

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Sunday, November 11, 2007

7:15 AM	Bus Pickup at Sofitel
7:45 AM – 8:25 AM	Registration and Breakfast
8:25 AM – 8:30 AM	Welcome: <i>Opening Remarks</i> Brian Smith, MSBE
8:30 AM – 9:10 AM	Keynote Address 1: Timothy Schallert, PhD <i>“Use–Dependent Plasticity After Injury: What Animal Models Teach Us About Neurorehabilitation”</i>
9:10 AM – 9:30AM	Keynote Discussion Moderator: Sam CK Lee, PhD, PT – University of Delaware – Newark, DE, USA
SESSION 1	
9:30 AM – 10:30 AM	Free Papers – <i>Gait Assist and Posture</i> Moderator: Carole Tucker, PhD, PT, Shriners Hospitals for Children – Philadelphia, PA USA
9:30 AM – 9:40 AM	Abstract #101 <i>Neuroprosthetic and Neurotherapeutic Effects of Implanted Electrical Stimulation for Ambulation After Incomplete SCI</i> Stephanie Bailey, BSE – Cleveland Department of Veterans Affairs Medical Center – Cleveland, OH, USA
9:40 AM – 9:50 AM	Abstract #102 <i>FES–Induced Gains in Coordination and Gait Components</i> Janis Daly, PhD – Cleveland VA Hospital – Cleveland, OH, USA
9:50 AM – 10:00 AM	Discussion
10:00 AM – 10:10 AM	Abstract #103 <i>Plantar– and Dorsi–Flexor FES in Conjunction with Fast Treadmill Training: Effects on Post–Stroke Walking Patterns</i> Trisha Kesar, MSPT – University of Delaware – Newark, DE, USA
10:10 AM – 10:20 AM	Abstract #104 <i>Using FES for Foot Drop Strengthens Cortico–Spinal Connections</i> Richard B. Stein, DPhil – University of Alberta – Edmonton, Alberta, Canada
10:20 AM – 10:30 AM	Discussion
10:30 AM – 10:45 AM	Break

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Sunday, November 11, 2007 (*continued*)

SESSION 2

10:45 AM – 12:00 PM

Free Papers – *Health and Fitness*

Moderator: Therese Johnston, PT, PhD, MBA – Shriners Hospital for Children – Philadelphia, PA, USA

10:45 AM – 10:55 AM

Abstract #201 *Oxygen Uptake During FES Treadmill Walking: Case Study*

Milos Popovic, PhD – Lyndhurst Center, Toronto Rehabilitation – Toronto, Ontario, Canada

10:55 AM – 11:05 AM

Abstract #202 *The Skeletal Biomechanics of Pressure Ulcer Prevention by Muscle Activation*

Hilton Kaplan, MD, PhD Candidate – University of Southern California – Los Angeles, CA, USA

11:05 AM – 11:15 AM

Abstract #203 *Reducing Spasticity After Chronic Spinal Cord Injury by Electrical Stimulation: Extracellularly–Applied Intraspinal Microstimulation Pulses and Electrical Fields*

Daniel R. Moroz, Undergraduate Student – University of Alberta – Edmonton, Alberta, Canada

11:15 AM – 11:30 AM

Discussion

11:30 AM – 11:40 AM

Abstract #204 *Monitoring Muscle Metabolic indexes by Time–Domain Near infrared Spectroscopy During Knee Flex–Extension Induced by Functional Electrical Stimulation*

Simona Ferrante, PhD. – Politecnico di Milano – Milan, Italy

11:40 AM – 11:50 AM

Abstract #205 *Preserving Bone Health After Acute Spinal Cord Injury: Differential Responses to a Neuromuscular Electrical Stimulation Intervention*

Alison Lichy, MPT, NCS – National Rehabilitation Hospital – Washington, DC

11:50 AM – 12:00 PM

Discussion

12:00 PM – 1:00 PM

Lunch (6th Floor) and **Poster Viewing** (9th Floor)

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Sunday, November 11, 2007 *(continued)*

