



## Ecologically valid tools for the assessment of executive functions and attention with patients who sustained acquired brain injury

Executive Functions (EFs) encompass higher-order cognitive processes responsible for the control and regulation of cognitive processes to effectively perform complex, intentional, goal-oriented tasks. Attention is one of the most important core cognitive abilities for adaptive behavior and for meeting daily demands. Acquired brain injury (ABI) during childhood or adulthood can cause severe impairments in everyday life related to attention and EFs impairments. As ecological validity of neuropsychological paper and pencil tests has been questioned, new forms of assessment have been developed, that may come closer to reproducing real-life contexts and demands. Thus performance in naturalistic contexts and virtual reality (VR) testing are ecologically-valid tasks to assess EFs and attention under conditions more similar to 'real' world challenges.

In the workshop we aim to present three ecological valid tools that were validated for the use of children and adults with ABI:

1. The Cooking Task and the Children's Cooking Task (Chevignard et al. 2000; Chevignard et al., 2009), an open-ended naturalistic task assessing executive functioning and multi-tasking abilities. The task entails preparing 2 simple recipes including a chocolate cake and an omelette (for adults) or a 'fruit cocktail' (for children) independently and following specific instructions.
2. The Jansari Assessment of Executive Function JEF(©) (jansari, 2014) and JEF-C (for children) (Gilboa et al., under review), a complex non-immersive VR assessment of executive functions.
3. The Virtual Classroom (Gilboa et al., 2015), a VR system that was developed for the assessment of attentional skills in an environment that simulates a real world classroom.

Multidisciplinary and international team, bringing you the state-of-the-art in ecological valid tools for the use of children and adults with ABI.



## Pathways to pain in myofascial pain syndrome

Myofascial pain syndrome (MPS) is a common occurrence in the lives of many. While there is lack of agreement about diagnostic criteria for MPS, and difficulties about pain measurement, no one disputes the presence of pain as part of the syndrome. Many theories have been advanced to explain the chronicity of pain in MPS and other musculoskeletal conditions. Emerging research has shown that neurogenic mechanisms may play an important role in the clinical manifestation of chronic myofascial pain and are implicated in the pathophysiology leading to sensory maladaptation and pain (hyperalgesia and allodynia). In addition to sensory findings, motor system adaptations or mal-adaptations frequently accompany chronic MPS. This may lead to stiffness, weakness and sensorimotor changes. Evidence points to adaptations occurring at multiple levels of the central nervous system, and that sensitization may be a mechanism driving the neuromuscular control and motor function changes frequently associated with chronic MPS.

This special topic provides (1) evidence supporting the conceptual approach that sensitization may play an important mechanistic role in the sensory-motor findings associated with chronic MPS and (2) gives clinically relevant recommendations for practice.

This special topic provides the evidence supporting the conceptual approach that sensitization may play an important mechanistic role in the sensory-motor findings associated with chronic MPS. It also will provide the busy clinician with evidence-based practice suggestions to implement into their practice.



## Electrodiagnostic and EMG in Latin America

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## Women physiatrists in academic medicine; A global perspective

Attracting, recruiting and retaining women to pursue careers in academic medicine are essential to creating excellent educational, clinical, and research cultures across academic medical centers. The number of women entering medical schools and joining academic institutions as faculty have been increasing steadily in many countries throughout the world. However, the number of women in medical leadership positions have not kept pace with this change. The majority of women remain at the junior faculty level, in spite of comparable achievements in publications, research and patient care. The aim of this workshop is to discuss the extent of the problem at a personal, cultural, institutional, and national level and explore potential solutions. The International Society for Physical Rehabilitation Medicine provides a unique opportunity for this issue to be discussed by medical leaders from many countries, bringing to light the extent of the problems and unique issues faced globally by women. The first Speaker, Anne Felicia Ambrose, MD, Associate Professor and Vice Chair PM&R at Albert Einstein College of Medicine has extensive experience in gender issues. She will provide the current status of women in academic medicine and barriers they face to advance. The second speaker, Carmen Terzic, MD, Chair, Professor of PMR, Mayo Clinic will discuss strategies to support a leadership career in academic medicine. The final speaker, Zaliha Omar, MD and former President of ISPRM, will speak on the role of mentorship, networking and collaboration. The final segment will be dedicated for a panel discussion with the audience.

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## **Adjunctive therapies following botulinum toxin injection in spasticity management: an evidence based workshop**

There has been an increase in interest and publications focusing on the value of adjunctive therapy following botulinum toxin injections to help enhance upper and lower limb spasticity management.

This short case-based workshop will guide the participant with evidence based and practical approaches in potential adjunctive therapies that may improve spasticity management.

The workshop will also explore the evidence-based mechanism of action of adjunctive therapies in enhancing the action of botulinum toxin at the synaptic and muscle level.

Objectives:

- 1.To provide evidence-based review of adjunctive therapies post botulinum toxin injections in spasticity management.
- 2.To discuss adjunctive therapies focusing on therapies such as Casting, Electrical Stimulation and Shock wave therapy for spasticity management post-botulinum toxin injections.
- 3.To provide clinical pearls and discuss barriers in the implementation of adjunctive therapies post-botulinum toxin for spasticity management.



## Sexual dysfunction after spinal cord injury

The workshop will cover the topic of sexual dysfunction after a spinal cord injury. Male and female SCI patients suffer from severe sexual disorders after a spinal cord injury and is a major concern in term of quality of life that justify that sexual disorders treatment programs needs to be associated in a comprehensive global approach during rehabilitation process. the workshop will cover several topics by international experts in the field. the first lecture will cover the efficacy and safety of different treatments of erectile dysfunction after a spinal cord injury as well as how to manage the different lines of treatment according to patient expectations. anejaculation is very frequent after spinal cord injury, different treatments are feasible both to permit ejaculation during sexual activity and fertility at home or within a program of assistance to procreation. recent advance in the physiology of ejaculation and the control of ejaculation by a central pattern generator will reinforce the selection of patients that have the best chance to ejaculate with simple solutions at home. For female SCI patients program of education and treatment are now available to improve quality of life and sexual life. the relationship between autonomic disorders such as autonomic dysreflexia or neurological control of sexual organs is important to know.



## Ultrasound guided head and neck muscles and salivary glands injections

Cervical dystonia is characterized by involuntary sustained neck muscle contractions resulting in twisting and repetitive movements or abnormal postures with rotation, anterior, and posterior flexion and tilt of the neck. Botulinum toxin (BTX) therapy has become the standard therapy for focal dystonia since late 1980s. The BTX should be injected into isolated neck muscles to allow for adequate diffusion. Ultrasound guide injection is useful to identify neck structure and ensure the precision of the injection.

