

Program Name: Functional Neurology Throughout Your Lifetime
Location: Online
Date(s): Beginning Septemver 28, 2023
Instructor(s): Drs. Longyear, Cedermark,Buerger, Brock, Melillo, Rubin, Spoelstra, Burns, Peck, Whitman, Andrews, Fletcher, Hoefler, Brewer, Fitzgerald, D’Arcy, Verpillot, Petersen, Rimka, Favit-Van Pelt, Carr, Balaster, Jackson, Otis, Habanva, Marquina, MacIntyre, Cumro
CE Hours Requested: 32.5 Total Hours

Functional Neurology Throughout Your Lifetime | Online Re-Play

TIME: 1 Hour

INSTRUCTOR: Ryan Cedermark, RN BSN MSN FNP-C DC DACNB and Michael Longyear, DC, DACNB, CCSP

TITLE: Changing the Brain Every Day at Every Age: The symbiotic relationship between functional neurology and neuroplasticity:

New research and practical applications happening in healthcare, in particular Functional Neuroscience, will be reviewed. The future of healthcare will be about a brain-based model of health. Using the principles of neuroplasticity to improve the brain and nervous system for the purpose of correcting neurological problems, preventing neurological degeneration and optimizing neurological performance.

Developing a neuroplasticity plan for your patients in a clinical setting should take into account the four quadrants of neuroplasticity: cognitive, emotional, physical and chemical. This talk ties together and reinforces the importance of the four quadrants of building a neuroplastic model in the office. Research supporting each category will be presented, as well as case examples.

Key Teaching Points:

1. Neuroplasticity allows practitioners to help patients build better brains
2. Engaging in specific activities and exercises promotes brain growth and rebuilding of brain networks through key growth factors and neurotransmitters.
3. Children with delayed neuronal growth can benefit from brain specific rehabilitation
4. Athletes injured in their respective sport can be rehabilitated, not just physically, but neurologically, to be able to re-enter sport with more resilience
5. Patient's experiencing neurodegenerative conditions can have their symptoms delayed or potentially reversed through positive neuroplasticity.

TIME: 1 HOUR

INSTRUCTOR: Monika Buerger, BA, DC

TITLE: Connecting the Connectome: The Brain-Gut Axis and Developmental Neuroplasticity

This presentation will look at how the microbiome of mom (MOM) and the microbiome of baby (MOB) affect developmental neuroplasticity and are pivotal for optimal neurodevelopment. It will also discuss how the microbiome is associated with Sudden Infant Death Syndrome (SIDS), autism, neuropsychiatric disorders and more. General "first steps" in "gut rehab" will be discussed as well.

Attendees Will Leave:

- With a firm understanding of the belly-brain connection and the importance of supporting optimal microbiome health to foster healthy developmental neuroplasticity.
- They will also have general guidelines to support optimal microbiome health of mom and baby.

TIME: 1 Hour

INSTRUCTOR: Brandon Brock, DNP, DC, MSN, APRN, NP-C, DACNB, DCBCN, FICC, BCIM

TITLE: A Comprehensive Look at Pediatric Acute-Onset Neuropsychiatric Syndromes

Pediatric Acute-Onset Neuropsychiatric Syndrome and associated dysregulation in immunology and neurology. Identification in a clinical setting of what area of PANS it falls under and which of the eight organisms can cause it.

- Identification of those suffering from the condition
- Differential diagnosis from other similar conditions
- Systems of consideration related to treatment
- Associated comorbidities

Key Presentation Points:

- Pediatric infections
- Infections that alter immunity in children
- Mimicry between infections and self-tissue (Autoimmunity)
- Symptoms related to PANS
- Empirical and non-empirical treatment

FULL LIST OF REFERENCES INCLUDED IS AVAILABLE UPON REQUEST

TIME: 1.5 HOURS**INSTRUCTOR:** Robert Melillo, DC, PhD (C) DACNB,FACFN,FABCDD**TITLE: Retained Primitive Reflexes, Functional Connectivity and Heart Rate Variability in Autism, Original Research Data:**

Over the past 4 years I have been conducting a age matched controlled double blind study looking at retained primitive reflexes in children, adolescents and adults with Autism. We have done a battery of Neuropsych testing before and after treatment, along with QEEG imaging and FMRI. We also have looked at Heart rate variability before and after treatment in this population.