1:00 PM – 1:40 PM

Keynote Address 2: Reggie Edgerton, PhD

“Strategies to Regain Motor Function with Technologies Designed to Capitalize On Intrinsic Physiological Properties of the Neuromotor System”

1:40 PM – 2:00 PM

Keynote Discussion

Moderator: Sam CK Lee, PhD, PT – University of Delaware – Newark, DE, USA

SESSION 3

2:00 PM – 3:15 PM

Free Papers – *Gait Assist and Posture*

Moderator: Edelle Field-Fote, PhD–Univ of Miami–Miami, FL, USA

2:00 PM – 2:10 PM

Abstract #301 *Automatic Control of Standing Balance Using Functional Electrical Stimulation Following Spinal Cord Injury*

Raviraj Nataraj, MS – Louis Stokes Cleveland VAMC – Cleveland, OH, USA

2:10 PM – 2:20 PM

Abstract #302 *Implanted Electrical Stimulation of the Trunk for Seated Postural Stability and Functional Mobility After Cervical SCI*

Ronald Triolo, PhD – Case Western Reserve University – Cleveland, OH, USA

2:20 PM – 2:30 PM

Discussion

2:30 PM – 2:40 PM

Abstract #303 *Walking by Complete Thoracic–Level SCI Patients Via FES: Present Status and System Improvements*

Daniel Graupe, PhD – University of Illinois – Chicago, IL, USA

2:40 PM – 2:50 PM

Abstract #304 *Restoring Standing After Spinal Cord Injury Using Intraspinal Microstimulation*

B. Lau, PhD – University of Alberta – Edmonton, Alberta, Canada

2:50 PM – 3:00 PM

Discussion

3:00 PM – 4:15 PM

Poster Session 1 and Exhibit Viewing

Special Interest Group Meetings

4:15 PM

Adjourn – Bus to Sofitel

6:00 PM – 8:00 PM

Welcome Reception

Shuttle service provided between the Sofitel Hotel and The College of Physicians of Philadelphia, Mutter Museum

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Monday, November 12, 2007

7:15 AM	Bus Pickup at Sofitel
7:15 AM – 8:25 AM	Registration and Breakfast
8:25 AM – 8:30 AM	Conference Announcements and Logistics Brian Smith, MSBE
8:30 AM – 9:10 AM	Keynote Address 3: <i>Craig McDonald, MD</i> <i>“Lower Extremity Functional Electrical Stimulation for Health and Fitness in SCI”</i>
9:10 AM – 9:30 AM	Keynote Discussion Moderator: Randal R. Betz, MD – Shriners Hospitals for Children – Philadelphia, PA
SESSION 4	
9:30 AM – 10:35 AM	Free Papers – <i>Clinical Transfer</i> Moderator: Paul Taylor, PhD – Salisbury District Hospital – Salisbury, Wiltshire, UK
9:30 AM – 9:40 AM	Abstract #401 <i>Surface Electrical Stimulation of Gluteal Muscles Reduces Sitting Pressure in Wheelchair Users With A Spinal Cord Injury</i> Thomas Janssen, PhD – VU University – The Netherlands
9:40 AM – 9:50 AM	Abstract #402 <i>Long–Term Outcomes of Implantable Functional Electrical Stimulation for Young People With C5 Spinal Cord Injury</i> Brian Smith, MSBE – Shriners Hospitals for Children – Philadelphia, PA, USA
9:50 AM – 10:00 AM	Abstract #403 <i>The Application of Functional Electrical Stimulation (FES) in Occupational Therapy for the Rehabilitation of Upper Limb Function of Patients With Stroke: A Preliminary Study</i> Raymond Tong, PhD – Hong Kong Polytechnic University – Hong Kong
10:00 AM – 10:15 AM	Discussion

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Monday, November 12, 2007 (continued)

10:15 AM – 10:25 AM **Abstract #404** *Integration of Neuromuscular Electrical Stimulation Approaches into Clinical Practice*
Dave Hutchinson, PT, Doctoral Candidate, MS, ECS – Shriners Hospitals for Children – Philadelphia, PA, USA

