

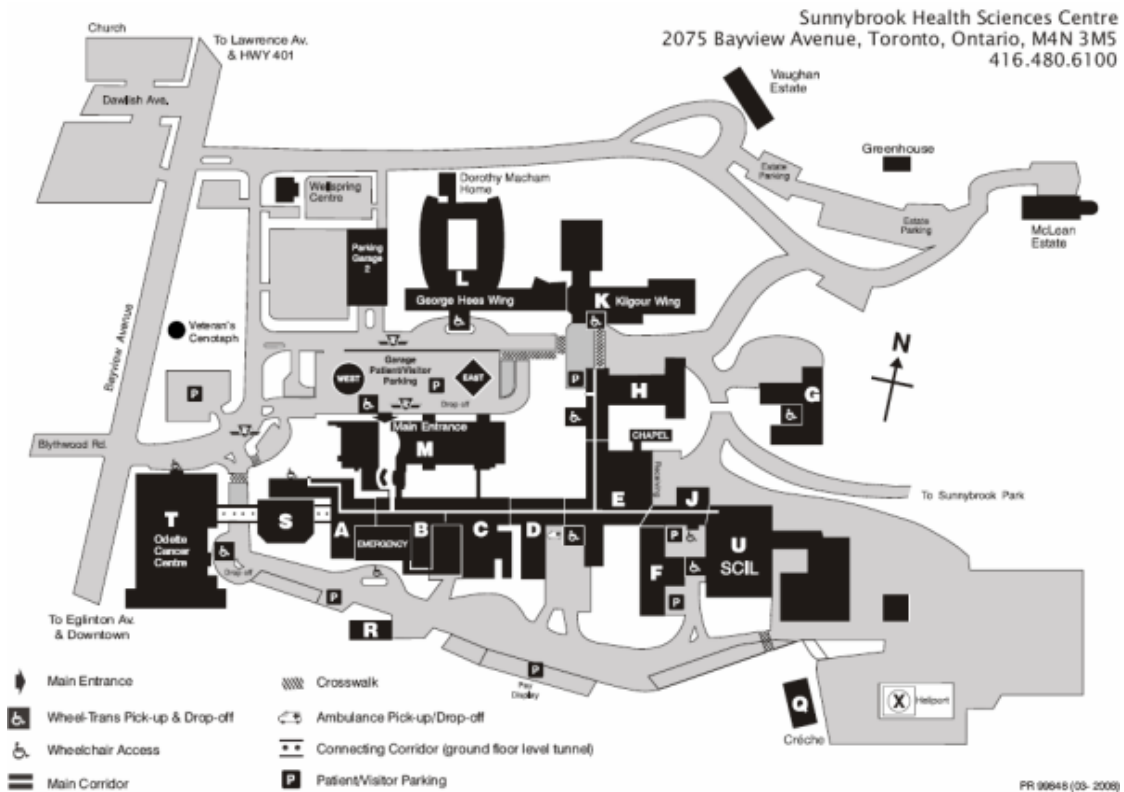


# Prosthetics and Orthotics Care for People with Diabetes

## ISPO Canada Symposium 2009

### Program – October 22-24

| October 22 – Manufacturer Workshops (Sunnybrook Hospital – SCIL) |  |   |
|--|--|---|
| 11:30 – 12:30  | Registration – E-Wing, McLaughlin Lecture Theatre (Room 18a) |   |
| 12:30 – 14:30  | Ortoped – Darco (Harrison Hall)                              | Woundcare<br>Andrew Hoar C. Ped (C)   |
|  | Otto Bock (McLaughlin Lecture Theatre)                       | Winning Combinations<br>Michael Pearce, C.P. (c)  |
|  | BMI – Townsend (GBC Lecture Room)                            | Unique Applications for Custom Silicone in Prosthetics and Orthotics<br>Sandra Ramdial, C.P.(c) |
| 14:30-15:00  | Nutrition break  |   |
| 15:00 – 17:00  | OrtoPed – Becker (Harrison Hall)                             | Stance Control KAFO Systems from Becker Orthopedic: Fabrication & Use<br>Steve Hill, CO         |
|  | Dorset Orthopaedic (McLaughlin Lecture Theatre)              | Silicone AFO  |



