ. of British Columbia, Vancouver, B.C., Canada, <sup>5</sup>Djavad Mowafaghian Centre for Brain Health, Univ. of British Columbia, Vancouver, B.C., Canada, <sup>6</sup>Graduate Program in Rehabilitation Sciences, Faculty of Medicine, Univ. of British Columbia, Vancouver, B.C., Canada

**T43: Neurobehavioral Validation Of An Individualized Indicator For The Presence Of Incidentally Developed Explicit Awareness In Motor Learning** (Motor Rehabilitation)

Regan Lawson, Lewis Wheaton  
Georgia Institute of Technology, Atlanta, GA, United States

**T45: Former Unilateral Amputees Exhibit Bilateral Differences In The Control Of Reach-To-Grasp Actions** (Peripheral Nerve/Plexus/Neuromuscular Diseases)

Daniela Mattos<sup>1</sup>, Nathan Baune<sup>1</sup>, Benjamin Philip<sup>1</sup>, Kenneth Valyear<sup>2</sup>, Christina Kaufman<sup>3</sup>, Scott Frey<sup>1</sup>  
<sup>1</sup>Washington Univ. School of Medicine, Saint Louis, United States, <sup>2</sup>Univ. of Bangor, Bangor, UK, <sup>3</sup>Christine M. Kleinert Institute, Louisville, United States

**T46: Effect of Stroke on Dynamic Forefoot Ground Reaction Force and Electromyography Activation in Tibialis Anterior during Isokinetic Passive Ankle Movement** (Stroke)

Hogene Kim, Sangwoo Cho, Hwiyoung Lee  
National Rehabilitation Center, Seoul, Republic of Korea

**T47: Mobile Phone-Based Ecological Momentary Assessment of Day-to-Day Paretic Hand Use following Stroke** (Stroke)

Yi-An Chen<sup>1</sup>, Rebecca Lewthwaite<sup>1,2</sup>, John Monterosso<sup>3</sup>, Nicolas Schweighofer<sup>1</sup>, Carolee Winstein<sup>1</sup>  
<sup>1</sup>Division of Biokinesiology and Physical Therapy, Univ. of Southern California, Los Angeles, CA, United States, <sup>2</sup>Rancho Los Amigos National Rehabilitation Center, Downey, CA, United States, <sup>3</sup>Dept. of Psychology, Univ. of Southern California, Los Angeles, CA, United States

**T48: Aerobic Exercise May Improve Walking Ability in People with Multiple Sclerosis: A Systematic Review of Evidence** (Multiple Sclerosis)

Augustine Joshua Devasahayam, Matthew Bruce Downer, Samantha Nicole Rancourt, Michelle Ploughman  
Memorial Univ. of Newfoundland, St. John's, Canada

# POSTER SESSION II

FRIDAY, NOVEMBER 11 • 10:30 - 12:30 PM • RIO PAVILION

**F1: Using Metronome-Timed Bipedal Hopping to Estimate Anticipatory Feed-Forward Control in Individuals with Mild Multiple Sclerosis Compared to Control and Elderly Subjects** (Multiple Sclerosis)  
Megan C. Kirkland, Matthew B. Downer, Elizabeth M. Wallack, Brett J. Holloway, Evan J. Lockyer, Natasha C.M. Buckle, Courtney L. Abbott, Michelle Ploughman  
*Memorial Univeristy, St. John's, Canada*

**F2: Leveraging Energetics of Walking to Change Gait Symmetry** (Motor Rehabilitation)  
Ryan Roemmich<sup>1,2</sup>, Kristan Leech<sup>1,2</sup>, Anthony Gonzalez<sup>1</sup>, Amy Bastian<sup>1,2</sup>  
<sup>1</sup>*Kennedy Krieger Institute, Baltimore, MD, United States*,  
<sup>2</sup>*The Johns Hopkins Univ. School of Medicine, Baltimore, MD, United States*

**F3: Modulating Cortical Plasticity as a Means to Promote Upper Limb Recovery in Incomplete Tetraplegia** (Spinal Cord Injury)  
Kelsey Potter-Baker, Daniel Janini, Nicole Varnerin, Yin-Liang Lin, David Cunningham, Vishwanath Sankarasubramanian, Ken Sakaie, Frederick Frost, Ela Plow  
*Cleveland Clinic Foundation, Cleveland, OH, United States*

**F4: Suppressing Contralesional Primary Motor Cortex Versus Facilitation Contralesional Dorsal Premotor Cortex in Stroke: Deriving and Testing a Model to Tailor Brain Stimulation** (Stroke)  
Yin-Liang Lin<sup>1</sup>, Vishwanath Sankarasubramanian<sup>1</sup>, Kelsey Potter-Baker<sup>1</sup>, Andre Machado<sup>1</sup>, Adriana Conforto<sup>2,3</sup>, David Cunningham<sup>1,4</sup>, Nicole Varnerin<sup>1</sup>, Xiaofeng Wang<sup>1</sup>, Ken Sakaie<sup>1</sup>, Ela Plow<sup>1</sup>  
<sup>1</sup>*Cleveland Clinic Foundation, Cleveland, OH, United States*, <sup>2</sup>*Hospital das Clinicas, Sao Paulo Univ., Sao Paulo, SP, Brazil*, <sup>3</sup>*Hospital Israelita Albert Einstein, Sao Paulo, SP, Brazil*, <sup>4</sup>*Kent St. Univ., Kent, OH, United States*

**F6: Effects of Introducing Variability on Bimanual Coordination in Individuals with and without Stroke** (Motor Rehabilitation)  
Rajiv Ranganathan, Rani Gebara, Michael Andary, Jim Sylvain  
*Michigan St. Univ., East Lansing, United States Minor Outlying Islands*