10:25 AM – 10:35 AM **Abstract #405** *FESAiR: Integration of Functional Electrical Stimulation with Physiotherapy Practice*
Maura Whittaker BScPT, MBA – GF Strong Rehabilitation Center – Vancouver, BC, Canada

10:35 AM – 10:45 AM **Discussion**

10:45 AM – 11:00 AM **Break**

SESSION 5

11:00 AM – 12:35 PM **Free Papers – Upper Extremity**
Moderator: Kevin Kilgore, PhD – Case Western Reserve University – Cleveland, OH, USA

11:00 AM – 11:10 AM **Abstract #501** *A Neuroprosthesis for Restoring Arm and Hand Function Via Functional Electrical Stimulation Following High Cervical Spinal Cord Injury*
Robert F. Kirsch, PhD – Cleveland FES Center – Cleveland, OH, USA

11:10 AM – 11:20 AM **Abstract #502** *Selective Finger and Wrist Activation Using Multi-Channel Transcutaneous Electrical Stimulation Electrodes*
Thierry Keller, Dr.sc Techn. – ETH Zurich – Zurich, Switzerland

11:20 AM – 11:30 AM **Abstract #503** *Design of Surface Electrode Array Applied for Hand Functional Electrical Stimulation in the Variation of Forearm Gesture*
Shan-Ting HSU, Master – National Taiwan University – Taipei, Taiwan

11:30 AM – 11:45 AM **Discussion**

11:45 AM – 11:55 PM **Abstract #504** *Prediction of Distal Arm Posture From Shoulder Posture During Three-Dimensional Reaching*
Rahul Kaliki, BS Biomedical Engineering – University of Southern California – Los Angeles, CA, USA

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Monday, November 12, 2007 *(continued)*

- 11:55 PM – 12:05 PM **Abstract #505** *Post–Stroke Arm Rehabilitation Using 5–7 Implanted Microstimulators: Implantation Procedures, Safety and Efficacy*
Ross Davis, MD – AE Mann Foundation – Santa Clarita, CA, USA
- 12:05 PM – 12:15 PM **Abstract #506** *A Clinical Study Using Implantable Microstimulators to Facilitate Recovery of Upper Limb Function in Hemiparesis: Preliminary Therapeutic Outcomes*
Jane H. Burridge, PhD – University of Southampton – Southampton, UK
- 12:15 PM – 12:30 PM **Discussion**
- 12:30 PM **Adjourn – AFTERNOON OFF**
Bus to Sofitel Hotel and Historic District

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Tuesday, November 13, 2007

7:15 AM	Bus Pickup at Sofitel
7:45 AM – 8:25 AM	Registration and Breakfast
8:25 AM – 8:30 AM	Conference Announcements and Logistics Brian Smith, MSBE
8:30 AM – 9:10 AM	Keynote Address 4: Hugh Herr, PhD <i>“The Importance of Neuromechanical Limb Models in the Design of Leg Prostheses and Orthoses”</i>
9:10 AM – 9:30 AM	Keynote Discussion Moderator: Carole Tucker, PhD, PT – Shriners Hospitals for Children – Philadelphia, PA, USA
SESSION 6	
9:30 AM – 11:00 AM	Free Papers – Control Techniques Moderator: Henrick Golee, PhD – University of Glasgow – Glasgow, Scotland, UK
9:30 AM – 9:40 AM	Abstract #601 <i>Novel FES System to Stimulate Both Dorsi- and Plantar-Flexor Muscles During Stroke Gait</i> Ramu Perumal, PhD – University of Delaware – Newark, DE, USA
9:40 AM – 9:50 AM	Abstract #602 <i>Real-Time Processing for Separation of Voluntary EMG and Evoked EMG From Mixed EMG Signals</i> Tongjin Song, PhD – University of Sydney – Sydney, Australia
9:50 AM – 10:00 AM	Discussion
10:00 AM – 10:10 AM	Abstract #603 <i>EEG-Triggered Neuromuscular Stimulation Therapy for Hemiplegia of the Hand Due to Chronic Stroke</i> Abiramai Muralidharan, MS – Case Western Reserve University – Cleveland, OH, USA
10:10 AM – 10:20 AM	Abstract #604 <i>Using Electrographic Signals to Identify Arm Movements</i> Cesar Marquez Chin, B.Sc. Eng., PhD Candidate – Rehabilitation Engineering Laboratory, Toronto Rehabilitation – Toronto, Ontario, Canada

