IC28: ADAPTIVE SPORTS AND ACTIVITY TRACKING FOR INDIVIDUALS WITH CEREBRAL PALSY (CP)
Jennifer Miros, MPT; Sarah Hickey, PT, DPT

Purpose: To assist health care professionals, children with CP or other childhood-onset disabilities (COD) and parents overcome barriers to fitness and adaptive sports to improve their physical and mental health. We have developed an adapted sports program for individuals with CP and implemented various activity tracking methods. Our goal is to present strategies developed in our program to optimize participation. This course will teach the various tracking devices that have been trialed with participants.

Target Audience: This course is relevant to clinicians treating individuals with CP and other COD and parents raising children with CP and other COD who want to become more independent with adaptive sports activities.

Course Summary: Sports can teach sportsmanship, teamwork, social skills, confidence, and risk taking. It is important as medical clinicians to promote adaptive sports skills and physical fitness. All children need to have the chance to learn how to play sports and interact with others. Participation in adaptive sports benefits individuals with CP and other COD by improving their independence through enhanced mental and physical fitness. Also, physical activity in sports can help prevent co-morbidities associated with sedentary behavior later in life. We will discuss numerous program formats that we have piloted and implemented. Various approaches for children in all the Gross Motor Function Classification Scale (GMFCS) levels will be discussed and many examples provided. We will provide detailed information on resources and equipment that can be utilized to facilitate maximal participation regardless of skill level. We will also discuss the social and psychological benefits of sports participation. Knowledge will be shared from working with individuals with cerebral palsy and other COD in an adaptive sports program format. Three different types of programs will be discussed: 1) an intensive sports day camp program, 2) weekly offerings of different sports activities, and 3) adaptive triathlon. Input will be offered on what has been successful in motivating individuals with cerebral palsy and other COD and their families to become energized about being more independent and physically fit through adaptive sports activities and activity tracking.

Learning Objectives:
1. Demonstrate an understanding of how to adapt sports for individuals with CP or other childhood-onset disabilities (COD)
2. Describe resources and equipment needed to assist with making sports accessible to individuals with CP or other COD
3. List ways to objectively measure physical activity in participants of an adaptive sports program
4. Differentiate between the role individual one on one physical therapy, group exercise classes and adaptive sports play as well as identify the role of the therapist, patient, and parent
IC29: ASSESSMENT AND TREATMENT OF ADULT PATIENTS WITH CEREBRAL PALSY AND COMORBID DEPRESSION
Daniel Linhares, MD; Hiroko Matsumoto, MA, PhD

Purpose: To discuss how to properly assess and treat adult patients with Cerebral Palsy (CP) presenting with depressive symptoms

Target Audience: Physicians and medical providers of adult patients with cerebral palsy.

Course Summary: Cerebral palsy (CP) is a common disability, with prevalence ranging from 2-3 per 1000 live births. Increasing numbers of these patients are surviving into adulthood, with more than 500,000 adults in the US alone. Our research at the Weinberg Family Cerebral Palsy Center (Columbia University Medical Center) identified that a significant proportion of adult patients had documented depressive symptoms in their clinical charts. This course will present the results of our research, including the prevalence of depression in adult patients with CP treated at our institution. We also identified risk factors associated with depression and commonly used psychotropic medications in this population. Additionally, we will discuss the potential advantages and disadvantages of different antidepressant medications, and how to tailor these medications to address specific psychiatric symptoms. Finally, we will discuss the use of various validated screening tools to identify depression in the medical setting.

Learning Objectives:
1. Properly assess patients for depression and utilize validated screening tools
2. Understand the prevalence of depression in the adult population with CP and potential risk factors
3. Understand the prevalence of different psychotropic medications being used for adult patients with CP
4. Understand the difference between multiple antidepressant medications and how to use their individual properties to more precisely target the depressive symptoms of each individual patient

IC30: BEYOND RCTS: PRODUCING HIGH LEVEL EVIDENCE USING SINGLE CASE EXPERIMENTAL DESIGN TRIALS
Peter Rosenbaum, MD, FRCPC; Helene Polatajko, BOT, MEd, PhD; Lynne Romeiser-Logan, PT, PCS, PhD; Hortensia Gimeno, MSc, OT

Purpose: This workshop offers an high level evidence alternative to randomized controlled trials (RCTs) using CONSORT Guidelines for single case experimental design (SCED) (SCRIBE) (Tate et al., 2016) and CONSORT guidelines for N-of-1 trials (CENT) (Vohra et al., 2016, Shamseer et al., 2015).