**F7: Comfortable Walking Speed Outcomes Associated with "Hands-Free" vs. "Skills-Based" BWS Training Poststroke** (Stroke)  
Sarah Graham<sup>1</sup>, Elliot Roth<sup>2</sup>, David Brown<sup>1</sup>  
<sup>1</sup>*Univ. of Alabama at Birmingham, Birmingham, AL, United States*, <sup>2</sup>*Feinberg School of Medicine, Northwestern Univ., Chicago, IL, United States*

**F8: Feasibility of Combined Brain and Hand Stimulation in Moderate to Severe Individuals with Chronic Stroke** (Motor Rehabilitation)  
Amit Sethi<sup>1</sup>, Emiliano Santarnecchi<sup>2</sup>, Alvaro Pascual-Leone<sup>2</sup>  
<sup>1</sup>*Pittsburgh, PA, United States*, <sup>2</sup>*Harvard Medical School, Boston, MA, United States*

**F9: Virtual Reality Treatment for Phantom Limb Pain** (Other)  
Elisabetta Ambron<sup>1</sup>, Alex Miller<sup>3</sup>, Katherine Kuchenbecker<sup>3</sup>, Laurel Buxbaum<sup>2</sup>, Branch Coslett<sup>1</sup>  
<sup>1</sup>*Perelman School of Medicine at the Univ. of Pennsylvania, Philadelphia, United States*, <sup>2</sup>*Institute Scientist, Moss Rehabilitation Research Institute, Philadelphia, United States*, <sup>3</sup>*Mechanical Engineering and Applied Mechanics, Univ. of Pennsylvania, Philadelphia, United States*

**F10: Referent Control and Motor Equivalence is Disrupted in Patients with Stroke When Reaching from Standing** (Stroke)  
Mindy F. Levin<sup>1,3</sup>, Yosuke Tomita<sup>1,3</sup>, Anatol G. Feldman<sup>2,3</sup>  
<sup>1</sup>*School of Physical and Occupational Therapy, McGill Univ., Montreal, Canada*, <sup>2</sup>*Dept. of Neuroscience, Univ. of Montreal, Montreal, Canada*, <sup>3</sup>*Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal, Montreal, Canada*

**F11: Hand Position Sense is Abnormal in Children With Developmental Coordination Disorder: Introducing a New Method to Measure Proprioception** (Other)  
Yu-Ting Tseng, Jürgen Konczak  
*Human Sensorimotor Control Lab, School of Kinesiology, Minneapolis, MN, United States*

**F12: Remote Monitoring of Upper Extremity Movement in Children with Stroke Using Smart Phones and Gaming** (Motor Rehabilitation)  
Paola Pergami<sup>1</sup>, Ben Frey<sup>2</sup>, Hayden Goodsir<sup>3</sup>, Sam Hoffman<sup>2</sup>, Arun Ross<sup>2</sup>  
<sup>1</sup>*CNMC, Washington DC, United States*, <sup>2</sup>*Michigan St. Univ., East Lansing, MI, United States*, <sup>3</sup>*George Washington Univ., Washington DC, United States*

**F13: Impaired Sequence Specific Learning with the Paretic Arm After Stroke** (Motor Rehabilitation)  
Melanie K. Fleming<sup>1</sup>, Di J. Newham<sup>1</sup>, Laszlo Sztrihai<sup>2</sup>, James T. Teo<sup>2,3</sup>, John C. Rothwell<sup>3</sup>  
<sup>1</sup>*Centre of Human and Aerospace Physiological Sciences, King's College London, London, UK*, <sup>2</sup>*Dept. of Stroke & Neurology, Princess Royal Univ. Hospital, King's College Hospital NHS Foundation Trust, London, UK*, <sup>3</sup>*Institute of Neurology, Univ. College London, London, UK*



**F14: Adjacent Motor Cortical Areas Have Distinct Brain Functional Connectivity** (Other)

Alaa Albishi, Jo Smith, Beth Fisher, Jason Kutch  
*USC, Los Angeles, United States*

**F15: Sensory and Motor System Predictors of Treatment Gains After Robotic Retraining of Finger Movements Post-Stroke** (Motor Rehabilitation)

Morgan Ingemanson<sup>1</sup>, Justin Rowe<sup>1</sup>, Vicky Chan<sup>1</sup>, Eric Wolbrecht<sup>2</sup>, David Reinkensmeyer<sup>1</sup>, Steven Cramer<sup>1</sup>  
<sup>1</sup>*Univ. of California, Irvine, Irvine, CA, United States*, <sup>2</sup>*Univ. of Idaho, Moscow, ID, United States*

**F16: Evidence of Common Structures in The Performance of Functional Tasks in Individuals with Moderate Upper Extremity Impairment After Stroke** (Motor Rehabilitation)

Helen Bacon, Bokkyu Kim, Clarisa Martinez, Carolee Winstein  
*Univ. of Southern California, Los Angeles, California, United States*

**F17: The Proportion of Critical Area Damaged as a Predictor of Behavioral Outcome in Chronic Aphasia** (Stroke)

Zainab Anbari<sup>1</sup>, Laura Skipper-Kallal<sup>1</sup>, Elizabeth Lacey<sup>1,3</sup>, Shihui Xing<sup>1,2</sup>, Peter Turkeltaub<sup>1,3</sup>  
<sup>1</sup>*Dept. of Neurology, Georgetown Univ. Medical Center, Washington, DC, United States*, <sup>2</sup>*Dept. of Neurology, First Affiliated Hospital of Sun Yat-Sen Univ., Guangzhou, China*, <sup>3</sup>*Research Division, MedStar National Rehabilitation Hospital, Washington, DC, United States*