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Tuesday, November 13, 2007 *(continued)*

10:20 AM – 10:30 AM **Abstract #605** *Toward An Animal Model of a BMI Driven Lumbar Stepping Prosthesis for Spinal Cord Injury*
Ubong Ime Udoekwere, MS – Drexel University – Philadelphia, PA, USA

10:30 AM – 10:45 AM **Discussion**

10:45 AM – 11:00 AM **Break**

SESSION 7

11:00 AM – 12:00 PM **Free Papers – *Bladder Management/ Neuromodulation***
Moderator: Randal R. Betz, MD - Shriners Hospitals for Children - Philadelphia, PA, USA

11:00 AM – 11:10 AM **Abstract #701** *A New Method to Extract Afferent Bladder Activities From Sacral Neural Roots: Acute Experiments in Dogs*
Mohamad Sawan, PhD – Ecole Polytechnique de Montreal – Montreal, Canada

11:10 AM – 11:20 AM **Abstract #702** *Functional Reinnervation of the Canine Urinary Bladder*
Michael Ruggieri, PhD – Temple University – Philadelphia, PA, USA

11:20 AM – 11:30 AM **Discussion**

11:30 AM – 11:40 AM **Abstract #703** *High-Frequency Blockade of the Pudendal Nerve Using a Transcutaneously Coupled Stimulator in a Chronically Implanted Cat*
Robert A. Gaunt, B.Eng. – University of Alberta – Edmonton, Alberta, Canada

11:40 AM – 11:50 PM **Abstract #704** *Chronic High-Frequency Nerve Block with an Implanted Waveform Generator*
Kevin Kilgore, PhD – Case Western Reserve University – Cleveland, OH, USA

11:50 PM – 12:00 PM **Discussion**

12:00 PM – 1:00 PM **Lunch** (6th Floor) and **Poster Viewing** (9th Floor)
BOD Follow-Up Meeting (Board Room, 9th Floor)

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Tuesday, November 13, 2007 *(continued)*

SESSION 8

1:00 PM – 2:30 PM

Free Papers – *Cycling and Rowing*

Moderator: Ken Hunt, PhD – University of Glasgow – Glasgow, Scotland, UK

1:00 PM – 1:10 PM

Abstract #801 *Functional Magnetic Stimulation Propelled Cycling of Paretic Patients (Comparison of FES With FMS)*

Johann Szecsi, MD – University of Munich – Munich, Germany

1:10 PM – 1:20 PM

Abstract #802 *Lower Leg Joint Power Output During Progressive Resistance Cycling in SCI Subjects: The Influence of Stimulation Intensity*

Pouran Faghri, MD, MS FACSM – University of Connecticut – Storrs, CT, USA

1:20 PM – 1:30 PM

Abstract #803 *The Feasibility of Using Functional Electrical Stimulation Assisted Cycling in Children With Cerebral Palsy*

Ann M. Tokay, PT, DPT – Shriners Hospitals for Children – Philadelphia, PA, USA

1:30 PM – 1:45 PM

Discussion

1:45 PM – 1:55 PM

Abstract #804 *A Comparison Between FES–Rowing and Upper Body Exercise for Cardiovascular Exercise in Spinal Cord Injury*

Dries Martijn Hettinga, PhD – Brunel University – Uxbridge, UK

1:55 PM – 2:05 PM

Abstract #805 *Musculoskeletal Effects of Cycling and/or Electrical Stimulation in Pediatric SCI*