Target Audience: This workshop will be of interest to clinicians and researchers in all areas of neurodisability, both adult and paediatric populations.
Course Summary: The proposed instructional course, hosted by Professor Rosenbaum, will have 3 presenters: Professor Polatajko, Dr Lynne Romeiser-Logan, and Ms Hortensia Gimeno. These experienced researchers have used SCEDs extensively to examine the effectiveness of interventions with a variety of populations including dystonia, cerebral palsy, stroke, developmental coordination disorder, acquired brain injury and the study of evidence based practice.

The host, Professor Rosenbaum will outline the challenges of running RCTs to establish new rehabilitation interventions, particularly in populations with high heterogeneity; variability in performance, or rare disorders.

The course will use data from published studies led by the presenters and from studies currently in progress in Canada, USA and UK. The data will include video footage from these intervention studies to demonstrated the nature of data capture in SCEDs As well, graphs and outputs used in this methodology will be provided to enable the attendee to understand and explore how results can be analyzed. This will provide participants with an insider’s view of how this design could be implemented in clinical research and applied in their own work.

We will explore examples of research questions that can be addressed with this methodology and invite participants to think of situations in their clinical services that would be appropriate for studies using SCED. In this course, we will propose a way to implement multi-centre clinical trials using this methodology, potentially allowing the rapid evaluation and implementation of international research while reducing the financial and recruitment burdens for single institutions.

Learning Objectives:
1. Identify the limitations of RCTs
2. Understand the basics of SCED methodology
3. Encourage audience participation and discussion
4. Leave participants with a toolkit to apply SCED

IC31: CLINICAL TOOLS FOR ASSESSMENT OF SELECTIVE VOLUNTARY MOTOR CONTROL IN PATIENTS WITH SPASTIC CEREBRAL PALSY: SELECTIVE CONTROL ASSESSMENT OF THE LOWER EXTREMITY (SCALE) AND TEST OF ARM SELECTIVE CONTROL (TASC)
Marcia Greenberg, MS, PT, KEMG; Loretta Staudt, MS, PT; Theresa Moulton, Ph.D., DPT; Kristin Krosschell, PT, DPT, PCS

Purpose: To instruct experienced clinicians in the use and administration of two standardized clinical tools for assessment of selective voluntary motor control (SVMC) in patients with spastic cerebral palsy: SCALE (Selective Control Assessment of the Lower Extremity) and TASC (Test of Arm Selective Control). The reliability and validity of the SCALE and the TASC have been established (Fowler et. al. Dev Med Child Neurol 51:607-614, 2009 and Krosschell et al, Conference proceedings, AACPDM, 2015). The tools and their clinical and research applications will be presented

Target Audience: This course is designed for clinicians evaluating patients with cerebral palsy in their practice and individuals conducting research on the clinical or functional characteristics of children and adults with cerebral palsy.
Course Summary: The role of SVMC assessment in clinical practice and research will be discussed. The relationship of SVMC to other impairments such as strength and spasticity will be explored. The SCALE and TASC tools will be presented for each joint and the patient positioning, examiner instructions and score sheets will be explained. The criteria for each SVMC grade will be described, providing participants with the knowledge and skill to independently assess SVMC of the upper and lower extremity. Participants will have an opportunity to use the tools to assess joints on a variety of videotaped patient examples exhibiting a range of SVMC. Discussion and feedback on the participants’ skills will be provided. The use of SCALE and TASC scores in research and clinical decision making will be discussed.

Learning Objectives:
1. Gain familiarity with the purpose, content and administration of SCALE and TASC clinical tools for evaluation of SVMC
2. Develop skill in scoring of SCALE and TASC
3. Increase knowledge of the literature, clinical relevance and research regarding SVMC
4. Understand the role of SVMC assessment in clinical decision-making, research and evidence-based practice

IC32: HIP SURVEILLANCE AND MANAGEMENT IN PRACTICE: FROM INITIATION OF SURVEILLANCE TO SURGERY AND BEYOND
Pamela Thomason, MPT; Kate Willoughby, B Physio, D Physio; Maureen O'Donnell, MD MSc FRCPC; Vedant Kulkarni, MD; Abhay Khot, FRACS

Purpose: This updated course will focus on the practical application of hip surveillance for children with cerebral palsy (CP). It will guide participants in the surveillance continuum from the initiation of a first x-ray and identifying displacement, to monitoring responses to intervention and long-term outcomes into adolescence and beyond. The course will assist participants to understand the evidence and indicators for hip surveillance and management of hip displacement, be familiar with the available clinical guidelines and pathways, and to implement hip surveillance in their clinical practice.