**F18: Dorsal and Ventral Premotor Areas Produce Distinct Modulation on Primary Motor Cortex Outputs** (Stroke)

Sandrine Cote, Adjia Hamadjida, Melvin Dea, Stephan Quessy, Numa Dancause  
*Université de Montréal, Montréal, Canada*

**F19: Long-term Outcome and Prognostication in Severe Disorders of Consciousness: Results of a Large German Prospective Multicenter Study (Disorders of Consciousness)**

Andreas Bender<sup>1,2</sup>  
<sup>1</sup>*Univ. of Munich, Dept. of Neurology, Munich, Germany*, <sup>2</sup>*Therapiezentrum Burgau, Burgau, Germany*

**F20: Investigating the Neuromodulatory Effects of Paired Associative Stimulation on Motor Skill Performance in Chronic Stroke** (Stroke)

Whitney Gray, Michael Borich  
*Emory Univ., Atlanta, GA, United States*

**F21: Sensory Function is Associated with White Matter Structure at Both Baseline and in Response to Therapy in Chronic Stroke** (Stroke)

Svetlana Pundik<sup>1,2</sup>, Margaret Skelly<sup>1</sup>, Jessica McCabe<sup>1</sup>, Janis Daly<sup>3</sup>  
<sup>1</sup>*Cleveland VA Medical Center, Cleveland, United States*, <sup>2</sup>*Case Western Reserve Univ. school of Medicine, Cleveland, United States*, <sup>3</sup>*Univ. of Florida, College of Medicine, Gainesville, United States*, <sup>4</sup>*Gainesville VA Medical Center, Gainesville, United States*

**F22: Use of the Instrumented Stand and Walk Test (ISAW) to Improve Frailty Assessment** (Motor Rehabilitation)

Mahmoud El-Gohary<sup>1</sup>, Amy Laird<sup>2</sup>, Nora Fino<sup>2</sup>, Patricia Carlson-Kuhta<sup>2</sup>, Jodi Lapidus<sup>2</sup>, Eric Orwoll<sup>2</sup>, Martina Mancini<sup>2</sup>, Fay Horak<sup>1,2</sup>  
<sup>1</sup>*APDM, Portland, OR, United States*, <sup>2</sup>*Oregon Health & Science Univ., Portland, OR, United States*, <sup>3</sup>*VA Portland Health Care System, Portland, OR, United States*

**F23: Unraveling the Active Ingredients That Underlie Improved Movement Time in Paretic Reach-to-Grasp** (Stroke)

Clarisa Martinez, Bokkyu Kim, Helen Bacon, Carolee Winstein  
*Univ. of Southern California, Los Angeles, CA, United States*

**F24: Development of a Motor Training Paradigm for the Study of Motor Memory Formation in Older Healthy Adults** (Stroke)

Julianne J. Freeman, Stephanie Zhang, Cathrin M. Buetefisch  
*Emory Univ., Atlanta, GA, United States*

**F25: Effects of Split-Belt Treadmill Training on Gait in People with Parkinson's Disease** (Motor Rehabilitation)

Narayanan Krishnamurthi<sup>1,2</sup>, Payton Herrera<sup>2</sup>, Padma Mahant<sup>3</sup>, Claire Honeycutt<sup>2</sup>, James Abbas<sup>2</sup>  
<sup>1</sup>*Arizona St. Univ., College of Nursing and Health Innovation, Phoenix, United States*, <sup>2</sup>*Arizona St. Univ., School of Biological and Health Systems Engineering, Tempe, United States*, <sup>3</sup>*Banner Good Samaritan Medical Center, Phoenix, United States*

**F27: Training Related Improvement of Hand Kinematics is Associated with Less Co-Contraction of Antagonistic Forearm Muscles in Chronic Stroke Patients** (Stroke)

Andrea R. Pack, Julianne J. Freeman, Gregory M. Kowalski, Samir R. Belagaje, Steven L. Wolf, Cathrin M. Buetefisch  
*Emory Univ., Atlanta, GA, United States*

**F28: Impact of Enhancing Expectations on Self-Efficacy and Motor Learning in Individuals with Parkinson's Disease** (Motor Rehabilitation)

Yu-Chen Chung<sup>1</sup>, Rebecca Lewthwaite<sup>1,2</sup>, Carolee Winstein<sup>1,3</sup>, Beth Fisher<sup>1,3</sup>

<sup>1</sup>Division of Biokinesiology and Physical Therapy, Univ. of Southern California, Los Angeles, CA, United States, <sup>2</sup>Rancho Los Amigos National Rehabilitation Center, Downey, CA, United States, <sup>3</sup>Dept. of Neurology, Univ. of Southern California, Los Angeles, CA, United States

**F29: A Novel Structural Biomarker of Motor Outcome in Acute Stroke Patients** (Motor Rehabilitation)

Gottfried Schlaug<sup>1</sup>, Jasmine Wang<sup>1</sup>, Ethan Pani<sup>1</sup>, Wayne Feng<sup>2</sup>

<sup>1</sup>Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, United States, <sup>2</sup>Medical Univ. of South Carolina, Charleston, SC, United States

**F30: AbobotulinumtoxinA Injection in Muscles Outside the Gastrocnemius-Soleus Complex in Pediatric Patients with Lower Limb Spasticity** (Movement Disorders)

Mauricio Delgado<sup>1</sup>, Ann Tilton<sup>2</sup>, Mark Gormley<sup>3</sup>, Philippe Picaut<sup>4</sup>, Dan Snyder<sup>5</sup>