Richard Lauer, PhD – Shriners Hospitals for Children – Philadelphia, PA, USA

2:05 PM – 2:15 PM

Abstract #806 *Cardiovascular and Respiratory Effects of FES Cycling in Pediatric SCI*

Therese E. Johnston, PT, PhD, MBA – Shriners Hospitals for Children – Philadelphia, PA, USA

2:15 PM – 2:30 PM

Discussion

2:30 PM – 3:45 PM

Poster Session 2 and Exhibit Viewing

Special Interest Group Meetings

3:45 PM

Adjourn – Bus to Sofitel

6:30 PM – 10:00 PM

Conference Dinner (Sofitel Philadelphia)

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Wednesday, November 14, 2007

7:15 AM	Bus Pickup at Sofitel
7:45 AM – 8:25 AM	Registration and Breakfast
8:25 AM – 8:30 AM	Conference Announcements and Logistics Brian Smith, MSBE
SESSION 9	
8:30 AM – 9:45 AM	Free Papers – <i>Stimulation and Sensor Technology</i> Moderator: Richard Lauer, PhD – Shriners Hospital for Children – Philadelphia, PA
8:30 AM – 8:40 AM	Abstract #901 <i>Development of an Implantable Networked Neuroprosthesis</i> Kevin Kilgore, PhD – Case Western Reserve University – Cleveland, OH, USA
8:40 AM – 8:50 AM	Abstract #902 <i>A High-Resolution Electrode Array System for Drop Foot Correction</i> Miguel Hernandez Silveira, BSc – University of Surrey – Guildford, UK
8:50 AM – 9:00 AM	Abstract #903 <i>Corrosion Resistance of Stainless Steel Nerve Cuff Electrodes in the Neurostep FES System</i> Stuart F. Cogan, ScD – EIC Laboratories, Inc. – Norwood, MA, USA
9:00 AM – 9:15 AM	Discussion
9:15 AM – 9:25 AM	Abstract #904 <i>Matrix Cuff Electrodes for Fibre and Fascicle Selective Peripheral Nerve Recording and Stimulation</i> Martin Schuettler, PhD – University of Freiburg – Germany
9:25 AM – 9:35 AM	Abstract #905 <i>Effects of Surface Electrical Stimulation of Suprahyoid Muscles on the Movements of the Hyo-Laryngeal Complex</i> Sang-Jun Kim, MD – Seoul National University – Seoul, Korea
9:35 AM – 9:45 AM	Break
9:45 AM – 10:00 AM	Discussion

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Wednesday, November 14, 2007 *(continued)*

SESSION 10

10:00 AM – 11:15 AM

Free Papers – Modeling

Moderator: Ramu Perumal, PhD – University of Delaware – Newark, DE, USA

10:00 AM – 10:10 AM

Abstract #1001 *Dynamic Computer Optimization for Standing Balance and Control of Postural Sway After Spinal Cord Injury*

Musa L. Audu, PhD – Case Western Reserve University – Cleveland, OH, USA

10:10 AM – 10:20 AM

Abstract #1002 *Experimental Identification of Skeletal Muscle Biomechanical Parameters With Sigma–Point Kalman Filter*

Mitsuhiro Hayashibe, PhD – LIRMM – Montpellier, France

10:20 AM – 10:30 AM

Abstract #1003 *Modeling of Limb Movements to Compute and Transfer Stimulation Trains to Spinal Motoneuron Pools*

Jozsef Laczko, PhD – Semmelweis University Department of Biomechanics – Budapest, Hungary

10:30 AM – 10:45 AM

Discussion

10:45 AM – 10:55 AM

Abstract #1004 *Understanding the Mechanisms and Sites of Action of Intraspinal Microstimulation*

Vivian K. Mushahwar, PhD – Centre for Neuroscience, University of Alberta – Alberta, Edmonton, CAN

10:55 AM – 11:05 AM

Abstract #1005 *Predicting the Effect of Muscle Length on Fatigue During Electrically Stimulated Isometric Contractions*