Using somatosensory stimulation alone that included Primitive Reflex stimulation exercises along with Hemispheric stimulation with TENS, we have shown we can change brain functional connectivity and function as measure by neuropsychological testing and reduce symptoms of Autism. We believe that this can apply to any neurobehavioral disorder. We also have shown that we can change Heart Rate Variability in significant ways that has implications for all aspects of physical health in patients.

Key Presentation Points: We are answering a number of questions with this study

1. Can Primitive reflexes be retained beyond year one?
2. If they are retained beyond one what impact does this have on brain development and function if any?
3. If Primitive reflexes are retained asymmetrically, what does this mean for Brain development and function?
4. How do these retained primitive reflexes relate to Autism?
5. What is happening in the brain in Autism and can that be changed?
6. What impact do retained primitive reflexes have on measures of cognitive function and Heart Rate Variability?
7. Can primitive reflex remediation along with hemispheric based stimulation significantly change functional connectivity, heart rate variability, cognitive and behavioral function in Autism

TIME: 1 HOUR**INSTRUCTOR:** Monika Buerger, BA, DC**TITLE: Tethers, Ties, and Torsion: The Effects on Developmental Neuroplasticity**

This presentation will focus on vertebral subluxations, myofascial restrictions, and tethered oral tissues through the lens of proper motor movement patterns and subsequent maladaptive movement patterns. Motor movement patterns have global effects on developmental neuroplasticity and are directly related to neurodevelopmental disorders such as autism. This presentation will help practitioners be able to identify and foster proper movement in the infant population.

This Presentation will Help Practitioners:

- better understand the neurological connection between proper motor movement patterns, vertebral subluxations, myofascial restrictions, and tethered oral tissues.
- It will also help practitioners identify maladaptive movements patterns and foster correction of these patterns.

TIME: 1 HOUR

INSTRUCTOR: Drew Rubin, BS, DC, CCSP, DACCP

TITLE: Polyvagal Informed Chiropractic in a Pediatric Practice

Polyvagal-informed chiropractic helps the practitioner build rapport with their Neurodiverse clients to increase patient comfort and feelings of ease, creating a space of connection which is a 'biological imperative.' Learn how to gain confidence with your neurodivergent practice members using this unique patient-centered approach.

1. Enhance the providers' co-regulation skills to build better connection/rapport
2. Learn how a patient-centered practice can be more rewarding to both the doctor and the patient.
3. Become more confident in attracting and caring for neurodivergent children and adults in your practice

Key Presentation Points:

1. Social engagement, neuroception, and co-regulation: what they are and how to understand their use in an applied Polyvagal practice.
2. Polyvagal-informed history taking and evaluation techniques
3. Applied Polyvagal management during subsequent visits.
4. Implications of developing a Polyvagal-based chiropractic practice
5. Detection of the appropriate Polyvagal stage a child is in during each visit, including understanding the neurological patterns associated with more difficult pediatric cases

KEY REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Amy Spoelstra, DC

TITLE: Finding Simplicity in Working with the Complexities of Pediatric and Family Practice Regarding Behavioral, Learning, and Socialization Challenges:

Finding simplicity in working with the complexities of pediatric and family practice regarding behavioral, learning, and socialization challenges. We will discuss three categories for finding success.

1. Working with and creating a safe place for learning and engagement of a parent/caretaker living with chronic stress.

2. Understanding the need to define long-term clinical plans/tools and "right-now" brain-based strategies.

3. Developing a hierarchical approach to your clinical care, including bottom-up and top-down strategies.

Key Presentation Points:

- To describe the care and outcomes of subluxation-based chiropractic care for several children with Neuro-Deflective Disorders™ associated with development.
- Chiropractic care of children with Neuro-Deflective Disorders™ via subluxation-based chiropractic care using neurological, developmental, functional, structural, and subjective parental outcome assessments.
- Chiropractic adjustments, which focus on the reduction of vertebral subluxation, appeared to be beneficial for children with Neuro-Deflective Disorders™. When measuring and assessing quality of life for these patients and families there was a positive correlation between chiropractic care and improvement in measured areas.