<sup>1</sup>Texas Scottish Rite Hospital for Children, Dallas, TX, United States, <sup>2</sup>Louisiana St. Univ. Health Center and Children's Hospital New Orleans, New Orleans, LA, United States, <sup>3</sup>Gillette Children's Specialty Healthcare, St. Paul, MN, United States, <sup>4</sup>Ipsen Biopharmaceuticals, Les Ulis, France, <sup>5</sup>Ipsen Biopharmaceuticals, Basking Ridge, NJ, United States

**F31: Improved Functional Connectivity in the Dorsal Attentional Network is Specific to Spatial Neglect Improvement Following Prism Adaptation Therapy** (Neural Repair Mechanisms)

Meghan Caulfield<sup>1</sup>, Peii Chen<sup>1,3</sup>, A M Barrett<sup>1,2</sup>

<sup>1</sup>Kessler Foundation, West Orange, NJ, United States, <sup>2</sup>Kessler Institute for Rehabilitation, West Orange, NJ, United States, <sup>3</sup>Rutgers Univ., Newark, NJ, United States

**F32: The Role of Neural Networks for Attention and Arousal in Stroke-Induced Spatial Neglect and Delirium** (Stroke)

Olga Boukrina<sup>1</sup>, Meghan Caulfield<sup>1</sup>, Peii Chen<sup>1,2</sup>, Oluwadamilola Thomas<sup>4</sup>, Dave Thiagaram<sup>3</sup>, A.M. Barrett<sup>1,2</sup>  
<sup>1</sup>Kessler Foundation, West Orange, United States, <sup>2</sup>Rutgers New Jersey Medical School, Newark, United States, <sup>3</sup>Kessler Institute for Rehabilitation, West Orange, United States, <sup>4</sup>Rutgers Graduate School of Biomedical Sciences, Newark, United States

**F33: Underlying Contributors to Visuomotor Learning Change with Aging** (Motor Rehabilitation)

Christopher Perry, Troy Herter, Tarkeshwar Singh  
*Univ. of South Carolina, Columbia, SC, United States*

**F34: Effects of a Single Bout of Training with a Novel Mechano-sensory Rehabilitation Bike on Paired-reflex Depression of the Soleus H-reflex in Individuals With Incomplete Spinal Cord Injury** (Spinal Cord Injury)

Niyousha Mortaza<sup>1</sup>, Zahra Moussavi<sup>1</sup>, Jennifer Salter<sup>2</sup>, Steven R. Passmore<sup>3,4</sup>, Cheryl M. Glazebrook<sup>3,4</sup>

<sup>1</sup>Program of Biomedical Engineering, Faculty of Engineering, Univ. of Manitoba, Winnipeg, Manitoba, Canada, <sup>2</sup>Faculty of Medicine, Physical Medicine and Rehabilitation, Univ. of Manitoba, Winnipeg, Manitoba, Canada, <sup>3</sup>Faculty of Kinesiology and Recreation Management, Univ. of Manitoba, Winnipeg, Manitoba, Canada, <sup>4</sup>Health, Leisure, and Human Performance Research Institute, Univ. of Manitoba, Winnipeg, Manitoba, Canada

**F35: Neural Mechanisms of Upper Limb Virtual Mirror Visual Feedback in Acute Stroke: A Single-Case Study** (Neural Repair Mechanisms)

Gangadhar Garipelli<sup>2</sup>, Tamara Rossy<sup>3</sup>, Marta Bellone<sup>2</sup>, Vasiliki Liakoni<sup>3</sup>, Daniel Perez-Marcos<sup>2</sup>, Harald Kinzner<sup>1</sup>, Jane Johr<sup>1</sup>, Marzia De Lucia<sup>1</sup>, Tej Tadi<sup>2</sup>, Karin Diserens<sup>1</sup>  
<sup>1</sup>Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland, <sup>2</sup>MindMaze SA, Lausanne, Switzerland, <sup>3</sup>EPFL, Lausanne, Switzerland

**F36: Individuals with Left Hemiparesis Show Asymmetries in Contralateral Force Matching Tasks** (Stroke)

Charlie Anderson, Kumar Rajamani, Vicky Pardo, Diane Adamo  
*Wayne St. Univ., Detroit, Michigan, United States*

**F37: Callosal Integrity and Dynamic Stability of Gait in People with Parkinsonism** (Movement Disorders)

Carolin Curtze<sup>1</sup>, Brett W. Fling<sup>1</sup>, Marian L. Dale<sup>1</sup>, John G. Nutt<sup>1</sup>, Fay B. Horak<sup>1,2</sup>

<sup>1</sup>Oregon Health and Science Univ., Portland, OR, United States, <sup>2</sup>Veterans Affairs Portland Health Care System (VAPORHCS, Portland, OR, United States)

**F38: Modulating Brain St. Using a Novel TMS-based Neurofeedback Approach** (Motor Rehabilitation)

Kathy Ruddy<sup>1</sup>, Joshua Balsters<sup>1</sup>, Dante Mantini<sup>1,2</sup>, Nicole Wenderoth<sup>1,2</sup>

<sup>1</sup>ETH Zurich, Zurich, Switzerland, <sup>2</sup>KU Leuven, Leuven, Belgium

**F39: Improved Arousal and Motor Function using Zolpidem in a Patient with HIV-associated CNS Lymphoma: A case report** (Disorders of Consciousness)

Martin Bomalaski, Sean Smith  
*Univ. of Michigan, Ann Arbor, MI, United States*

**F40: Rasch Analysis of UE Fugl-Meyer in the ICARE Stroke Trial: Effects of Rescaling on Clinical Assessment and Measurement of Recovering Motor Control** (Motor Rehabilitation)