Drooling becomes significant complication for the people with neuromuscular disorders. It causes not only social embarrassment from anterior drooling but also aspiration pneumonia due to posterior drooling and dysphagia. Botulinum toxins have been used for drooling management with remarkable benefits for preventing aspiration pneumonia with relative minor complications.

This workshop reviews anatomy of neck muscles, salivary glands and its surrounding structures. Participants will learn 1) how to scan neck including muscles and surrounding structures and salivary glands with ultrasound and 2) ultrasound guided injection techniques with BTX. Attendees will be confident in BTX injections to neck muscles and salivary glands upon completing this course.



## Stem cells injections: applications in osteoarthritis

Over the past 10 years, there has been a vast increase in the use of orthobiologics for the treatment of osteoarthritis. With clear evidence that steroid injections are chondrotoxic and are detrimental to articular cartilage when used chronically, physiatrists have reduced their use. In addition, our ability to provide precise targeted, more accurate, and effective injections and special techniques with ultrasound guidance, has dramatically changed the field.

This workshop will provide an evidence based, clinically applicable and relevant update on application of two newer injectates: bone marrow aspirate and adipose derived "stem cells". These are more accurately "signaling cells" that activate mesenchymal stem cells resulting in a regenerative environment. They are immunomodulatory and anti-inflammatory. There is growing evidence to support use in osteoarthritis.

This workshop will review research, clinical evidence, patient selection, technique, and rehabilitation post procedure. This will include case presentations as well. Dr Borg-Stein has taught in the AAPMR pre-conference on orthobiologics and has directed the stem cell workshops at the AAPMR for several years. In addition, she has spoken about this topic at the Japanese, Turkish and Mexican PM&R Society national meetings.





## A tool to support patients' adherence to home-based exercises in low back pain: description of a collaborative research and presentation of the final tool

Adherence to home-based exercises recommended in low back pain is poor, what can compromise treatment outcome. In 2012, we showed in a qualitative study that the ideal solution for patients to enhance adherence would be to have a coach at home on demand, and that a digital tool based on virtual reality and information and communication technologies could play the part of this coach if it makes the exercises attractive, measures performance, provides feedback, and authorizes exchanges with therapists and other patients. Based on those expectations, the collaborative HODOREV project started in September 2016 with the aim to develop a digital tool to enhance patient's adherence to home-based exercises. It involves therapists, sociologists, researchers, engineers, game designers and patients. During this workshop, the partners of the HODOREV project will present the different steps of the development process and the final tool.



## Pulmonary rehabilitation in COPD

The aim of this lecture is to provide evidence-based recommendations for the practice of pulmonary rehabilitation (PR) in chronic pulmonary disease. About ten practice guidelines has been published over the past ten years. More than 50 meta analysis are listed about pulmonary rehabilitation. Who can benefit from a rehabilitation program, when, where, how, and which modalities? Which outcomes can we expect?

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## Cancer prehabilitation: models of exercise interventions, outcomes, and clinical application

In 2013, Silver, Mayer and Baima defined cancer prehabilitation in the CA: Cancer Journal for Clinicians as “a process on the cancer continuum of care that occurs between the time of cancer diagnosis and the beginning of acute treatment” that is important to establish a baseline and to plan for future impairments. Cancer Prehabilitation is an emerging field in physiatry and oncology. It is an opportunity for program development and expansion of physiatry practice.

In this session we will discuss the benefits of early multimodal intervention for cancer patients involving preoperative exercise, and incorporating nutrition and psychology interventions. We will present data on prehabilitation research and data on active prehabilitation protocols at our own institutions:

- Prehabilitation for potentially resectable pancreatic cancer: Mouse model data, feasibility data of exercise in patients, functional outcomes, and evaluation of tumor vasculature.
- Prehabilitation for breast cancer: breast prehabilitation study for shoulder impairment, discuss mouse model for bone metabolism after fracture.
- Prehabilitation for pelvic radiation in gynecologic cancer: pelvic exercises to change sacral slope before/ during radiation treatment.

We will include case presentations of prehabilitation patients: the interventions, outcomes, and clinical pearls. We will also introduce the concept of developing a prehabilitation program by presenting a multi-disciplinary prehabilitation clinic implemented at a comprehensive cancer center. Prehabilitation is gaining interest from medical and surgical oncologists both at academic and community-based healthcare settings. Physiatry-driven programming with expertise in physical activity and fitness in cancer patients is vital in the development and execution of these programs.



## Dynamic prosthetic alignment workshop

The use of visual gait analysis in prosthetic alignment can be supplemented by video force line visualization. The course will use video cases to illustrate such an approach to improve the outcomes of lower limb prosthetic restoration. Clinical cases will be presented and discussed with the audience to arrive to optimal prosthetic solutions.

Educational objectives

- 1 Define the most common prosthetic gait deviations
- 2 Analyse prosthetic gait pattern and identify the potential causes
- 3 Using video enhance observation arrive to a treatment intervention





## The role of compression garments in the management of lymphedema

Compression is the cornerstone of lymphedema management. However, the evidence base for the optimal application, duration and intensity of compression therapy is lacking.

Compression garments can be prescribed for prevention of lymphedema, during Decongestive Lymphatic Therapy (DLT) to achieve volume reduction and during maintenance treatment.

Concerning maintenance phase, studies indicate that compression garments are effective in maintaining the volume of the arm in BCRL. Consensus documents and systematic reviews state that:

- A prescription for low stretch elastic garments to maintain lymphedema reduction after DLT is essential for long-term care.
- A trained practitioner should check that a newly prescribed garment fits properly and fully covers the area requiring treatment.

Standards of different garments, the availability and reimbursement by public health system are not uniform between different countries. Thus, the patients are wearing a wide range of products, depending on this availability rather than an accurate prescription.

This workshop aims to provide the keys for prescription in upper and lower limb lymphedema and lipedema in order to maintain the volume of the limb, to prevent progression of the disease and improve the activities of daily living.