Susan Marion, PhD – University of California – Davis, CA

11:05 AM – 11:15 AM

Discussion

11:15 AM – 12:00 PM

General Membership Meeting

Closing Remarks

12:00 PM

Adjourn – Bus to Sofitel

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Poster Session 1

- Poster 1–1** *An Evaluation of the Muscle Recruitment Properties of Intraspinal Microstimulation*
Jeremy Bamford, MSc – University of Alberta – Edmonton, Alberta, Canada
- Poster 1–2** *Assessment of Neurochemical Changes Induced by Spinal Cord Injury Using Magnetic Resonance Spectroscopy*
Daniel Patrick Hallihan BSc – University of Alberta – Edmonton, Alberta, Canada
- Poster 1–3** *Electrical Stimulation of Cutaneous Afferent Nerves to Modify Locomotor Cycle in the Spinal Cat*
Karen Ollivier–Lanvin, PhD – Drexel University College of Medicine – Philadelphia, PA, USA
- Poster 1–4** *Assessment of Paraplegic Gait: Angles, Flexion / Extension Ratio, Peak Moment and Six–Minute Walking Test*
Alberto Cliquet Jr., Professor – UNICAMP Faculty of Medical Sciences – Campinas, Brazil
- Poster 1–5** *Evaluation of Electromyogram–Triggered Functional Electrical Stimulation–Assisted Stand–to–Walk Transition*
Anirban Dutta, MS – Case Western Reserve University – Cleveland, OH, USA
- Poster 1–6** *Stimulating the Quadriceps With Four–Contact Nerve–Cuff Electrodes to Improve Standing After Spinal Cord Injury: A Case Study*
Lee Fisher, BS – Case Western Reserve University – Cleveland, OH, USA
- Poster 1–7** *Selection of an Optimal Muscle Set for A 16–Channel Standing Functional Electrical Stimulation System*
Stephen John Gartman, BS – Case Western Reserve Univ – Cleveland, OH, USA
- Poster 1–8** *A Kinematic Study of the Sway of Upper Limb Through Normal Gait and Drop Foot*
Shih–Ching Chen, PhD – Taipei Medical University and Hospital – Taipei, Taiwan
- Poster 1–9** *Community Support for FES*
Louise Annette Miller, MBA – University of Alberta – Edmonton, Alberta, Canada
- Poster 1–10** *A Pilot Study on the Electrical Stimulation for the Abdomen*
Misa Sasaki, RPT, MS – Tohoku University – Sendai, Japan
- Poster 1–11** *Evaluation of Fitness Effect on Paraplegic Patient Using the Akita Fes–Rowing Machine*
Masaaki Takeshima, MD – Akita University – Akita, Japan

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Poster Session 1

- Poster 1–12** *Neural Networks Identification of Electrical Stimulation Model Based On Hammerstein*
Raymond tong, PhD – Hong Kong Polytechnic University – Hong Kong
- Poster 1–13** *A Proportional Derivative FES Controller for Planar Arm Movement*
Kathleen M. Jagodnik, MS – Case Western Reserve Univ – Cleveland, OH, USA
- Poster 1–14** *A Selectivity Measure for Transcutaneous Electrodes*
andreas Kuhn, MSc – ETH Zurich, Automatic Control Lab – Zurich, Switzerland
- Poster 1–15** *Ramped Amplitude Waveforms in Mammalian High Frequency Nerve Block*
Niloy Bhadra, PhD – Case Western Reserve University – Cleveland, OH, USA
- Poster 1–16** *Clinical Effects of Sacral Surface Electrical Stimulation for Dysmenorrheal Analyzing by Self-Assessed Visual Analogue Scale*
Takahide Ogura, PhD – Tohoku University School of Medicine – Sendai, Japan
- Poster 1–17** *High Frequency Conduction Block of Sensory Nerves*
Emily Anna Lahowetz, BS – Case Western Reserve University – Cleveland, OH, USA
- Poster 1–18** *Effect of Muscle Fatigue by Laser Irradiation in Rat Skeletal Muscle – Preliminary Study*
Akiko Misawa, MD – Akita University School of Medicine – Akita, Japan
- Poster 1–19** *The Effects of Dermatomal Electric Stimulation to the Finger Flexors and Extensors in Chronic Hemiplegia*
Young-Hee Lee, PhD – Yonsei University Wonju College of Medicine – Wonju, Korea
- Poster 1–20** *A Comparison of the Effect of Programs of Lower Extremity Cycling and Electrical Stimulation On Spasticity As Measured by Isokinetic Dynamometry in Children With Spinal Cord Injury*
Samuel R. Pierce, PhD – Shriners Hospitals for Children – Philadelphia, PA, USA
- Poster 1–21** *Combination Therapy of Botulinum Toxin Type A With Therapeutic Electrical Stimulation for Chronic Spastic Upper Limb Paralysis*
Kazunori Seki, MD, PhD – Department of Restorative Neuromuscular Rehabilitation – Sendai, Japan
- Poster 1–22** *EMG Triggered Rehabilitation of Complex Movements – Biofeedback/Stimulation System Stiwell Med4*
Monika Rakos, PhD, Dipl. Ing. – Otto Bock Healthcare Products GmbH – Vienna, Austria