Shashwati Geed<sup>1,2</sup>, Monica Nelsen<sup>3</sup>, Christianne Lane<sup>4</sup>, Carolee Winstein<sup>3</sup>, Steven Wolf<sup>5</sup>, Alexander Dromerick<sup>1,2</sup>  
<sup>1</sup>MedStar National Rehabilitation Hospital, Washington, DC, United States, <sup>2</sup>Dept. of Rehabilitation Medicine, Georgetown Univ. Medical Center, Washington, DC, United States, <sup>3</sup>Division of Biokinesiology and Physical Therapy, Univ. of Southern California, Los Angeles, CA, United States, <sup>4</sup>Division of Biostatistics, Dept. of Preventive Medicine, Keck School of Medicine, Los Angeles, CA, United States, <sup>5</sup>Division of Physical Therapy, Emory Univ. School of Medicine, Atlanta, GA, United States

**F41: Implementation of Fractional Calculus Order-based Methods in Store-and-Forward Telehealth Systems for the Purpose of Stroke and Neurodegenerative Disorders Rehabilitation** (Stroke)

Aleksandra Kawala-Janik<sup>1</sup>, Waldemar Bauer<sup>2</sup>, Piotr Walecki<sup>3</sup>, Monika Blaszczyzyn<sup>1</sup>  
<sup>1</sup>Opole Univ. of Technology, Opole, Poland, <sup>2</sup>AGH Univ. of Science and Technology, Krakow, Poland, <sup>3</sup>Medical College - Jagiellonian Univ., Krakow, Poland

**F42: Vibrotactile P300 BCI for Communication with Persons with Late-stage ALS in a Completely Locked-in St. (CLIS)** (Other)

Rossella Spataro<sup>3</sup>, Vincenzo LaBella<sup>3</sup>, Rupert Ortner<sup>1</sup>, Brendan Allison<sup>1</sup>, Alexander Heilinger<sup>2</sup>, Christoph Guger<sup>1,2</sup>  
<sup>1</sup>Guger Technologies OG, Graz, Styria, Austria, <sup>2</sup>g.tec medical engineering GmbH, Schiedlberg, Oeberoesterreich, Austria, <sup>3</sup>ALS Clinical Research Center, Univ. of Palermo, Palermo, Sicily, Italy

**F43: Bilateral Motor Priming plus Task Specific Training for Severe Upper Limb Hemiparesis** (Motor Rehabilitation)

Mary Ellen Stoykov<sup>1</sup>, Shawna Cutting<sup>1</sup>, Louis Fogg<sup>1</sup>, Daniel Corcos<sup>2</sup>  
<sup>1</sup>Rush Univ. Medical Center, Chicago, IL, United States, <sup>2</sup>Northwestern Univ. Dept. of Physical Therapy, Chicago, IL, United States

**F44: Using Neuroimaging to Study the Impact of Motivation on Brain Activity During Motor Learning: Methodological Considerations** (Motor Rehabilitation)

Dorsa Beroukhim Kay, John Monterosso, Rebecca Lewthwaite, Jason Kutch, Nicolas Schweighofer, Carolee Winstein  
Univ. of Southern California, Los Angeles, CA, United States

**F45: Postural control and Freezing of Gait in Parkinson's disease** (Movement Disorders)

Christian Schlenstedt<sup>1,2</sup>, Muthuraman Muthuraman<sup>1</sup>, Karsten Witt<sup>1</sup>, Burkhard Weisser<sup>2</sup>, Alfonso Fasano<sup>3</sup>, Günther Deusch<sup>1</sup>  
<sup>1</sup>Dept. of Neurology, Christian-Albrechts-Univ., Kiel, Germany, <sup>2</sup>Dept. of Sport Science, Christian-Albrechts-Univ., Kiel, Germany, <sup>3</sup>Morton and Gloria Shulman Movement Disorders Clinic and the Edmond J. Safra Program in Parkinson's Disease, Toronto Western Hospital, Toronto, Canada

**F46: Can Prolonged Exercise Increase Corticospinal Excitability in Chronic Stroke Survivors? A Pilot Study** (Stroke)

Matthew Bruce Downer, Beraki Abraha, Elizabeth Wallack, Liam Patrick Kelly, Augustine Joshua Devasahayam, Jason McCarthy, Michelle Ploughman  
Recovery and Performance Lab, Faculty of Medicine, Memorial Univ. of Newfoundland, St. John's, NL, Canada

**F47: Neural Correlates of Freezing of Gait in Parkinson's Disease** (Movement Disorders)

Ishu Arpan, Brett Fling, Martina Mancini, Laurie King, Katrijn Smulders, Damien Fair, John Nutt, Fay Horak  
Oregon Health & Science Univ., Portland, OR, United States

**F48: A Novel Model of Lacunar Stroke Targeting the Forelimb Representation of the Internal Capsule in Rats** (Neural Repair Mechanisms)

Anil Sindhurakar<sup>1</sup>, Tong-Chun Wen<sup>1</sup>, Honggeun Park<sup>1</sup>, Jason Carmel<sup>1,2</sup>  
<sup>1</sup>Burke Medical Research Institute, White Plains, NY, United States, <sup>2</sup>Dept.s of Neurology and Pediatrics and Brain Mind Research Institute, Weill Cornell Medicine, New York, NY, United States



# ASNR EDUCATION FOUNDATION EVENT PRESENTATION AND POOLSIDE RECEPTION

**ASNR EDUCATION FOUNDATION EVENT**  
**THURSDAY, NOVEMBER 10, 2016, AT 6:30 PM**  
**MARRIOTT MISSION VALLEY - SAN DIEGO**



This year we welcome Kip Thorne, PhD, an American Theoretical Physicist and Executive Producer of the motion picture *Interstellar* to give the ASNR Education Foundation talk. This talk will be followed by a ticketed poolside reception which promises camaraderie with neurorehabilitation colleagues over heavy Hors d'oeuvres and beverages. A cash bar will be available. Tickets are \$100 and can be purchased at the onsite registration desk.