MULTIPLE RESEARCH SOURCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Krista Burns, DC, CPEP, DHA

TITLE: ADHD & Posture: The Missing Link for Case Management

Participants will learn how ADHD is related to postural distortion patterns through an evidence-based research review. They will learn the role that posture plays for sensory and motor function, proprioception, balance, and focus. Participants will discover clinical assessments for posture and ADHD, and how to improve posture for children and adolescence with ADHD. They will walk away with postural correction rehabilitation solutions to implement with their ADHD patients to improve posture and neurologic integration.

Why this Presentation is Important to the Field of Functional Neurosciences:

ADHD & Posture for Adolescence: The Missing Link for Case Management is important for functional neurosciences because it can help improve neurologic outcomes for patients. The purpose of this presentation is to give practitioners clinical tools to get better results and provide them with an evidence-based research review to increase clinical confidence when working with children and adolescence with ADHD. According to the American Journal of Epidemiology and Public Health (2021), >70% of school aged children present with forward head posture. Postural distortion patterns present a significant public health concern. When left uncorrected, postural distortion patterns can negatively impact neurologic development.

Participants will walk away feeling confident with the clinical connection between ADHD and posture. They will have clinical assessments to implement to assess postural distortion patterns. Participants will be ready to implement postural correction rehabilitation solutions to improve posture and neurologic integration for patients with ADHD.

Postural correction is evidence-based and simple to implement. With more than 70% of school aged children presenting with postural distortion patterns, there is a significant need for more practitioners who have the skills to detect, analyze, and correct postural distortion patterns for improved neurologic development of children and adolescence.

Key Presentation Points:

1. What is ADHD: including the impact, risk factors, signs, and symptoms
2. Research review correlating ADHD and postural instability
3. Diagnostic factors of ADHD
4. Clinical assessment overview: including posture and neurologic assessments
5. Review of evidence-based treatment protocols for ADHD
6. Postural correction exercises and habit modifications for children and adolescence with ADHD

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 Hour

INSTRUCTOR: Sharik Peck, PT, CRC

TITLE: The Adolescent Brain Conundrum - How to Effect Neurological Improvements in the Hardest Population

For years the most difficult clients, and the ones I tried to pass off on others in the clinic, were adolescents. In particular, young ladies with chronic headaches were the most difficult but the boys were often just as challenging. Parents are at a loss, knowing their child hurts and finding very few remedies. I would like to talk about the adolescent brain, chemistry, and barriers to treatment success as well as things we have found to improve success in this population.

To help other practitioners understand the adolescent conundrum and come away armed with several interventions to improve compliance with treatment and to enhance outcomes.

Key Presentation Points:

1. Physiology of the adolescent nervous system - what is so different?
2. Barriers to successful biomodulation in the adolescent population
3. Helping the adolescent to "feel" the improvements to give hope for treatment
4. The Insta-Tok approach to behavior modification
5. Motivating the future generation through your interventions

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Monika Buerger, BA, DC

TITLE: Pivots, Potholes and the Developing Nervous System: The COVID Generation

This presentation will focus on preconception and prenatal stressors from an epigenetic perspective and how these stressors will affect developmental neuroplasticity. It will specifically focus on the COVID generation and what the research is showing regarding neurodevelopmental concerns in the offspring born during the pandemic. It will also discuss maternal immune activation (MIA) and the association with neurodevelopmental disorders, including the rise in autism.

Attendees Will Leave:

- with better ways to help support parents-to-be during the preconception and prenatal periods in order to help foster healthy development in the offspring.
- It will also give practitioners "red flags" to consider and more confidence during consultations and/or history intake.

TIME: 1 HOUR

INSTRUCTOR: Melissa Wittman, DC, CFMP

TITLE: The Autistic Female - Stop Overlooking This Patient! (current research + exam findings + treatment strategies)

While new research and resources emerge around Autistic Females, we are the ideal care providers uniquely skilled to create real neurological improvements and long term positive change for this population. Mere diagnosis and acceptance is not the end point.

Emerging evidence is trending toward an approximately equal prevalence of Autism in males and females. Diagnostic practices and research have historically been established from males. Females with Autism Spectrum Conditions may display different behaviors, causing them to go undiagnosed at an astounding rate.

As a long time, practicing doctor in the field of functional neuroscience and an Autistic Female myself, I provide valuable insight both clinically and personally.