Target Audience: Paediatricians, rehabilitation physicians, physical and occupational therapists

Course Summary: This course will provide an overview and practical approach to the surveillance and management of hip displacement in children with CP. The epidemiology of hip displacement will be explored, along with evidence of effectiveness of formalised hip surveillance. Clinical guidelines for hip surveillance will be described and explored, including the Australian Hip Surveillance Guidelines for Children with Cerebral Palsy and an introduction to the newly developed AACPDM Care Pathway. The findings of two new studies exploring the experiences of parents and health professionals when engaging in hip surveillance will be discussed, including the identification of barriers to surveillance. The ‘HipScreen’ app will be presented as an example of a strategy to overcome such barriers. Participants will have the opportunity to explore the app and gain skill in using its migration percentage measurement tool. A significant portion of the course will be dedicated to enhancing participant’s learning through interactive case studies, providing them with rationale to support implementing hip surveillance for children in their care. The utility of serial monitoring of hip displacement will be explored in the contexts of triggering referral for Orthopaedic assessment, joint decision-making about intervention between clinicians and parents, and monitoring the effectiveness of intervention.
Learning Objectives:
1. Describe the epidemiology of hip displacement and its relation to gross motor function
2. Familiarity with the evidence for hip surveillance and with the clinical guidelines available to support its implementation, including the newly developed AACPDM Care Pathway
3. Aware of potential barriers to hip surveillance and strategies to overcome such barriers, and develop confidence in applying guidelines for hip surveillance in clinical practice
4. Describe the evidence for non-surgical and surgical approaches to managing hip displacement

IC33: NEURO-ORTHOPAEDIC JOURNAL CLUB: TOP 10 ARTICLES IN THE LAST YEAR RELATING TO THE ORTHOPAEDIC MANAGEMENT OF CHILDREN WITH NEUROMUSCULAR DISORDERS
Amanda Whitaker, MD; Benjamin Shore, MD, MPH, FRCSC; Jon Davids, MD

Purpose: This course will present a journal club style review and analysis of the last year’s most significant scientific articles relating to the orthopaedic management of children with neuromuscular disorders. Articles will be reviewed following a standardized format, with each review followed by a period of open discussion concerning the contribution of the article to the body of knowledge and its potential impact on clinical practice.

Target Audience: Practitioners that treat the neuro-orthopaedic sequela of neuromuscular disorders.

Course Summary: Each article will be presented by a course faculty member, focusing on structure, content, validity, and significance. Open discussion will follow each article review, moderated by another course faculty member.

Learning Objectives:
1. Introduced to a standardized format for the critical analysis of scientific articles from the medical literature
2. Familiarity with the most significant recent advances in the orthopaedic management of children with neuromuscular disorders
3. Incorporate new techniques and technologies into clinical practice
4. Appreciate current research trends in this area and be inspired to make a contribution to the body of knowledge
Purpose: This course will describe how the train-the-trainer model was used across international borders to implement the Holland Bloorview Chronic Pain Assessment Toolbox for Children with Physical Disabilities at an American children’s hospital. This workshop will help attendees become familiar with the toolbox, understand how the chronic pain assessments were integrated into three new clinics, and gain an appreciation for the feasibility, utility and clinical impact of collecting pain assessment data.

Target Audience: Physicians, Occupational and Physical therapists, Nurses, Researchers.

Course Summary: This course will touch on the development and implementation of the Chronic Pain Assessment Toolbox within the Canadian context. The presentation will focus on how the presenters used the train-the-trainer model as well as the ‘action’ portion of the ‘knowledge-to-action’ cycle to support the successful integration of the toolbox within a US setting. A key focus of discussion will include strategies for tailoring the toolbox to a new setting, assessing barriers and facilitators to implementation, and monitoring uptake to ensure success. Presenters will highlight the clinical impact of systematically assessing chronic pain and will provide a summary of the chronic pain interference and chronic pain coping data collected during the first year of implementation.