**LIGO: Our Half Century Quest to Open the Gravitational-Wave Window Onto the Universe.** On September 14 of last year, humans observed gravitational waves for the first time: waves in the fabric of space produced 1.3 billion years ago by two colliding black holes. Thorne, a co-founder of the LIGO Project, which discovered these waves, will describe the half century 1.1-billion-dollar, 1000-person effort that led to this success. And he will describe the future of gravitational-wave astronomy: explorations of phenomena in the universe made from warped spacetime, including the birth of our universe and rich violence in the first one second of its life.

## ABOUT THE ASNR EDUCATION FOUNDATION

The American Society of Neurorehabilitation Research and Education Foundation (ASNREF) was developed as a not-for-profit tax-exempt endowment fund to support research and education in neurorehabilitation. The Foundation was established in honor of Fletcher McDowell, MD, Labe Scheinberg, MD, and Norman Namerow, MD.

Fletcher McDowell, MD focused on the care and recovery of patients following stroke. Labe Scheinberg, MD established the first multidisciplinary Multiple Sclerosis care clinic and advocated for a similar approach at other MS clinics. Norman Namerow, MD was the primary advocate for multidisciplinary care of patients with traumatic brain injury. These three individuals actively lobbied within the American Academy of Neurology, and the American Neurological Association to recruit additional support from within the field of Neurology. Their efforts led to creation of the American Academy of Neurology Section on Neurorehabilitation in 1985, and eventually to the creation of the American Society of Neurorehabilitation in 1990.

The Neurorehabilitation Research and Education Fund is a vehicle for perpetuating goals of applying neuroscience to neurorehabilitation. We solicit donations from our physician and allied health professional colleagues, as well as from patients and family members who would like to support neurorehabilitation research and education.

The Foundation is a non-profit endowment fund established to support neurorehabilitation research and education. It is with these contributions that the Foundation will continue to flourish; we thank you for your continued support.

To donate to the Foundation, visit [www.asnr.com](http://www.asnr.com) or pick up a donation form at the registration desk during the Annual Meeting.

## ASNR MENTORING BREAKFAST

*(pre-registration was required for this event)*

This program has been created to further meet the ASNR's mission and promote membership, education, communication, and support research and practice in neurorehabilitation.

### THANK YOU TO THE ASNR VOLUNTEER MENTORS:

S. Thomas Carmichael, MD, PhD  
Leonardo Cohen, MD, FASNR  
Joyce Fung, PT, PhD  
David Good, MD, FASNR  
Catherine Lang, PT, PhD  
Mindy Levin, PT, PhD  
Jeffrey Samuels, MD, FASNR  
Krish Sathian, MD, PhD  
Keith Tansey, MD, PhD  
Carolee Winstein, PT, PhD  
George Wittenberg, MD, PhD, FASNR  
Steve Wolf, PhD, PT, FASNR  
Guang Yue, PhD

### 2016 MENTORING SESSION SCHEDULE

*Breakfast will be served.*

7:00-7:20  
Introduction

7:20-7:45  
First Roundtable discussions

7:45-8:10  
Second Roundtable discussions  
*Roundtable Topics:*

- *Scientific meeting presentation*
- *Scientific study design and Grant writing*
- *Career choices/transitions (student to fellow and beyond)*
- *Advice for academic careers/academic advancement*
- *Transitioning from mentee to mentor*
- *Work/life balance*

8:10-8:30  
Open format Q&A with panel

# FACULTY DISCLOSURE STATEMENTS

*Speaker:* Tyson Aflalo, PhD  
*Commercial Interest:* None

*Speaker:* S. Thomas Carmichael, MD, PhD  
*Commercial Interest:* Asterias Biotherapeutics, Biotime Inc., and Takeda Pharmaceuticals  
*Role:* Principal Investigator

*Speaker:* Pablo Celnik, MD  
*Commercial Interest:* None

*Speaker:* Dale Corbett, PhD  
*Commercial Interest:* None

*Discussant:* Daniel Corcos, PhD  
*Commercial Interest:* None

*Organizer and Speaker:* Steven Cramer, MD  
*Commercial Interest:* Roche, RAND Corp, MicroTransponder, Dart Neuroscience, and personalRN  
*Role:* Consulting  
*Speaker:* Terry Ellis, PT, PhD, NCS  
*Commercial Interest:* None

*Organizer and Speaker:* Beth Fisher, PT, PhD, FAPTA  
*Commercial Interest:* US WorldMeds  
*Role:* Consulting