How will this apply to your practice? Autistic Females are significantly under diagnosed and therefore do not receive the neurological therapy that could drastically improve their quality of life. Knowing how to identify, examine, and treat these cases will not only benefit your practice with a new and eager niche, but will improve the lives of high functioning adolescent and adult females, allowing them to reach a more full potential without the endless struggles they typically bear. Learn ways to identify this population, typical findings on the neurological exam, and treatment strategies.

Key Presentation Point:

- How research has failed Autistic Females
- Female Autism Phenotype: What is it?
- Camouflaging and Masking: what they are and how they're detrimental to well-being
- True male: female ratio: could it really be 3:4?
- Current research estimates 80% of autistic females remain undiagnosed at age 18
- Typical findings in the functional neurological exam
- Treatment strategies for this population

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Monique Andrews, MSc, DC, DNM

TITLE: Exploring the Impact of Early Childhood Trauma on Neurodevelopment

This presentation will explore the impact of early childhood trauma on neurodevelopment. Particular attention will be paid to autonomic nervous system development and how various stressors affect typical sequential neurodevelopment. Emphasis will be placed on a trauma informed approach to care.

Understanding the impact of trauma on the developing brain and the necessity of "trauma informed care" allows the clinician to provide a safer mental health space for those seeking care.

Key Presentation Points:

Perinatal Stress triggers Neuroinflammation

Early childhood stress disrupts typical sequential neurodevelopment.

Abnormal development of brain connectivity in children exposed to stress in utero

Pediatric PTSD is characterized by both overt and developmental abnormalities in frontolimbic circuitry

Vocal interactions in the perinatal period can have profound influence on the development of the infant and on the behavior of both the infant and mother. When communication between mother and infant is absent or negative, the adverse effects on development and behavior can be profound and long-lasting

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 2 HOURS**INSTRUCTOR:** David Fletcher, DC, FRCCSS(C)**TITLE: Coherence and the Neuroskeleton: Unraveling the Interconnected Dynamics of Neural Function and Structure using analytical instrumentation such as Surface EMG, Thermography, and HRV**

Title: Coherence and the Neuroskeleton: Unraveling the Interconnected Dynamics of Neural Function and Structure using analytical instrumentation such as Surface EMG, Thermography, and HRV

Duration: 2 hours

This two-hour presentation will provide an in-depth look at the interconnected dynamics of neural function and structure, particularly coherence and neuroskeleton, and how surface EMG, thermography, and HRV can be used to study these phenomena. The presentation will cover the integrated applications of these devices in studying neural coherence and neuroskeletal tone, and case studies and research findings. The presentation will also discuss the benefits and challenges of a multimodal approach, potential clinical applications, and future directions in the field.

Key words: coherence, HRV, surface EMG, thermography, neuroskeleton, chiropractic MULTIPLE

REFERENCES AVAILABLE UPON REQUEST**TIME: 2 HOURS****INSTRUCTOR:** Liz Hoefler, ASCT, BS, DC, DCCJP and Jane Brewer, DC, DCCJP**TITLE: Practical Application of CranioCervical Anatomy and Physiology A Review of Key Structures, Functions, Examinations and Imaging of the CCJ**

Hour 1: Embryology, anatomy, neurology and physiology: foundational concept review to enhance the understanding of the delicate nature of the development and stability of CranioCervical Junction.

1. Review of the embryological development of the nervous system
2. Understanding in osteological development with key neurovascular landmarks and positions
3. Ligaments of the CCJ
4. Physiology review to gain understanding of structures from a functional perspective
5. CSF development and function

6. Gross review of CCJ structures and function to have a holistic understanding of the CCJ

Hour 2: Functional and practical examination to expose dysregulation of the nervous system and highlight the anatomical structures that are designed to stabilize a healthy nervous system.

Introduction to advanced imaging identifying normal and consequently abnormal anatomy of the CCJ to gain clarity on vectored spinal manipulation. Review of research in the CCJ.