| <b>October 23 – Main Ballroom (Vaughan Estate)</b> |   |
|--|---|
| 7:30 – 8:30  | Registration<br>Coffee and Pastries   |
| 8:30 – 8:45  | Welcome<br>Edward Lemaire, PhD  |
|  | ISPO Canada Greetings<br>Steve Hale, MSc, CO(C)<br>President, ISPO Canada   |
|  | ISPO Canada /War Amps 2009 R&D Award<br>Edward Lemaire, PhD, ISPO Canada<br>Karen Valley, The War Amps  |
| 8:45 – 10:15                                       | An Interactive " Smörgåsbord " on Diabetes<br>Dr. Robert Silver, MD<br>Endocrinologist, Toronto   |
| 10:15–10:45  | Break   |
| 10:45 – 11:30                                      | Rehabilitation of the diabetic foot syndrome<br>Dr Jan-Willem G. Meijer, MD, PhD (Netherlands)<br>Physiatrist   |
| 11:30 – 12:00                                      | Ambulation of People with Lower-Limb Amputations: Relationship Between Capacity and Performance Measures<br>Clifford Chadderton Award Presentation<br>Kim Parker, MASc, PEng<br>Nova Scotia Rehabilitation Centre                     |
| 12:00 – 13:00                                      | Buffet Lunch (Dining Room / Ballroom)   |
|  | <b>Prosthetics – Main Ballroom</b>  |
|  | <b>Orthotics – Academy of Medicine Room</b>   |
| 13:00 – 14:00                                      | The Biomechanics of Partial Foot and Neuropathic Gait<br>Stephania Fatone, PhD, Prosthetist/Orthotist<br>Orthoses for the Neuropathic Foot<br>Nancy Elftman, CO, CPed, (USA)  |
| 14:00 – 14:30                                      | Amputation/Prosthetic quality register<br>Bengt Söderberg, CPO (Sweden)<br>An Overview of Pedorthic Modalities for the Management of Diabetic Related Foot Conditions<br>Jay Paul, CPed(c)  |
| 14:30 – 15:00                                      | Break   |
| 15:00 – 15:30                                      | Outcome Measurement for Upper Extremity Prosthetics<br>Peter Kyberd, PhD, Biomedical Engineering<br>Stroke gait<br>Stephania Fatone, PhD, Prosthetist/Orthotist   |
| 15:30 – 16:00                                      | A Collaborative Gait Training Approach for Canadian Forces Personnel<br>Capt. Lisa Francis, Marie Andrée Paquin<br>Clinical Outcomes for Dynamic Cranial Orthoses<br>Ted Radstake, Edward Lemaire                                     |
| 16:00 – 16:30                                      | Swing-phase damping mechanism with power generation for use in above-knee prostheses<br>Jan Andrysek, PEng, MASc<br>A Velocity-Triggered Stance Control Knee Orthoses<br>Edward Lemaire, Reza Samadi, Louis Goudreau, Jonathan Kofman |
| 16:30  | Closing Remarks   |

| <b>October 24 – Workshops (Sunnybrook Hospital – SCIL)</b> |   |  |   |
|--|---|--|---|
| 7:30-8:15  | Coffee and Pastries (SCIL Clinic Area)  |  |   |
| 8:15 – 8:45  | CPOT (Compendium of Prosthetic and Orthotic Treatment) Update<br>Kirsten Simonsen, BSc, CP(c)<br>(McLaughlin Lecture Theatre) |  |   |
| 8:45 – 9:00  | ISPO International Update<br>Dan Blocka, CO(c), President ISPO International  |  |   |
| 9:00 – 10:30   | Rehabilitation of Neuropathies<br>Jan-Willem G. Meijer<br>(Harrison Hall)   | Orthotic management of the neuropathic limb<br>Nancy Elftman<br>(GBC Lecture Room) | Partial Feet<br>Bengt Söderberg<br>(McLaughlin Lecture Theatre) |
| 10:30 – 11:00  | Break (SCIL Clinic Area)  |  |   |
| 11:00 – 12:30  | Rehabilitation of Neuropathies<br>Jan-Willem G. Meijer<br>(Harrison Hall)   | Orthotic management of the neuropathic limb<br>Nancy Elftman<br>(GBC Lecture Room) | Partial Feet<br>Bengt Söderberg<br>(McLaughlin Lecture Theatre) |
| 12:30 – 13:30  | Lunch / Closing remarks (SCIL Clinic Area)  |  |   |
| 13:30 – 14:00  | ISPO Canada Annual General Meeting (McLaughlin Lecture Theatre)   |  |   |
| 14:00 – 17:00  | OAPO Annual Meeting (McLaughlin Lecture Theatre)  |  |   |

## Speaker Bios

### **Nancy Elftman, CO, C.Ped., Orthotist (USA)**

Nancy Elftman has built a specialty around a diversified background. Her biomedical implant career involved personal patents in percutaneous devices, as well as specialized surgical procedures for implantation. In the search for expanding her research and development grants to include robotics, she returned to the University setting for another degree in Orthotics and Prosthetics. In the clinical setting at Rancho Los Amigos, the poor prognosis for diabetic patients was of special interest. For 12 years there was protocol development in cooperation with Paul Brand, William Wagner, and Richard Chambers, all physicians investigating the neuropathic limb and its complications. Nancy has physically retired from Rancho, but consults for several diabetes and wound care facilities. Her dedication to private practice and patient relationships complete her career in the preservation on the neuropathic limb.