## How to diagnose and treat a work related musculoskeletal disorder?

Work Related Musculoskeletal Disorders (WRMSDs) are impairments of muscles, joints, tendons, ligaments, nerves, bones or a localised blood circulation system caused or aggravated primarily by the performance of work and by the effects of the immediate environment where the work is carried out. WRMSD is the commonest occupational health condition across the world. WRMSDs can affect workers in the industrial, commercial, healthcare, hospitality, and service sectors. U.S. companies spent 50 billion dollars on direct costs of WRMSDs in 2011 (source: CDC). Indirect costs can be up to five times the direct costs of WRMSDs (source: OSHA). The average WRMSD comes with a direct cost of almost \$15,000 per worker (source: BLS). Diagnosis of WRMSD can be controversial and challenging, especially since soft tissue evaluation requires specialised manual skills not usually provided in medical training. Symptoms of WRMSD are often poorly localised, nonspecific, and episodic. Accurate diagnosis helps determine the most appropriate treatment and protects the worker from treatments that are ineffective, unwarranted, or unnecessarily invasive. In this interactive and practical workshop, we will present the latest criteria for diagnosis and for classification of WRMSD, and demonstrate diagnostic tests for different regions of the body. Establishing work relatedness of MSDs has significant organisational, financial and medico-legal implications. The current best practices regarding investigations, treatment of WRMSD using a staged, comprehensive, multi-disciplinary protocol, and criteria for return to work will be discussed. Common WRMSDs like Myofascial Pain Syndrome, Thoracic Outlet Syndrome, Fibromyalgia Syndrome, Tendinopathies, Compressive Neuropathies and Disc Disorders will be covered.



## **Robot assistants for the elderly**

All around the world, the increase of the senior population combined with small population growth brings a decline in the number of people of working age who support the costs of the system, and a lack of resources to treat patients and to provide quality care. Robotics is one alternative to address these issues. This workshop presents perspectives for using robots to assist in the care of seniors, ranging from remote consultations or assistance to providing cognitive assistance and long-term human monitoring and interaction. Major initiatives in this area are going to be presented at the workshop:

-ENRICHME tackles the progressive decline of cognitive capacity in the ageing population proposing an integrated platform for Ambient Assisted Living (AAL) with a mobile service robot for long-term human monitoring and interaction.

-RAMCIP aims to research and develop real robotic solutions for assistive robotics for the elderly and those suffering from Mild Cognitive Impairments and dementia.

-MARIO aiming to address and make progress on the challenging problems of loneliness, isolation and dementia in older persons through multi-faceted interventions delivered by service robots.

-VIGIL-Robot, addressing functions such as assisted telepresence with navigation, mapping, vital sign monitoring and sound processing capabilities, along with the social interaction capabilities to engage and assist users with activities of daily living to promote aging-in-place.

Issues regarding user-centered design in a socially and economically responsible fashion are also going to be addressed. This would be the first joint presentation of robot assistants for the elderly projects conducted in Europe and Canada.



## Innovations in virtual reality and biofeedback for advanced rehabilitation

For many patient populations who experience limited mobility as result of injury or long term disorder, rehabilitation is an extensive and challenging process. With advances in technology, virtual reality is a growing field of exciting new research in the rehabilitation field. Virtual reality can take a patient outside of their usual therapy environment to provide challenges and cognitive stimulation that would not otherwise be possible in standard rehabilitation. Principles from motor learning research, such as implicit learning and variable practice can easily be implemented, improving rehabilitation outcome. Biofeedback is also considered to be a powerful tool in rehabilitation, facilitating the communication between patient and therapist and optimizing motor learning to reach targeted functional goals. Innovations in rehabilitation devices allow researchers to calculate biomechanical parameters in real-time and this can be used to provide biofeedback to a wide variety of patient populations; from wounded soldiers, to older adults with knee osteoarthritis and children with cerebral palsy. The broad ranging applications of virtual reality and biofeedback in rehabilitation and cutting edge research will allow for a stimulating discussion.

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## Pain management in chronic pain

Chronic pain is one of the most common complaints that lead patients to seek medical care, and is a big problem because the population is getting older in the world. Chronic pain syndromes are a complex conditions that present a major challenge to physicians because of their unknown etiology, and poor response to all kinds of therapies. It has been suggested that chronicity should be considered when pain persists longer than the acceptable healing time. The impact of chronic pain on patients' lives varies from minor limitations to complete loss of independence. The rehabilitation of chronic pain syndromes involves physical therapy, occupational therapy, manual therapy, hydrotherapy, cognitive/behavioral therapy, biofeedback, psychotherapy and some new therapies such as functional restoration and neurostimulation/neuromodulation. Combination of several methods has been tried, but long term evidence-based studies are needed for new treatment modalities. The main goals of this session are to gain basic knowledge of chronic pain and chronic pain syndromes; to integrate pain mechanisms and clinical practice through case examples, and to have an enriched experience of managing chronic pain/chronic pain syndromes through interactive discussion.

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## **Percutaneous tenotomy: a complementary solution for the treatment of the articular deformities of patients with muscle hypertonia**

Twenty-two percent of institutionalized elderly persons have muscle contractures. Contractures have important functional consequences, rendering hygiene and positioning in bed or in a chair difficult. Medical treatment (such as botulinum toxin injections, physiotherapy or positioning) is not very effective and surgery may be required. Surgery is carried out in the operating theatre, under local or general anesthesia but is often not possible in fragile patients. To reduce the risks and provide effective treatment, our physical and rehabilitation medicine (PRM) and neuro-orthopedic teams adapted a technique of percutaneous needle tenotomy under local This microsurgical technique involves using the bevel of a large needle to section the affected tendons. The aim of this workshop is to present the technic, the effectiveness and the complications of percutaneous needle tenotomy. A complementary solution to treat muscle contractures for patients with spasticity.



## Promotion and prescription of physical activity for adolescents with chronic diseases

The importance of physical activity promotion and implementation is universally accepted for the health of young people. The same arguments, for the health and well-being of healthy adolescents can be made for those with chronic diseases. However, whilst the message is agreed, more people need to participate in more physical activity, the 'how' this is accomplished is not well understood. The purpose of this short workshop is to present a series of clinically based scenarios; focusing on two life limiting chronic conditions - cystic fibrosis and congenital heart disease. Presentations will cover what the research currently suggests for both conditions; regarding the assessment, evaluation, prescription and implementation of physical activity for young people. Presentations will provide actual case examples of implementation of exercise testing and prescriptions utilised in hospitals, as well as physical activity schemes. Practical examples will be supported by discussions on the behaviour change theories and approaches. Materials which will be useful to implement in clinics, hospitals or other equivalent settings will be provided.