1. Cranial Nerve exam explained and demonstrated in an effective and efficient way
2. Orthopedic exam explained and demonstrated in an effective and efficient way
3. Introduction of Cone Beam Computed Tomography (CBCT)
4. Review of functional MRI examination of the CCJ with normal vs abnormal anatomy
5. Case study review of interesting presentations and their outcomes
6. Presentation of original research as well as other notable investigations

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 2 HOURS

INSTRUCTOR: DeAnn Fitzgerald, OD

TITLE: Advanced Concussion Management

A study published in the journal Brain in early 2023 found that almost half of people with concussions still show symptoms of brain injury six months later. With staggering incidents of concussion it's imperative that practitioners continue to research and find appropriate tools and technology to assist in not only the diagnosis stage, but more importantly in the rehabilitation and recovery phase.

This in-depth and evidence-based course will provide a foundation in treating concussions and the prolonged aftereffects. You'll learn:

- How to identify signs of a concussion and when further assessment is needed
- What happens to the brain for a concussion diagnosis
- Clear assessment criteria for activity progression and return to activity after a concussion
- Evidence-based interventions to address dizziness, headaches, motion/light sensitivity, neck pain and more!

We will guide you in resolving the biggest challenges of working with concussion patients. You'll discover treatment strategies for vestibular, vision, cognition, balance and gait with cervical spine involvement and SO much more! No matter your level of experience, this course will give you tools that you can implement immediately.

We will outline protocols coupled with cutting edge technology, using eye hand coordination techniques with vision|vestibular|cognition therapies to help advance your patients. Case studies and examples will include:

- Concussion
- TBI
- Neurodegenerative disease
- COVID long haulers

TIME: 2 HOURS

INSTRUCTOR: Ryan D'Arcy, M.Sc., Ph.D., PIEng (Neurotech)

TITLE: Access to Cognitive Evoked Potentials at the Point of Care

Brain vital signs, neurotrauma diagnostics, neuroplasticity and brain injury rehabilitation, surgical simulation, advanced functional brain imaging: 116 papers, chapters, and patents. Associate Editor: BMC Neuroscience. Chair (2014-2016), International Advisory Board, Biomagnetism.

- 30 minute review of the science and clinical validity of cognitive evoked potentials
 - The N100, P300 and N400 event-related potentials (brainwaves) have been clinically validated since the late 1930's and auditory evoked potential research currently sits at over 750k peer reviewed publications
 - ERPs have been clinically validated to be significant in findings in many disease states, including concussion, dementia, PTSD, and others
- 30 minute review of the NeuroCatch technology and clinical validity
 - NeuroCatch's technology has taken what was previously available in laboratory or hospital settings with a multiple-hour process to be fully portable and rapidly conducted in a 6 minute battery
 - NeuroCatch has effectively eliminated trigger jitter, but having a temporal resolution 15x faster and more precise than anything else currently available
 - NeuroCatch has been published in peer-reviewed publications with collaborators such as the Mayo Clinic, Cornell University, Sanford Institute, Simon Fraser University and others
- 30 minute review of published peer-reviewed publications that utilized NeuroCatch and review of case studies
 - Presenting and interpreting data from the peer reviewed publications mentioned above
 - Patient populations include pediatric TBI, adult TBI, adult PTSD, age related cognitive decline and others
- Final 30 minutes with a couple of specific cases - case examples
 - We can go into more depth about our findings with Cornell in pediatric TBI (ages 3 to 12)
 - We can go into more depth about the sub-concussive impacts of contact sports in pediatrics (ages 12-17)

MULTIPLE REFERENCES WILL BE REVIEWED AND ARE AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Annette Verpillot, M. OMSc, RMT

TITLE: Enhancing Performance and Health Outcomes Through Sensory Integration: Case Studies of Law Enforcement Officers

This presentation delves into the crucial role of sensory receptors in maintaining the balance and overall health of the human body. By using a case study conducted with twelve (12) law enforcement officers, we will demonstrate the significance of addressing all sensory organs simultaneously to achieve better performance and health outcomes. Law enforcement officers, who constantly work under duress, were chosen as the target population for this study due to the high-stakes nature of their profession.

The case studies will showcase the impact of stimulation the feet with therapeutic insoles on shooting accuracy, blood pressure, and grip strength. Attendees will learn about the link between sensory imbalances and their consequences, such as poor posture, injuries, and pain, and how addressing the entire sensory system can lead to improved performance and wellbeing.

The importance of considering the entire body and the interconnectivity of sensory receptors in the field of Functional Neurosciences will be emphasized. By understanding the role of the central nervous system (CNS) in integrating sensory inputs and the principle of neuroplasticity, attendees will gain valuable insights into how to optimize their practices for better patient outcomes.