### **Stephania Fatone, PhD, Prosthetist/Orthotist (USA)**

Stephania Fatone is a Research Assistant Professor with the Northwestern University Feinberg School of Medicine, Prosthetics Research Laboratory and Rehabilitation Engineering (Chicago, USA). She obtained PhD and undergraduate degrees in prosthetics and orthotics from La Trobe University (Melbourne, Australia). Dr. Fatone's research covers the areas of gait biomechanics, prosthetic and orthotic applications for the foot segment, spinal orthotic biomechanics.

### **Dr Jan-Willem G. Meijer, MD, PhD (Netherlands)**

Physiatrist

Jan-Willem Meijer is physician for rehabilitation medicine and medical director of two rehabilitation institutes called Revant, in the South of the Netherlands. His fields of interest in research are neurorehabilitation, orthesiology and the diabetic foot syndrome. He wrote his PhD thesis on the diabetic foot syndrome. He published several articles in international journals and has won the ISPO Forchheimer Prize on the ISPO World Congress in Hong Kong 2004.

### **Dr. Robert Silver, MD (Toronto)**

Staff Endocrinologist- University Health Network/Toronto Western Hospital since 1985.  
Professor- Dept.of Medicine- University of Toronto. Director of Education- University Health Network/Mount Sinai Hospital Division of Endocrinology since 1991. Former Training Program Director- University of Toronto Division of Endocrinology. Former Editor-In Chief- Diabetes Dialogue- a nationally distributed magazine for lay readership- Canadian Diabetes Association- 1986-1999. Winner of 20 Teaching Awards- Undergraduate and Postgraduate teaching- University of Toronto Dept.of Medicine. In my "spare time", I sing as a Cantor in my synagogue and have served as a long-time Musical Director of "LifeBeat", a group of health care professionals who put on an annual musical variety show to raise monies for various designated medical charities.

**Bengt Söderberg, CPO (Sweden)**

Scandinavian Orthopaedic Lab

Bengt Söderberg is a certified prosthetist/orthotist (Sweden) with extensive experience with gait analysis and partial foot prosthetics. In addition to academic contributions at the university in Jönköping, Sweden, Bengt Söderberg has taught and lectured at the universities of Strathclyde, Baghdad, and Siriraj University in Bangkok. He has been president of ISPO Sweden, Chairman of the Orthopaedic technicians society, and an adviser to the WHO. As well as being Founder and Managing Director of Scandinavian Orthopaedic Laboratory, Mr. Söderberg is Founder and Director of the Gait lab at Lund University Hospital. His book, Partial Foot Amputations, has been international recognized as a key text in this field.

**Peter Kyberd, PhD (New Brunswick)**

Peter Kyberd is a professor at the University of New Brunswick's Institute of Biomedical Engineering and a leading authority on control of prosthetic limbs, a subject he has been working on since the late 1980s, including a highly publicised collaboration with Kevin Warwick and Mark Gasson at the University of Reading using implanted electrodes to control a robotic arm and collaborative work on upper extremity outcome measures. In addition to his peer-reviewed scientific publications his work has been featured in popular science journals such as Electronics Times. Dr. Kyberd has a first class degree from Durham University, his PhD was awarded in 1990 for work on a prosthetic hand at Southampton University, and his subsequent career saw this followed through the Oxford Orthopaedic Engineering Centre, his work at Reading, and currently in Canada.

# Manufacturer Workshop Abstracts

## ***OrtoPed***

### **Woundcare**

Andrew Hoar C. Ped (C)

Orthotic and Prosthetic Dept, QEII Health Sciences Centre, Halifax, NS

Caring for the patient with diabetic neuropathic foot ulceration requires a multidisciplinary approach to management and pressure offloading is an imperative intervention if wound healing and limb salvage is to be achieved. In a Vascular Leg Ulcer Clinic at a large, tertiary care hospital the number of patients seen who have diabetic foot ulcers is approximately 30% (n=400) of the total patient population. Diabetic neuropathic foot ulceration poses a challenge to orthotists due to the natural progression that occurs due to the biomechanical changes to the foot.