## Ultrasound evaluation of nerves: median and ulnar

Musculoskeletal sonography is becoming an important part for evaluating and managing joint, nerve and soft tissue disorders. Carpal tunnel and ulnar neuropathy are very common and are evaluated and treated by physiatrist routinely. This course is designed to shorten the learning curve for health professionals interested in developing expertise in ultrasound evaluation of median and ulnar nerve. The course will familiarize clinicians with key techniques used to perform MSK examinations. Clinicians will learn to recognize normal anatomy, common pathologies, and critically evaluate the images. Treatment options will be discussed.

This introductory course is designed for clinicians who wish to become more familiar with the function of diagnostic ultrasound, its limitations, and its capabilities. Through didactic, interactive, and hands-on portions, learn the basics of performing a diagnostic ultrasound of median and ulnar nerves. This course is designed to shorten the learning curve for health professionals interested in developing expertise in MSK ultrasound. Upon completion of this course, one'll leave with a solid skill set to readily implement into their practice.





## Novel treatments for emotional self-regulation in chronic, moderate to severe traumatic brain injury

People with moderate to severe traumatic brain injury (TBI) often have chronic, debilitating limitations in the executive functions necessary for self-regulation: the ability to monitor and adjust thoughts, feelings, and behaviors in the service of goal-directed behavior. These deficits contribute to emotional dysregulation and affective disorders such as depression, anxiety, and problematic anger/ irritability. In this session, two TBI researchers discuss novel treatment approaches to improving self-regulation of maladaptive emotional responses. The first speaker will present lessons learned from a multi-center RCT testing the efficacy of a psychoeducational treatment for anger self-management, designed specifically for moderate/ severe TBI. The primary focus will be on as-yet unpublished material, including findings from a treatment enactment interview conducted several months after cessation of treatment. In this interview, participants were asked whether and how often they were using strategies and concepts learned in the treatment sessions and queried about barriers and facilitators for strategy enactment. The anger self-management strategies cited as most effective by study participants will be described in depth. The second speaker will present the theoretical rationale, training strategies, and findings from a clinical trial of a treatment for improving overall emotion regulation and deficient emotional self-awareness (alexithymia) in TBI. Following emotional self-awareness training, participants significantly improved on overall emotion regulation and positive affect and had significant reductions in both anxiety and anger. There are virtually no evidence-based guidelines for treating the common emotional difficulties that follow TBI. Psychoeducational approaches such as these, which accommodate the cognitive deficits of TBI, are promising because they teach patients how to self-regulate emotions and self-manage emotional behaviors, for improved productivity, relationships, and quality of life.



## Muscular and joint coordination in individuals post-stroke: what does technology bring to neurorehabilitation?

Everyday activities require adequate muscle and joint coordination. After stroke, impaired nervous system reduces the ability to produce coordinated movements and force-directing tasks which limits daily function. Clinicians and researchers agree that the pathological patterns of coordination of the upper and lower limbs in stroke survivors remain a central issue and an open question for neurorehabilitation. The use of technology allows to study different aspects of inter-limb and intra-limb coordination and a better understanding of mechanisms of muscle and joint coordination could potentially lead to improvements in rehabilitation interventions offered to hemiparetic patients. This workshop aims to present new knowledge related to coordination of the upper limb in stroke and non-stroke persons generated by different technologies, such as robotic devices and transcranial stimulations. Presentations will include the background theory underlying the research projects and new, original findings on coordination will be presented for upper limbs in both healthy and stroke subjects. In addition, the potential added value of these technologies to the clinical setting will be addressed. At the end of the workshop, participants: New technology allows to better understand problems of muscular and joint incoordination after stroke. In this workshop participants will learn new knowledge on that subject from theory to practice. It initiates new Quebec-France collaborations and offer a platform for young researchers. Our workshop could be considered for a Special Session.



## **Workshop in ultrasound guided chemoneurolysis of the lower extremities for spasticity management in adult and pediatric patients**

Ultrasound guided imagery has become widely used in the management of spasticity in adult and pediatric populations. Research has demonstrated the advantages of Ultrasound use compared to traditional injection techniques, resulting in improved patient outcomes. This presentation and workshop will provide attendees with:

- Chemoneurolysis techniques using alcohol and phenol
- Localization techniques for selected Lower Extremity Nerves using Ultrasound
- Practice of these techniques in during the workshop.

### Material and Methods

The presentation will briefly review the basic principles of Ultrasound, including studies demonstrating the advantages of Ultrasound technology in localization and injection techniques. This will be followed by a discussion on chemoneurolysis using alcohol/phenol in the management of spasticity of the upper extremities. There will be a demonstration of localization of selected nerves through the use of anatomic landmarks and via Ultrasound. The selected injection sites will include: Femoral, Obturator and Tibial nerves.

Participants then practice these techniques on live models. Attendees will practice hands-on localization using an Ultrasound machine. They will first use surface anatomy to locate target sites, then use Ultrasound guidance to visualize specific nerves. At each station an instructor will demonstrate the technique and attendees then practice with supervision. There will also be time allotted for free practice. Although a popular topic at conferences, many patients in other countries simply cannot afford Botulinum Toxin. Our goal is to provide attendees with techniques for the injection of a much less costly alternative that can be used in their home countries.



## Use of ultrasound to evaluate spastic muscles and guide spasticity treatment procedures

Spasticity is a common motor dysfunction arising from upper motor neuron lesions, which is a substantial impact on the continuum of rehabilitative care and recovery. Patients with spasticity are disabled by paresis (reduced voluntary recruitment of skeletal motor units), soft tissue contracture, and muscle overactivity (reduced ability to relax muscles). Muscle contracture includes atrophy (loss of muscle mass), loss of sarcomeres (shortening), accumulation of intramuscular connective tissue, increased fat infiltration, and modifications at the myotendinous junction. Degenerative alterations of muscle properties not only interfere with motor function recovery but also increase the degree of spasticity and further aggravate motor impairment. Moreover, progressive changes in the spastic muscle may account for the loss of response to botulinum toxin type A therapy,<sup>8</sup> which is considered a first-line treatment for patients with focal spasticity.

Ultrasound studies to examine disruptions in the normative architecture of spastic muscles have documented changes in muscle thickness, fascicle length, pinnation angle, echo intensity, and elasticity in patients with spasticity.

These observations should be taken into account when planning the management of spasticity with pharmacologic and non-pharmacologic approaches. Furthermore, ultrasound has been proposed as a fundamental instrument in order to achieve an acceptable accuracy of needle placement when performing botulinum toxin type A injections into the spastic muscle of adult and pediatric patients.

On these bases, this workshop aims to give some key information about the use of ultrasound to evaluate spastic muscles and guide spasticity treatment procedures.