*Speaker:* Karunesh Ganguly, MD, PhD  
*Commercial Interest:* None

*Organizer and Speaker:* Leigh Hochberg, MD, PhD  
*Commercial Interest:* None

*Speaker:* Michael Jakowec, PhD  
*Commercial Interest:* None

*Speaker:* Liam Johnson, PhD  
*Commercial Interest:* None

*Speaker:* Tomoko Kitago, MD  
*Commercial Interest:* None

*Speaker:* John Krakauer, MA, MD  
*Commercial Interest:* None

*Speaker:* Catherine Lang, PT, PhD  
*Commercial Interest:* None

*Organizer and Speaker:* Sook-Lei Liew, PhD, OTR/L  
*Commercial Interest:* None

*Speaker:* Keith Lohse, PhD  
*Commercial Interest:* None

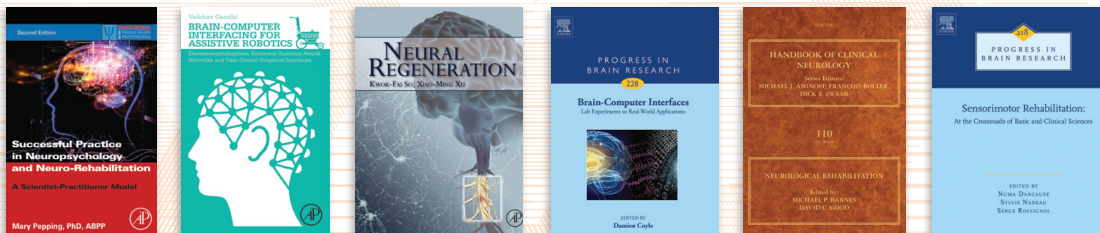
*Speaker:* Kenneth Ottenbacher, PhD, OT  
*Commercial Interest:* None

*Speaker:* Nick Ward, MD  
*Commercial Interest:* None

*Organizer and Moderator:* Steven Wolf, PhD, PT, FAPTA  
*Commercial Interest:* Enspire  
*Role:* Advisor

*Organizer and Speaker:* Steven Zeiler, MD, PhD  
*Commercial Interest:* Techfields Pharma  
*Role:* Consulting

## American Society of Neurorehabilitation Book Selections for Attendees



Elsevier's books are available online via ScienceDirect, eBook, or in print format!

Visit [store.elsevier.com/SFN](http://store.elsevier.com/SFN) or visit booth #101 at SFN



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# BENEFITS OF ASNR MEMBERSHIP – JOIN TODAY!

In 1990, the ASNR was founded by neurorehabilitation specialists from different fields who recognized the need to be united in one organization with the single purpose of fostering excellence in neurorehabilitation research and practice. Over the years, the society has continued to foster dialogue between disciplines at our annual meetings, our regional symposia and through our internationally recognized journal, *Neurorehabilitation and Neural Repair*. ASNR subcommittees focus on promotion of common research and development interests, patient advocacy and fundraising for further growth and support of the organization.

## WHY BECOME AN ASNR MEMBER?

- First color page complimentary in printed *NNR* issue (corresponding author must be ASNR member)
- Subscription to *Journal of Neurorehabilitation and Neural Repair*
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- Involvement in the development and promotion of standards of care and practice guidelines
- Networking opportunities with other neurorehabilitation professionals
- Reduced rates on continuing medical education activities
- Unique educational opportunities through the Annual Meeting and workshops
- Access to Journal Watch -- monthly resource of rehabilitation related articles

**You can join ASNR by visiting [www.asnr.com](http://www.asnr.com) or the 2016 Annual Meeting Registration desk!**

## LISTSERV

By joining the listserv, you will be able to communicate with clinicians and neuroscientists interested in

neurorehabilitation. You can ask questions of other members with diverse backgrounds and viewpoints, give your input on issues of interest to you and learn by monitoring threads of responses generated by others. The listserv can be used to announce new programs, invite comments regarding new projects, even invite others to join you in collaborative efforts.

It is very easy to become a member and it is free. All you need to do is visit the ASNR website and complete the List Serv Request form.

Please join with us to make this effort successful. Please ask others who are involved in these activities to join. The greater the participation, the more likely the listserv will be of value to all of the members.

## ASNR CLINICAL RESEARCH NETWORK

ASNR is seeking to facilitate neurorehabilitation research teams and research projects that are low cost and easy to implement in clinical practice across multiple sites. The goal of this pilot grant program is to support evidence-based clinical practice as well as to provide opportunities for building research teams and for junior researchers to work with more experienced researchers. To this end, ASNR solicits proposals from investigators who wish to conduct a study that would investigate some aspect of clinical practice, including descriptive-observational, mechanistic or interventional research that easily fits within normal clinical routines. These pilot funds are intended to help with the costs of starting a collaborative network and/or to help with the costs of starting up the clinical research project. ASNR will review these proposals and will provide the successful applicants with up to \$5,000 to start and conduct a collaborative clinical research project.

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## NEUROREHABILITATION AND NEURAL REPAIR

*New 2016 Impact Factor: 4.035*  
<http://nnr.sagepub.com/>

*Neurorehabilitation & Neural Repair* offers neurologists, neurosurgeons, physiatrists, rehabilitation nurses, discharge planners, social workers, basic scientists working in neural regeneration and plasticity, and physical, occupational, and speech therapists innovative and reliable reports relevant to functional recovery from neural injury and long term neurologic care. The journal's unique focus is evidence-based basic and clinical practice and research.

*NNR* deals with the management and fundamental mechanisms of functional recovery from conditions such as stroke, multiple sclerosis, cerebral palsy, Parkinson's disease and other movement disorders, Alzheimer's disease and dementia, traumatic and acquired brain injuries and related secondary conditions, spinal cord injuries, and peripheral nerve injuries.

Some of the key topics covered in recent issues include

cortical remodeling after stroke, traumatic brain injury or spinal cord injury studied by transcranial magnetic stimulation and functional magnetic resonance imaging, mechanisms of sprouting and regeneration, development of cell lines for transplantation and trophic factor replacement strategies to promote functional recovery in human patients, multidisciplinary management of neurologic disease, bioengineering and assistive devices used in the management of neurologic impairment or pain syndromes, pharmacological management of multiple sclerosis, pharmacology of motor recovery, cognitive rehabilitation, and design of randomized multicenter trials in neurorehabilitation.