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Poster Session 1

- Poster 1–23** *Mechanical Behavior of Implantable Cables*
John J. Lewandowski, PhD – Case Western Reserve Univ – Cleveland, OH, USA
- Poster 1–24** *An Implanted Microinjectable Stimulator for Muscle Excitation Suitable for Pediatric Applications: An Evaluation Using A Canine Model*
Brian Smith, MSBE – Shriners Hospital for Children – Philadelphia, PA, USA
- Poster 1–25** *Study of Functional Electrical Stimulation by Using Slip and Force Sensors for Grasping*
Shih–Ching Chen, PhD – Taipei Medical University and Hospital – Taipei, Taiwan
- Poster 1–26** *An Intramuscular Bipolar Mes Electrode for Implantable Systems*
William Memberg, MS – Cleveland FES Center – Cleveland, OH, USA
- Poster 1–27** *An Implanted Device for Hand Opening Following Stroke*
Paul Taylor, PhD – Salisbury District Hospital – Salisbury, Wiltshire, UK
- Poster 1–28** *Measurement of the Right and Left Crank Torque to Improve the Rehabilitative Effects of FES Cycling on Stroke Patients*
Emilia Ambrosini – Politecnico di Milano – Milan, Italy

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Poster Session 2

- Poster 2–1** *Restoration of Blink Symmetry Following Unilateral Facial Paralysis*
Nicholas Sachs, PhD – University of Southern California, Doheny Eye Institute – Los Angeles, CA, USA
- Poster 2–2** *Characterization and Optimization of the Stimulus Router System, A Novel Neuroprosthesis*
Liu Shi Gan, BSc – University of Alberta – Edmonton, Alberta, Canada
- Poster 2–3** *Optimal Patterns Synthesis Approach for Knee Motion Under FES*
Mourad Benoussaad, MSc – LIRMM – Montpellier, France
- Poster 2–4** *FES Assisted Swing Through Gait Using Accelerometer and Neural Network*
Toshiki Matsunaga – Akita University – Akita, Japan
- Poster 2–5** *Analysis tool for Sensory Feedback of Neural Signals*
Thilo Krueger – University of Freiburg – Freiburg, Germany
- Poster 2–6** *Effect of Data Quality in Neural Telemetry Systems on Spike Rate*
Douglas Michael Ackermann, MS – Case Western Reserve Univ – Cleveland, OH, USA
- Poster 2–7** *Selective Control of Leg Muscle Activation Patterns and Ankle Forces Using A Multi-Chambered Stimulation Cuff Implanted on the Sciatic Nerve*
Geoffrey Thor Desmoulin, MSc – Simon Fraser University – Burnaby, BC, Canada
- Poster 2–8** *Out-of-the-Saddle FES-Cycling by Paraplegics*
Johann Szecsi, MD – University of Munich – Munich, Germany
- Poster 2–9** *FES Rowing After SCI: Health Sport and Recreation*
Dries Hettinga, PhD – Brunel University – Uxbridge, UK
- Poster 2–10** *Development of FES-Rowing Machine With Quadriceps Stimulation and Energy Storing Device*
Sina Sareh, MSc – University of Sheffield – United Kingdom
- Poster 2–13** *FES-Cycling Strategies for the Child With A Spinal Cord Injury Using Muscle Force-Stimulation Relationships – A Case Study*
Calum McRae, PhD – Shriners Hospitals for Children – Philadelphia, PA, USA
- Poster 2–14** *Quadriceps Oxygenation During Steady State FES-Rowing in Persons With SCI*
Dries Martijn Hettinga, PhD – Brunel University – United Kingdom
- Poster 2–15** *An Investigation of the Effects of Using Different Numbers of Stimulation Channels on Muscle Perfusion During FES-Rowing*
Sarah Wightman, BSc (Hons) – Oxford Brookes University – Wheatley, UK