## An overview of the wheelchair skills and maintenance training packages

The session will be providing an overview of wheelchair-related training materials that are currently available for in-person and online training. Focus will be on training programs that have been developed through an evidence-based approach, and that have freely available materials, so participants can implement the programs in their clinical or training environments:

1) The Wheelchair Skills Program ([www.wheelchairskillsprogram.ca](http://www.wheelchairskillsprogram.ca)), which includes assessment and training methodology to improve the manual and power wheelchair skills of users and their caregivers

2) The Wheelchair Maintenance Training Program (<http://www.upmc-sci.pitt.edu/wmtp>), which includes assessment and training methodology for clinicians to train wheelchair users how to maintain their wheelchairs.

Participants will receive an overview of each training program and will be led through examples of the online and hands-on training that occurs in each program.



## Workshop in ultrasound guided chemoneurolysis of the upper extremities for spasticity management in adult and pediatric patients

Ultrasound guided imagery has become widely used in the management of spasticity in adult and pediatric populations. Research has demonstrated the advantages of Ultrasound use compared to traditional injection techniques, resulting in improved patient outcomes. This presentation and workshop will provide attendees with:

- Chemoneurolysis techniques using alcohol and phenol blocks
- Provide localization techniques for selected Upper Extremity Nerves
- Allow participants to practice these techniques in an included workshop.

### Material and Methods

The presentation will briefly review the basic principles of Ultrasound as a review/introduction. The lecture will then present the advantages of Ultrasound technology in localization and injection techniques. There will be a review of the latest research on the use of Ultrasound guidance. This will be followed by a discussion on chemoneurolysis using alcohol/phenol in the management of spasticity of the upper extremities. There will be a demonstration of localization of selected nerves using anatomic landmarks and via Ultrasound. The selected injection sites will include: Musculocutaneous, Thoracodorsal and Median nerves.

Participants then practice these techniques on live models. Attendees will practice hands-on localization using an Ultrasound machine. They will first use surface anatomy to locate target sites, then use Ultrasound guidance to visualize specific nerves. At each station an instructor will demonstrate the technique and attendees then practice with supervision. There will also be time allotted for free practice. Although a popular topic at conferences, many patients in other countries simply cannot afford Botulinum Toxin. Our goal is to provide attendees with techniques for the injection of a much less costly alternative that can be used in their home countries.



## Controversies in intrathecal baclofen therapy

Intrathecal baclofen therapy is a well-established technique for spasticity management. Despite a three-decade clinical experience of this treatment, controversies over patient selection, management and troubleshooting continue to exist. Additionally, intrathecal baclofen therapy can influence a number of systems outside of the spastic hypertonia including neurogenic bowel, neurogenic bladder, dysautonomia, respiratory and pain systems. This session will explore the debate that encompasses these controversies.

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## Therapeutic potential of whole-body cryotherapy in sport and medicine

Whole-body cryostimulation/cryotherapy (WBC) involves short exposures to air temperature below  $-100^{\circ}\text{C}$ . This therapy is more and more used in rehabilitation and sport contexts. Little known a few years ago, this therapy has recently been the subject of tremendous interest. Therefore, our objective is to review the current knowledge about this topic. Recent studies found observational evidence that WBC have a positive impact on many important biochemical and physiological variables. Moreover, WBC can induce adaptive changes in antioxidant status, and positive effects on muscular enzymes associated with muscle damage. Therefore, WBC has been found useful in neurological and psychiatric disorders, especially depression. It seems that cryostimulation may be used as adjuvant therapy in the treatment diseases with oxidative stress background. WBC is a technique that can influence many physiological and biochemical factors in the human body. Triggering physiological defensive mechanisms in response to a repeated external stressor (cold) may induce adaptations useful in the context of medicine, physiotherapy, and physical exercise recovery. However, it is important to select an appropriate temperature, and number of expositions, according to the needs of each patient. In conclusion, in our workshop we will try to figure out how WBC might impact clinical practice in the near future and present what are the current technologies available and their possible applications.





## Telerehabilitation for everyday practice

Information on uses of telerehabilitation - education (patient/family/healthcare providers); consultation - providing specialised services to rural and remote areas; intervention/treatment - providing therapy and rehabilitation medical interventions; maintenance and monitoring - use of peripheral devices to monitor therapy/ joint range of motion/ vital signs etc; and research link/attend meetings anywhere in the world.

- Practical presentation to enable those to begin telerehabilitation and for those already involved to increase uses within their field of rehabilitation as well as look at areas of research.
- Presentation on technology involved in telerehabilitation
- Presentation on policy and ethics involved in using telerehabilitation
- Presentation on clinical use delivery consultations and therapy (physical and speech pathology telerehabilitation clinics)
- Presentation on use of telerehabilitation in acute stroke management and communicating with patients and other health care providers in behaviour change / health coaching situations
- Presentation on use of telerehabilitation in research - SLAM-TIA project Hunter Medical Research Institute Newcastle Australia.

Telerehabilitation is a valuable tool in providing specialized care and education to remote areas and this workshop will present ways in which telerehabilitation can be used to provide timely person-centered care.



## Gait assessment and orthotics prescriptions after ABI

This is a proposal for an interactive session that will use video based clinical cases to promote interaction and discussion with the audience regarding optimization of lower limb brace prescription for patients with acquired brain injury. The course will use didactics and video to formulate case presentations followed by group discussion to arrive to orthotic prescription

Speaker Alberto Esquenazi, MD Orthotics for lower limb

Objective 1: Review normal and pathological gait

Objective 2: evaluate the gait of a patient using video enhanced visual observation

Objective 3: prescribe the appropriate orthotic device to address gait dysfunction

Lower limb orthotics and visualization techniques of gait are important rehabilitation assessment techniques.

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## Dynamic arthrosonography applications in physiatry short workshop proposal

Musculoskeletal ultrasound has several advantages over MRI & CT, SONOGRAPHY is a dynamic test permits visualization of structures as they move through their ROM that can detect subtle lesions missed by static modalities . Clearly MRI & CT are static modalities.

Dynamic ultrasound examination is rapidly growing imaging tool in musculoskeletal examination by physiatrists in a rehabilitation setting , though the literatures are still lacking standard protocols for dynamic sonography for each joints and mobile structures, and many physiatrists still not aware of important applications of dynamic ultrasound that can improve their diagnostic and rehabilitation skills .

Dynamic ultrasound examination of the shoulder is the most widely studied and described in literatures [2],[3].