The journal carries articles designed to appeal to a variety of audiences: clinical practice, research, brief communications, case reports, reviews, and media reviews.

## MEET THE EDITOR AT EXHIBIT BOOTH 6

Thursday, November 10, 10:00 - 12:00

Friday, November 11, 10:30 - 12:30

Randy Nudo, PhD - Editor-in-Chief

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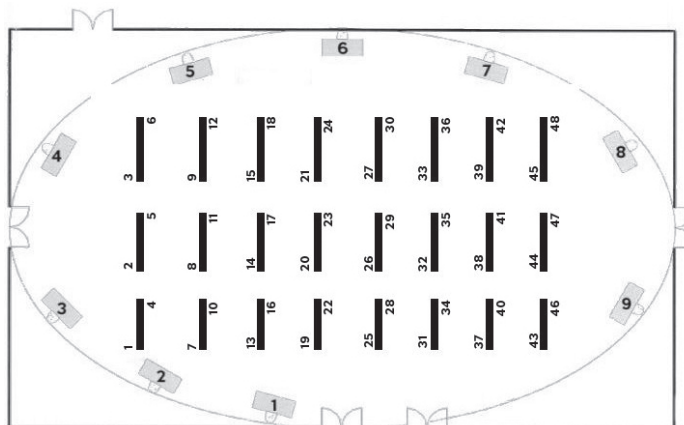


**BRAIN VISION, LLC**

**ASNR would like to thank the National Institute of Neurological Disorders and Stroke (NINDS) and National Institutes of Health (NIH) for their generous support of our Annual Meeting.**

## EXHIBIT MAP

### RIO PAVILION





# EXHIBITORS



## **MINDMAZE** (Booth 1)

MindMaze is a Swiss neurotechnology company committed to enhancing the quality of life of individuals who are recovering from brain injury and other neurological disorders. We aim to revolutionize the rehabilitation process by combining advanced brain monitoring technology with interactive 3D environments to develop the next generation of medical devices.



## **G.TEC** (Booth 2)

g.tec shows Brain Computer Interface (BCI) for neuro-rehabilitation and assessment for coma patients.



## **ANT-NEURO** (Booth 3)

ANT Neuro offers products tailored to the needs of rehabilitation scientists including the eego line of EEG products which were developed from the ground up to allow collection of high density EEG and EMG data during movement without compromising data quality. ANT's visor2 TMS navigation system includes tools to enable fast and easy motor mapping.



## **ROGUE RESEARCH INC.** (Booth 4)

Rogue Research develops the Brainsight family of products for neuroscience and neurological research. This includes our neuronavigator for TMS coil placement and EMG recording for motor maps, Brainsight NIRS for functional Brain imaging and our newest product, cTMS which is the most flexible TMS device available today.



## **SELECT MEDICAL** (Booth 5)

Select Medical is one of the nation's largest providers of specialized care. Select Medical's more than 40,000 employees operate or support more than 100 hospitals specializing in long-term acute care, nearly 20 inpatient rehabilitation hospitals, and approximately 1,600 outpatient centers offering physical and occupational therapy. For more information, visit [selectmedical.com](http://selectmedical.com).



## **SAGE PUBLISHING - NNR** (Booth 6)

NNR offers neurologists, neurosurgeons, physiatrists, rehabilitation nurses, discharge planners, social workers, basic scientists working in neural regeneration and plasticity, and physical, occupational, and speech therapists innovative, reliable reports relevant to functional recovery from neural injury and long term neurologic care. NNR's focus is evidence-based basic and clinical practice and research.



## **EKSO BIONICS** (Booth 8)

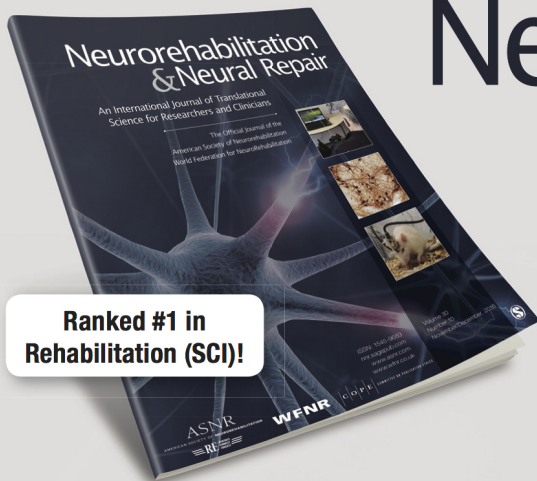
Ekso Bionics develops Ekso™ GT - the first exoskeleton FDA cleared for use with stroke and spinal cord injuries from L5 to C7. Ekso GT with smart Variable Assist™ software is the only exoskeleton available for rehabilitation institutions that can provide adaptive amounts of power to either side of the patient's body.



## **NEUROELECTRICS** (Booth 9)

Neuroelectrics is a digital brain health company that innovates at the intersection of neuroscience, physics, machine learning, and hardware. We have developed wireless EEG and tDCS/tACS/trNS stimulation devices with up to 32 channels, amongst other products encompassing software and research services, with the purpose of monitoring and enhancing brain health.

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**nnr.sagepub.com**

**Editor: Randolph J. Nudo**  
*University of Kansas Medical Center*

**Impact Factor:** 4.035

**Ranking:** 1/65 in Rehabilitation  
(SCI) and 37/192 in Clinical  
Neurology (SCI)

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# SAVE THE DATE

**NOVEMBER 9 & 10, 2017**

**JOIN US** as ASNR returns to the east coast for the two day satellite meeting of the Society of Neuroscience (SfN) Annual Meeting in Washington DC.

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