Participants will leave the presentation with a deeper understanding of the CNS's role in posture and proprioception and the importance of addressing all sensory receptors for optimal health and performance. They will learn how to utilize sensory integration techniques to correct posture, improve heart rate variability, reaction time, eye-tracking, and coordination, ultimately leading to better overall health outcomes.

By incorporating these principles and practices into their daily work, professionals will be able to achieve long-lasting results for their clients and enjoy a thriving business driven by satisfied customers and positive word-of-mouth.

By attending this presentation, participants will not only expand their knowledge and expertise in the field of Functional Neurosciences but also gain valuable tools and strategies to improve their practices, enhance patient outcomes, and contribute to the continued growth and development of the field.

Key Presentation Points:

In addition to the main takeaways mentioned previously, attendees of the presentation will also benefit from the following:

- Understanding the role of feet in postural control and regulation, and how issues such as hyperpronation can lead to secondary dysfunctions or increase stress on critical joints like the ACL.

- Gaining insights into the importance of constant, appropriate sensory signals for rewiring the brain, based on the principle of neuroplasticity.
- Learning about the interconnectedness of various bodily systems such as muscular, cardiovascular, digestive, immune, and endocrine, and how posture influences their functioning.
- Discovering practical applications of the knowledge acquired during the presentation to treat and prevent a wide range of conditions and improve patient satisfaction.
- Networking with fellow professionals and sharing experiences, ideas, and best practices in the field of Functional Neurosciences, promoting collaboration and the advancement of the field.

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 2 HOURS

INSTRUCTOR: Melissa Petersen, DC, MS, BCHH and Stephanie Rimka, BA, DC, BCN

TITLE: Optimizing Clinical Outcomes with Chrono Neurobiology

Our brain, peripheral tissues and each cell in our body have clocks that ensure key metabolic functions occur in the brain and body each day. What happens when the clocks become disregulated? Chrononeurobiology shares the impact that light and dark have on our neurotransmitters and brain wave health and function. In this session, you will learn how to reset the clocks in the brain and body for improved health outcomes leveraging light, dark, timing, temperature and ANS modulation.

This course will cover:

- Understanding circadian rhythms and how they impact our biology.
- Light cues and how they signal the brain
- The role of the SCN in cellular health
- HPA axis- the tipping point between healing or breakdown
- Light signals and neurotransmitter production
- Light signals and hormone production
- Light signals and metabolic pathways
- Light signals disrupted and the role in neurological dysfunction and disease
- Light disruption in our environment
- Circadian time keepers, how to use light, temperature, and timing in your clinical protocols
- Cortisol modulation for neurobiological re-regulation
- The role of neurotechnology to support an optimized light response
- Pairing lifestyle, molecules, therapeutics and technology together for optimized outcomes
- Neuromodulation therapies will be reviewed with clinical examples

At the completion of this class, the student will have an understanding of the impact of circadian rhythms on our biology. How entraining to our natural light cues can improve health and healing or how overriding

these natural clocks will add to accelerated breakdown and dysfunction in the body. Once understood and identified, protocols to re-entrain to these natural clocks to their ideal time will be essential in adding to any functional neurology based practice for improved clinical outcomes.

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Antonella Favit-Van Pelt, MD, PhD

TITLE: Sustained neuromodulation leads to long term neuroplasticity for balance and gait rehabilitation In movement and coordination disorders, signal transmission pathways to the spinal cord can be partially or totally compromised leading to impaired function. Repeated neurostimulation employs mechanisms that can mitigate or compensate abnormal cortico-spinal signal activity. Consistent activation of these neural mechanisms leads to neuromodulation, a process that engages physiologic compensatory mechanisms capable of replacing and/or repairing impaired neural pathways. Sustained neuromodulation often promotes consolidation of neuroplastic changes that can, eventually, help regulate function and regain control of movement and coordination.

Key Learnings:

- What is the PoNS Therapy
- How does it work
- Therapeutic outcomes and managing expectations.