Dughbaj et al, recently described dynamic ultrasound examination of true quadriceps tendon impingement [1].

in this short workshop we are going to show a complete dynamic ultrasound examination protocol for shoulder and knee and some applications to other joints and demonstrate how dynamic US can detect different pathologies and improve functional outcome in a rehabilitation practice. Dynamic arthrosonography is a powerful diagnostic tool in the hand of physiatrists in understanding the biomechanics and pathophysiology of wide varieties of soft tissue, caused by encroachment or impingement of these soft tissues over or between hard tissues. So it can improve their management and guide their rehabilitation interventions

References

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## Right-brain dysfunction in stroke rehabilitation: clarifying brain mechanisms, and patient outcomes of spatial neglect and delirium

Right-brain strokes are associated with a nearly doubled risk for spatial neglect and delirium compared to left-brain strokes. Patients who develop delirium, defined as an acute and fluctuating state of impaired attention, thinking, and arousal, will be 2 times more likely to die, will remain in the hospital twice as long, and will have worse cognitive and motor function after hospital discharge. Similarly, patients who develop spatial neglect, defined as a functionally disabling asymmetry in attention and action arising after a brain lesion, are at risk for decreased functional independence, longer hospital stays, and chronic disability. The high co-morbidity of delirium and spatial neglect with right-brain strokes may be related to right-brain dominance in supporting three-dimensional attention and orientation. Indeed, common brain mechanisms are likely responsible for increased risk of delirium in right-brain stroke survivors with spatial neglect. In this educational workshop we will present data-driven assessment of the often underestimated incidence of spatial neglect and delirium in post-stroke rehabilitation settings and review validated assessment instruments, and share effective preventive practices and rehabilitation strategies. We will also present our brain model of these disorders using neuroimaging biomarkers and discuss how it can be used for predictive risk assessment.





## **Ultrasound-guided common and uncommon nerve blocks with alcohol for spasticity management**

This workshop will provide education on the utility, and practice of ultrasound-guided nerve blocks for spasticity management.

Neurolysis of peripheral nerves can be performed to treat regional spasticity. A neurolytic agent such as alcohol (60-65% ethyl alcohol or 6-10% phenol) can be used to mobilize joints negatively affected by spasticity.

Alcohol neurolysis offers several advantages when it is compared to botulinum toxin (BTX) injections which has been widely accepted for spasticity management: It provides i) a longer lasting effect; ii) enable to cover diffuse spastic muscles when it combined with (BTX) that has limitation by the guideline of safe dosage; iii) is less costly than BTX. By using the same techniques, nerve can also be blocked with local anesthetic injection to differentiate between spasticity and contracture of injected muscles.

Ultrasound has advantage to facilitate the identification of nerves under direct electric stimulation, allow real-time monitoring needle path and injection solution spread, and reduce procedure complications.

At the conclusion of this workshop, participants will learn to delineate the indications of relevant nerve blocks for spasticity of the upper and lower extremities; participants will be able to attain the detailed knowledge of anatomy and sonoanatomy for relevant nerve blocks and will be able to outline the pearls and pitfalls of ultrasound-guided injection for nerve blocks for treating spasticity. It is important for physiatry to understand and use ultrasound as a clinical tool, and learn nerve block technique as spasticity treatment option



## Mirror therapy: guidelines for its clinical practice and its future in the era of virtual reality

Visual Illusions are used in Mirror Therapy (MT) as a rehabilitation technique to improve motor function in stroke patients and to treat chronic pain conditions as phantom limb pain and complex regional pain syndrome (CRPS). These are often effective in cases where medication, invasive treatment and other therapy options have proven ineffective. Although clinical trials results and meta-analyses are showing growing evidence of its efficacy, its daily clinical implementation is facing several difficulties due to the diversity of interventions proposed in clinical trials, the hardness of its implementation in non-selected patients, and the lack of consensual clinical guidelines. The aims of this interactive workshop are: 1) to deliver an update on the evidence of mirror therapy efficacy in motor rehabilitation and pain treatment; 2) to propose some practical guidelines on the implementation of MT in motor rehabilitation and pain treatment; 3) to give a perspective of the future of mirror therapy in the new area of the virtual-reality. Based on the clinical practice of Mirror Therapy (MT), speakers will deliver a pragmatic workshop, with the aim that participants who are naive to MT feel ready to use MT after attending the workshop. More experienced participants will find an update on clinical evidence and the future of MT.



## Stroke rehabilitation guidelines: a global perspective

In order to optimize stroke rehabilitation outcomes, best practices need to be defined and implemented. Practice guidelines have been developed in a number of countries around the globe, but the evidence base for stroke rehabilitation remains incomplete and subject to interpretation. This symposium includes leaders from the clinical practice guideline writing groups from South Korea, Canada, Australia, and the USA, who will provide highlights from their respective national guidelines, and address areas of controversy and disagreement among the guidelines. A panel discussion will provide a lively discussion of these areas where there are discrepancies among the guidelines and provide attendees with a deeper understanding of the strengths and limitations of stroke rehabilitation practice guidelines.

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## Using inertial measurement units as tools for motor rehabilitation

Inertial measurement units (IMU) have long been available to assess human movement. Recently, the smaller, wireless units with turnkey software have made them gain popularity in the rehabilitation community. However, the proliferation of companies and rapid obsolescence of IMU-based technologies causes important problems in using them regularly in clinical settings. Furthermore, the fact that there are no standardized protocols for placement and calibration in clinical populations can cause problems of measurement accuracy, repeatability, and ability to share data across users.

The focus of this workshop is to present important aspects related to the use of IMU for mobility measurements in rehabilitation. Five aims will be presented, followed by a round table discussion with the audience. Aim#1 (very didactic) will introduce how IMUs measure spatial orientation of a body in motion. Aim#2 will define how IMU orientations can be linked to human anatomy to describe joint motion during locomotion. Methods such as functional and anatomical calibrations will be presented, together with their impact on spatiotemporal gait parameters and joint kinematics in health and disease. Aim#3 will introduce activity level monitoring and movement quantification during standard clinical tests. Aim#4 will address the challenging issue of using IMUs for measuring not only kinematics but also dynamics of locomotion in and out of the laboratory. Finally, Aim#5 will introduce the OpenIMU initiative started in Québec (Canada) that proposes the development of open source standardized calibrations/protocols for data collection, and a web-based community for the analysis of mobility data related to rehabilitation. With the proliferation of IMU-based systems and the lack of standardization of calibration and sensor placement, there is a need for education and discussion of the proper use of these devices in clinical research. This is the goal we want to reach with this short Workshop.