Learning Objectives:
1. Familiarity with the Chronic Pain Assessment Toolbox for Children with Disabilities and understand how it can be tailored to new settings
2. Understand the process of integrating a new practice into a clinical setting using the train-the-trainer model and the knowledge-to-action cycle
3. Understand the clinical impact and feasibility of conducting thorough and systematic chronic pain assessments
4. Understand the benefits of streamlining knowledge translation, patient care, and research efforts while also maximizing collaborations between hospitals

Purpose: In this course, an experienced team of neuroplasticity researchers will discuss the most commonly used tools and techniques for studying neuroplasticity in people with CP. These techniques include transcranial magnetic stimulation, diffusion tensor imaging, and functional magnetic resonance imaging. The course will discuss the feasibility and limitations of each of these modalities for examining neuroplasticity. The course will also discuss ways that neuroplasticity impacts function in people with CP, particularly neuroplastic changes to the motor and sensory systems as a result of perinatal brain injury. All presenters will introduce novel, unpublished data. Additionally, this course will discuss optimal ways to design neuroplasticity studies in people with CP. This course will provide the opportunity for participants to become familiar with the current state of neuroplasticity research as relates to cerebral palsy across the lifespan.
Target Audience: Parents, caregivers, individuals with cerebral palsy, therapists, researchers, and physicians

Course Summary: Cerebral palsy affects movement and sensory systems in people throughout their lifespan. Neuroplastic changes to these systems occur during development, in response to injury, and in response to rehabilitation. Understanding how neuroplastic changes relate to dysfunction and recovery can inform the development of novel, more effective therapies. During this course, neuroplasticity experts will discuss the key methods of measuring neuroplasticity in people with CP, and how these methods can be used to understand the relationships between brain function and impairments. During this course, participants will also learn about the latest findings in neuroplasticity research, and will understand the methodology behind these findings. In this Instructional Course, attendees will discover the current challenges and promise of neuroplasticity research, to dare greatly to step into the arena.

Learning Objectives:
1. Define the main factors that drive neuroplasticity in people with cerebral palsy (CP)
2. Recognize the main methods, feasibility, and limitations of measuring neuroplasticity in people with CP
3. Understand how neuroplasticity impacts function in people with CP
4. Demonstrate understanding of the key elements for designing a study that examines neuroplasticity

IC36: SUPPORTING THE MENTAL HEALTH OF MOTHERS OF CHILDREN WITH A DISABILITY: BUILDING THE CAPACITY OF HEALTH PROFESSIONALS AND EARLY INTERVENTION SERVICES

Elise Davis, PhD; Dinah Reddihough, MBBS; Kim-Michelle Gilson, MPsyCh, PhD; Susan Brunton

Purpose: To discuss the mental health needs of mothers of children with a disability and strategies to support health professionals and early intervention services to better support mothers’ mental health. The authors, including a paediatrician, psychologist, parent and public health researcher conduct research on the mental health of mothers as part of a NHMRC Centre for Research Excellence in Cerebral Palsy in Australia.

Target Audience: Health care professionals, including physiatrists, orthopedic surgeons, pediatricians, pediatric neurologists, physical and occupational therapists who support children with a disability.

Course Summary: Mothers of children with a disability are at increased risk of poor mental health compared to mothers of typically developing children. There is a limited evidence base to guide child health professionals to support mothers’ mental health. This workshop will discuss the mental health care needs of mothers of children with a disability, including our study of 300 mothers. The challenges for health professionals to support mothers mental health will be discussed. Strategies to build the capacity of health professionals to better support mothers’ mental health will be presented, including using a) a resource for mothers on mental health (also adapted for USA), and organizational change to increase health professionals’ job-related wellbeing and knowledge of mental health. Findings from two pilot studies with early intervention services and evaluation data from health professionals and parents will be presented. Participants will engage in discussions to explore the feasibility of strategies to better support mothers’ mental health in their own settings.
Learning Objectives:
1. Understand the mental health care needs of mothers of children and young people with a disability along with their preferences for support
2. Understand and discuss the challenges for health professionals to support the mental health and wellbeing of mothers of children with a disability
3. Describe a range of strategies to build the capacity of health professionals and service providers to better support mothers’ mental health
4. Examine the feasibility of implementing strategies to support mothers’ mental health in the participants’ own settings

IC37: TREADMILL PROTOCOLS ACROSS AGES AND STAGES: A FRESH LOOK AT DOSAGE
Katrin Mattern-Baxter, PT, DPT, PCS; Julia Looper, PhD, PT; Kristie Bjornson, PT, PhD, MS; Noelle Moreau, PT, PhD

Purpose: This course is designed to bring the audience up to date on current evidence on treadmill training in children with CP. The presenters will explain the theoretical mechanisms behind infant treadmill protocols, describe muscle performance impairments in children with CP and the implications for treadmill training and discuss implementation and outcomes of home-based and short-burst interval treadmill training in pre-ambulatory and school-aged children with CP.