12th Annual International Functional Electrical Stimulation Society Conference

Shriners Hospital for Children, Philadelphia PA

November 10–14, 2007

Poster Session 2

- Poster 2–16** *Effects of Voluntary Breathing on Force Responses to Electrical Stimulation (ES) of Finger Extensors: A Pilot Study*
Sheng Li, MD, PhD – University of Montana – Missoula, MT, USA
- Poster 2–17** *Can Iterative Learning Control (ILC) Mediated by Functional Electrical Stimulation (FES) Be Used in the Re-Education of Upper Limb Function Post Stroke?*
Ann Marie Hughes, MSc, BSc – University of Southampton – Southampton, UK
- Poster 2–18** *Implanted Myoelectric Control Methods for Hand Grasp*
Kevin Kilgore, PhD – Case Western Reserve University – Cleveland, OH, USA
- Poster 2–19** *Implementation of a Wireless Wearable Controller for an Upper Extremity Neuroprosthesis*
Christa Wheeler, MS – Case Western Reserve University – Cleveland, OH, USA
- Poster 2–20** *Functional Results Following Implantation of an Upper Extremity Neuroprosthesis Utilizing Myoelectric Control*
Anne Bryden, OTR/L – Case Western Reserve University – Cleveland, OH, USA
- Poster 2–21** *Post-Stroke Upper Extremity Rehabilitation Using 5–7 Implanted Microstimulators: Thresholds and Orthotic Effects*
Jane H. Burridge, PhD – University of Southampton – Southampton, UK
- Poster 2–22** *A Novel FES Treatment for Recovery of Hand Function in Hemiplegia*
Jayme S. Knutson, PhD – Case Western Reserve University – Cleveland, OH, USA
- Poster 2–23** *The Combined Effect of Dynamic Splinting & Neuromuscular ES in Reducing Wrist and Elbow Contractures in Children With Cerebral Palsy: A Pilot Study*
Neil Postans, PhD – RJ&AH Orthopaedic Hospital – Oswestry, Shropshire, UK
- Poster 2–24** *Restoration of Functional Tenodesis Action in a Case of C5 Spinal Cord Injury by Means of Clinical Functional Electrical Therapy (FET)*
Young Hee Lee, PhD – Wonju College of Medicine – Republic of Korea
- Poster 2–25** *Use of an Upper Limb FES Device for a Drinking Task: 2 Case Studies*
Sibylle B. Thies, PhD – Salford University – Greater Manchester, UK
- Poster 2–26** *Advanced Neuroprosthesis to Restore Trunk, Shoulder, Elbow and Hand Function in C5/C6 Spinal Cord Injury*
Juan Gabriel Hancapie, MSc – Case Western Reserve Univ – Cleveland, OH, USA
- Poster 2–27** *Peripheral Nerve Interface System for Controlling and Sensing in Artificial Limbs*
Joe Schulman – AE Mann Foundation – Santa Clarita, CA, USA