## Developing rehabilitation technology and services through participatory research

Participatory research aims at planning and conducting research processes in collaboration with key partners, whose life experiences or roles are also under study. Partners may be individuals, private businesses, community organizations, etc. In this framework, partners and researchers work together in identifying solutions that will benefit the partners and in evaluating their implementation. The key reasoning underlying this approach is that participatory research will lead to better solutions and to increased adoption of the research results by stakeholders. Participatory research can be rewarding as it can allow better insight and access to knowledge on the group under study and their context, with respect to traditional research methods. On the other hand, participatory research also involves sharing of power between partners and researchers. Cultural and language barriers, disagreements with respect to key objectives or processes may require additional time and effort; or may even lead to conflictual situations. In this workshop, we will present various examples of participatory research experiences, involving projects in partnership with community organizations, municipalities and private businesses. We will highlight the processes and methodological approaches that were employed, what went well and what difficulties were encountered. This will be followed by an open discussion period where workshop participants will be encouraged to ask questions and comment on their own experiences with participatory research. By attending this workshop, participants will gain a better understanding of participatory research and the associated methodologies. This workshop will be organized by a multidisciplinary team with expertise in rehabilitation, engineering and technology development. All speakers have expertise in participatory research for the development of rehabilitation services and technology. Archambault and Monacelli both lead organizations (ceremh.org, societeinclusive.ca) where participatory research constitutes a central aspect.



## The role of the kinetic chain in the injured overhead athlete

The overhead athlete presents an increased risk for both acute and overuse injuries of the upper extremities especially the shoulder. Particularly overuse injuries are associated with multiple intrinsic and extrinsic risk factors. These factors can be directly related to the shoulder, but very commonly involve the trunk, hip girdle, and the lower extremity. Understanding sport-specific physical demands is essential when treating the overhead athlete. The evaluation of the complete kinetic chain is essential in order to identify muscle imbalances, extremity misalignment and flexibility limitations. Evaluation involves static and dynamic assessment that includes scapular movements, trunk and pelvic control, lower limb alignment. Common findings in the injured athlete include, but are not limited to foot hyperpronation, knee valgus, femoral anteversion, hip tightness, core muscle weakness, glenohumeral internal rotation deficit, rotator cuff weakness, and scapular muscle dysfunction. This session will provide the attendee with an overview of the importance of evaluating the full kinetic chain when treating a shoulder injury.



## **"It is my life". Self-management promotion in adolescents and young adults with childhood onset disability**

This course aims to improve knowledge of age-appropriate treatment of young people with childhood onset disability. We will share expertise from The Netherlands and Canada on interventions to promote self-management capabilities of adolescents and young adults with disabilities.

Target Audience: Health care professionals working with youth and adults with childhood onset disabilities or interested in effective transition programs.

Course Summary: Youth with childhood onset disabilities often experience poor healthcare and a delayed transition to adulthood in several life areas. A key element for young people with a disability is to learn how to self-manage their health and their life.

In the presentation of The Netherlands we will share our experience with a transition program with a special focus on self-management and autonomy. We will present our intervention 'Manage Your Life', which provides training of self-management skills in young adults.

The Canadian presentation will draw, among other things, on the Transition to Adulthood with Cyber Guide Evaluation (TRACE) study that entails innovative transition resources for youth with chronic health conditions. Building on the TRACE study, we have developed the 'MyTransition' app that features several tools to aid patients in managing their health care needs, such as tips to help patients summarize their conditions, communicate with doctors and book appointments without the assistance of their parents. Persons with childhood onset disabilities grow into deficits. Navigating life requires self-management skills to gain autonomy and optimize participation. Health care services must address the challenges of growing older with a disability. Both speakers are physiatrists with a clinical and research interest in transitional care.



## Suit therapy for cerebral palsy: One size does not fit all

Suit therapies are alternative and complementary treatment methods which are increasingly utilized in pediatric rehabilitation settings. Although their use has become popular, scientific evidence supporting the efficacy of suit therapies is lacking. The studies investigating the effects of suit therapy mainly consist of case reports and case series. They also have limited number of subjects and include heterogeneous study populations such as cerebral palsy (CP), Duchenne Muscular Dystrophy. Children at a wide range of age, with various types of CP at various GMFCS levels had been recruited to those studies. Also in the previous studies, different types of orthoses (full body suit, vest and pants etc.) were used but the patients were evaluated with the same outcome measures hoping the same improvements will occur. Most of these studies lack validated and standardized assessment tools that do not assess all domains of ICF. Families who have children with moderate to severe disabilities are at risk of spending valuable resources on alternative therapies which have not been proven, and professionals should be cautious in encouraging families to pursue alternative techniques in the early phases of research on their efficacy. Therefore; while there some evidence exists regarding the use of suit therapies, it must be considered that "one size does not fit all", not all therapies are a good fit for all children with CP. The aims of this workshop to provide a comprehensive discussion on the effectiveness of suit therapy for CP, to guide future research and practice with suit therapies. There is not sufficient evidence to recommend the prescription suit therapy. There is a need for properly designed RCTs to draw a conclusion on the effectiveness of suit therapies. It is important to carefully decide patient selection criteria because one type does not fit all children with CP.





## Rehabilitation in Latin America, current concepts

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## The diagnostic nerve block with anesthetics as a pre-operative assessment tool in spasticity management

The diagnostic nerve block (DNB) with anaesthetics involves injecting a small dose of local anaesthetics at the level of the motor nerve innervating spastic muscle. The DNB eliminates spastic muscle overactivity after few minutes allowing to determine the respective responsibility of spastic muscles and of contracture in the deformity. The DNB also allows the patient to feel what could be achieved with an adequate spastic muscle overactivity treatment.

The workshop will review:

- 1) how to perform a DNB (movie)
- 2) the most frequently targeted nerve (movie)
- 3) the clinical and electrophysiologic effect of DNB (literature review)
- 4) the use of DNB as an help for therapeutic decision (movie)
- 5) the predictive value of DNB before surgical neurotomy (literature review)



## Work disability and vocational rehabilitation (VR): from assessment to intervention and the role of rehabilitation professionals

For vocational rehabilitation (VR) or sustaining employment, to be effective, a carefully planned and comprehensive vocational assessment is crucial. Comprehensive assessments include non-modifiable aspects, such as sociodemographic and health condition-related factors, environmental factors specific to employment and not to forget the evaluation of functional abilities and restrictions, crucial to optimize work-related capacities and the ability to carry out work-related tasks.