Target Audience: Physical Therapists, Occupational Therapists, Developmental Pediatricians, Physiatrists, Nurses, and all others who encounter young children with neuromotor impairment who present with delayed ambulation, but who show walking potential.

Course Summary: Treadmill training can be utilized to foster the achievement of walking in young children as well as for optimizing walking activity in older children with cerebral palsy (CP) and other neurodevelopmental diagnoses. But what is the optimal intensity, frequency, duration and type of training at different stages? Does one size fit all? This course is designed to explore the differences in treadmill protocols between pre-ambulatory children who are working on walking acquisition and school-aged children who may be experiencing limitations with walking activity and participation. The presenters will explain the underlying conceptual frameworks of neuroplasticity and muscle plasticity that informed their research. The practical application and results of different training protocols will be shown via the presenters’ research on pre-ambulatory and school-aged children with CP.

Learning Objectives:
1. Describe the theoretical and neuroplastic mechanisms behind infant treadmill protocols
2. Describe the available evidence on treadmill training in pre-ambulatory children with CP and neuromotor impairment
3. Describe muscle performance impairments in children with CP and the implications for treadmill training
4. Describe implementation and outcomes of short-burst interval treadmill training in ambulatory children with CP
Purpose: This presentation and hands-on workshop will discuss recent updates and guidelines in Ultrasound guided Alcohol and Phenol injections for the management of spasticity. The presentation will include a hands-on workshop for practitioners looking to expand their knowledge of techniques for Alcohol/Phenol injections in selected nerves of the upper and lower extremities.

Target Audience: Physiatrists and Neurologists with basic knowledge of Ultrasound guidance looking to expand their knowledge of injection techniques in spasticity management.

Course Summary: Ultrasound guided imagery has become widely used in spasticity management. Research has demonstrated the advantages of Ultrasound visualization compared to traditional “blind” injection techniques, resulting in improved patient outcomes. This workshop will provide a background on the use of Ultrasound guided visualization and the benefits of chemodenervation with Alcohol/Phenol in spasticity management. Attendees will learn techniques for the localization of selected muscles and nerves using Ultrasound guidance. Participants will then practice these techniques to improve their spasticity management practice.

Learning Objectives:
1. Provide an evidence based background on the use of Ultrasound guided imagery in spasticity management
2. Discuss the evidence based benefits of Alcohol/Phenol in spasticity management
3. Demonstrate Ultrasound guided injection localization techniques for selected muscles and nerves
4. Employ these techniques in their spasticity management practice with improved patient care, function and quality of life
Purpose: This course will cover issues commonly encountered when both spasticity and dystonia are identified in cerebral palsy (CP), and the dilemma this poses in terms of motor classification, measurement of dystonia and decision-making regarding treatment. This workshop will help attendees to identify and classify tone patterns when more than spasticity or dystonia are present (“mixed” tone).

Target Audience: Physicians, orthopaedic surgeons, neurosurgeons, physical therapists and occupational therapists working with children with CP; CP registry staff.

Course Summary: Classification of motor subtypes in CP is important as it promotes an accurate description of the child’s neuromotor impairments, leading to appropriate and effective treatment choices. This assists in clear communication between treating clinicians and is relevant for use in CP registries around the world in data collection. Current CP classification methods usually result in the identification of a “dominant” motor type, such as spasticity, at the expense of coexistent or secondary motor patterns. Workshop attendees will participate in case discussions highlighting mixed tone and focus on how to both identify and classify in these situations, in particular with the use of the Hypertonia Assessment Tool (HAT) and related measurement tools. Contemporary research will be presented highlighting the issue of varied tone patterns in a large CP population, and a new toolkit will be introduced which aims to assist clinicians and researchers in this challenging process of working with mixed tone.

Learning Objectives:
1. Understand the current range of tools used to classify motor type and measure dystonia in CP in clinical and CP register settings
2. Identify gaps in motor classification in CP related to the picture of mixed tone and strategies to account for this
3. Be familiar with the use of the Hypertonia Assessment Tool (HAT) as part of a toolkit in identifying different tone patterns in clinical settings
4. Participate in discussion on the pros and cons for changes to motor classification systems in CP