Patients with diabetic neuropathic feet are more susceptible to ulceration of the feet due to the loss of protective sensation. Ulcers occur in the diabetic foot because of repetitive stress on insensitive feet. When repetitive stress continues, the foot develops hot spots, callus build-up, pressure necrosis, and ultimately ulceration. The most common site of pressure and subsequent callosity is over the metatarsal phalangeal joint, in particular the first interphalangeal joint and the plantar surface of the Hallux. This presentation will share with the participant the role of pressure reduction and off-loading devices, as well as a multidisciplinary approach in the management of patients with diabetic foot ulcers (DFU).

Objectives:

1. Identify the structural and biomechanical anomalies associated with DFU.
2. Demonstrate the advantages and disadvantages of various off-loading devices.
3. Implement a multidisciplinary approach to managing patients with DFU.

## ***OrtoPed-Becker***

### **Stance Control KAFO Systems from Becker Orthopedic: Fabrication & Use**

Steve Hill, CO

President and CEO of Delphi Ortho, Secretary and founding board member of OPTA (Orthotic Prosthetic Technological Association)

Since the introduction of stance control technologies many different systems have attempted to address the assorted pathologies stance control components must address. The Stance Control system of components provides an economical answer to all of these concerns. This talk will show the step by step fabrication instructions and give the practitioner an overview of what stance control hopes to accomplish in their patients. Successful clinical application of KAFOs with stance control knee joints requires an understanding of the technical features of each joint. This workshop will attempt to provide a broad overview of contemporary component design and construct a matrix, or frame of reference, that allows prescription to be informed and, irrespective of clinical diagnosis based upon the biomechanical principles of joint motion, the underlying design of the orthosis and its impact on the joint.

## **Otto Bock**

### **Winning Combinations**

Michael Pearce, C.P. (c)  
Clinical Product Specialist, Prosthetics

Otto Bock's Socket Technology Winning Combinations have been leading the way in Technical Orthopedics for several years. These combinations have proven to provide the right fit, optimal quality and ease of selecting the best possible product choices. Let's take a look at how this innovative approach can improve your fittings and benefit your patients.

Traditionally within Socket Technologies we have used gel liners as residual limb socket interfaces offering suspension possibilities of 'with' or 'without' pin. In this presentation we will go beyond this method by identifying and evaluating different types of liner materials available; examining liner compatibility with different limb types as well as choosing the right suspension method based on activity levels; and exploring the various modifications and casting methods used for our TPE, PU and Silicone liners.

### **Unique Applications for Custom Silicone in Prosthetics and Orthotics**

Sandra Ramdial, C.P.(c)  
Clinical Services Manager

This session will focus on Otto Bock's Custom Silicone Services, a unique combination of art and technology that provides custom solutions for people with limb deficiencies and unmatched durability. There have been numerous attempts to improve the treatment of our patients. We are constantly looking for ways to optimize prosthetic and orthotic care using a variety of methods, techniques and materials.

With a product line ranging from partial hands and feet to liners, gloves and fingers, this presentation will emphasize the many benefits of Otto Bock's proprietary silicone. Challenging fittings and unusual applications of custom silicone for prosthetics and orthotics will be discussed. Through the experience of Otto Bock's Custom Silicone Services, we will present a number of solutions.

## ***BMI – Townsend***

### **Human and Prosthetic (Below Knee Complex) Biomechanical Function In Level Ground Walking**

Barry Townsend, BS, CPO

President / co-founder of BioQuest Prosthetics

Barry Townsend has provided O&P services in California for over 25 years. He is an accomplished speaker and is recognized for his extensive knowledge of human biomechanics and its relationship to amputee gait and prosthetic design. His collaboration with Dr. Jacquelin Perry of the Perry Institute at Rancho Los Amigos has led to the advancement in interpretation of lower limb prosthetic biomechanics. Mr. Townsend, along with co-founder / co-inventor Byron Claudino, has applied for and/or been granted approximately 80 USA and foreign below knee complex prosthetic patents. His presentation will concentrate on human and prosthetic below knee complex biomechanical function in level ground walking and focus on the processes of the human below knee complex non-pathological gait to accurately replicate these functions in prosthetic replacement. Particular attention will be paid to physiological shock absorption and kinetic power generation. Mr. Townsend will also present innovative mechanical solutions that advance the biomechanics, function, and design of current below knee prosthetic systems.