Currently two major approaches to assess functioning in the context of work are discussed; a clinical testing of functioning abilities and patient reported instruments e.g. questionnaires.

Although clinical evaluation of functioning is expected to provide valid and objective information, it is time consuming and depends on expert experience. Information from self-reported instruments on the other hand is easy and fast to administer, but reflects the valuation of the patient including experienced environmental barriers or facilitators .

Recent studies conclude that both approaches might complement each other and integrating both approaches might support patient centered care and benefit clinical practice in terms of time, costs and information gained.

### Aim:

This workshop will aim to (1) Present the current state of work disability and vocational rehabilitation, (2) Describe changes and challenges of patient-perceived assessment instruments and clinical tests in vocational rehabilitation, (3) Describe the influence of organization strategies on VR, and to (4) Describe the role of rehabilitation professionals in the return to work process. Understanding work-related functioning is crucial for VR professionals, but also for general practitioners to address the participation goal of return-to-work or to sustain employment. This workshop informs the participants on current evidence and provides strategies on assessment and use of information on work- related functioning for disability or rehabilitation management.



## How to improve functioning in stroke survivors: relationship with nutritional status, balance and exercise capacity

The goal of stroke rehabilitation is to enable stroke survivors to achieve and maintain optimal functioning in interaction with the environment and to enhance their quality of life. Various factors might have impact on the functional outcomes of stroke survivors both in the post-acute and long-term phase following stroke. The aim of this workshop is to address the effects of nutritional status, balance and exercise capacity on functioning in the light of evidence-based medicine as well as clinical experience and research of the workshop presenters. The first presentation will initially illustrate the frequency of malnutrition and its associated risk factors following stroke. Then the impact of malnutrition on functional outcomes will be discussed. Finally, recommendations for nutritional screening/ assessment and management in a postacute rehabilitation setting will be presented. The second presentation will firstly discuss factors associated with poor balance following stroke, as well as the effects of balance training on mobility and functioning in terms of activities and participation. Then assessment methods of balance for stroke survivors and interventions for balance training after stroke will be presented. Third presentation will focus on improving exercise capacity in stroke survivors. Initially importance and assessment of exercise capacity will be addressed. Then relation of exercise capacity with activities and participation will be presented. Finally, the importance of aerobic training and its applicability in stroke survivors will be discussed. Various factors such as malnutrition, balance problems and impairment of exercise tolerance functions might have negative effects on functioning during the post-acute and long-term rehabilitation phase following stroke. Strategies for the screening and assessment as well as management of these impairments would be useful to improve functioning of stroke survivors.





## Demystifying telehealth for remote therapeutic interventions and follow-ups

Telehealth has been increasingly proposed as an alternative to usual service delivery models. Many different populations could benefit from individualized telehealth therapeutic interventions in health care services. Moreover, because specialized services are often only found in urban areas, many patients with rare conditions come from regions far from the specialized centers. Limiting the number of visits to the health care facility can have a significant impact on many patients and their families. Using information technologies, tele-health can (1) decrease the number of patient visits to the health care facility and (2) facilitate group interventions for research and treatment purposes.

The objectives of this interactive workshop, presented in a panel format, are to (1) review the state of the literature in telehealth; (2) provide examples of telehealth used in research and clinical contexts for individuals or in groups; and (3) explore its benefits and drawbacks.



## Fatigue in patients with multiple sclerosis: how to treat, how to measure, and how to find biomarkers?

Fatigue is one of the most often reported symptoms in Multiple Sclerosis. It often restricts societal participation. In this workshop the main study results of the TREFAMS-ACE research programme will be presented. TREFAMS is an acronym for TReating FATigue in Multiple Sclerosis, while ACE refers to the rehabilitation treatments under study, i.e. Aerobic training, Cognitive behavioural therapy, and Energy conservation management. The core of the TREFAMS-ACE research programme consisted of three high quality Randomised Clinical Trials to investigate the effectiveness of Aerobic training, Cognitive Behavioural Therapy or Energy Conservation Management to treat fatigue in 89, 91 and 86 patients with MS respectively. In each trial, we only included patients with severe MS-related fatigue and measured the short (direct post intervention) and long term (after one year) effect on fatigue and societal participation. We also performed a systematic review for each intervention to enable us to put the results of our RCTs into context, and studied the neurobiological working mechanisms of the interventions.

Objectives of this workshop are:

- \* To present and discuss the results of the TREFAMS-ACE research programme, and present current evidence about the effectiveness of rehabilitation interventions for MS-related fatigue.
- \* To learn about the measurement of MS-related fatigue. Is it really a multifaceted symptom?
- \* To explain what biomarkers of MS-related fatigue tell us about the neurobiological mechanisms that underlie treatment effects and MS-related fatigue. In the clinical field of neurorehabilitation, fatigue is a prevalent complaint of many patients. The findings of the TREFAMS-ACE research programme resulted in challenging results. With this workshop we would like to attract a wide international audience, and share our research findings.



## Oral sensorimotor disorders: from evaluation to management

Oral sensory motor disorders in children affect the development of feeding and swallowing patterns, speech and language development, and ability to manage oral secretions. These disorders are common in many medical conditions, including prematurity, cerebral palsy, neuromuscular disorders, GE reflux, developmental disabilities, and autism. Interruption or delay in the normal introduction of breast or bottle feeding at birth due to complex medical and neuromuscular conditions has a negative impact on the sensory experience, development of oral motor skills, and tolerance of food texture advancement. In addition, many children have abnormal muscle tone that affects their oral motor control. This session will discuss the comprehensive multi-disciplinary approaches for early detection of oral sensory motor disorders and provide a framework of evaluation and treatment by a team including a physiatrist, speech pathologist, and occupational therapist. The clinical examination will be described and include attention to posture and position, airway status, state of alertness, neurodevelopment, communication, oral sensorimotor status, whole body awareness, and cognitive levels of functioning (Arvedson & Brodsky, 2002). Treatment options for oral sensorimotor dysfunction, including approaches to feeding therapy, appropriate positioning and postural supports, and muscle tone management will be reviewed through a comprehensive assessment of the oral mechanism and observation of a feeding interaction as demonstrated through videos and case presentations. Upon completing this workshop, physiatrists will be able to understand oral sensorimotor disorders and provide recommended treatment options. Oral sensorimotor disorders have a significant impact on children's development of feeding and swallowing, speech and language, and ability to manage secretions. Early identification of these problems is important and providers should be aware of treatment options including feeding therapy approaches, positioning support, and spasticity management, including onabotulinumtoxin A injections.