MULTIPLE REFERENCE AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Rich Carr, BcID, CRME

TITLE: COGNITION - Brain-centric Design: How the Brain Processes Information and How People Love To Learn

Brain-centric Design (BcD) is a framework for designing learning experiences that are more effective and efficient. It is based on the latest neuroscience research on how the brain learns. BcD is effective in various settings, including education, corporate training, and healthcare, and is agnostic to the topic or concept presented.

In Functional Neuroscience, BcD can be used to design interventions that target specific cognitive functions. For example, BcD can create interventions that improve memory, attention, and problem-solving skills. The BcD framework, by design, creates psychologically safe learning spaces with jaw-dropping results compared to current behavioral learning and development models by revising the communication method using the same information.

Rich Carr is a Learning Scientist and the co-author of the book Brain-centric Design: The Surprising Neuroscience Behind Learning with Deep Understanding. He has over 40 years of

experience in Mass Communications and the Learning Sciences in Cognitive Neuroscience and is a leading expert on how the brain learns.

Here are some of the reasons why BcD is so essential in the field of Functional Neurosciences:

- BcD is the latest neuroscience research on how the brain learns.
- BcD is effective in nearly every setting where new communication must be received in its entirety and acted on appropriately.
- BcD can be used to design interventions that target specific cognitive functions.
- BcD aligns your communication with how the brain processes information.

BcD is a powerful tool that can be used to improve learning, cognitive function, and the communication of new information to another for deep understanding.

Participants walk away from a Brain-centric presentation with the following: A better understanding of how the brain learns.

A framework for designing learning experiences that are more effective and efficient. Specific strategies for improving communication and learning.

A sense of how BcD can be applied to their practice or research.

Examples for Functional Neuroscience:

To design interventions that improve memory, attention, and problem-solving skills.

To improve the effectiveness of communication between functional neurologists and their patients.

To improve the effectiveness of research in Functional Neuroscience.

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: HOUR

INSTRUCTOR: Cavin Balaster, Author, Educator

TITLE: TBI - Empower Patients to Give Themselves the Best Environment For Brain Recovery

How can we help patients empower themselves to give their brains the best environment for brain recovery? Learn a step-by-step system to putting your patients brain in a place for optimal recovery.

A step-by-step system to putting patients brains in a place for optimal recovery by creating an anti-inflammatory internal environment while healing gut, skin, and brain barriers.

Key Presentation Points:

- Pathology of TBI
- Damaged Brain barrier necessitates clean environment
- Minimize exposure to environmental toxins in the air (smoking, vaping, synthetic fragrances)

- Minimize exposure to environmental toxins in food and drink.
- Minimize exposure to environmental toxins in soap, lotions, ointments, deodorants, skin products, hair products, etc.
- Minimize exposure to environmental toxins in female hygiene products
- Damaged brain and atrophied muscles require hypertrophy. How do we stimulate this? What nutrients do we need?

TIME: 1 HOUR

INSTRUCTOR: David Jackson, MEng, PGCE, ASCC

TITLE: TBI - Using Breath Training and HRV (heart rate variability) as Both Monitoring Tools and Rehabilitation for Concussion Recovery

The research into how concussions and brain injuries affect breathing dates back to the 1960's yet the practical application of using breathing as a monitoring tool alongside HRV (heart rate variability) isn't applied with either the general public or sports performance world. Concussion protocols are a hot topic in professional contact sports at the moment and recent research has shown that long term cognitive damage occurs after just 3 concussions in a lifetime. Worrying functional MRI's are revealing that once players are symptom free and clear of 'return to play protocols' the scan still shows signs of brain damage, which in one study was still seen 7 months after being 'symptom free'.

Participants will leave with a clear understanding of how brain injuries and concussion affect the respiratory center of the brain stem. They will learn what the more current research in 2023 as well as from the 1960's all shows in terms of issues we have with symptom management not being a reliable indicator of a brain's full recovery. Finally, they'll learn how to use breathing assessments and HRV measurements to better understand the brain's recovery and state of the autonomic nervous system before learning what breathing techniques and protocols have been scientifically proven to improve cerebral blood flow and oxygen supply to the brain to help it heal and recover.

Key Presentation Points:

How concussion and brain injuries affect breathing mechanics, respiratory rate and end tidal carbon dioxide.

Link between breathing and cerebral blood flow

How restoring carbon dioxide chemosensitivity in the brain stem is essential to improve cerebral blood flow post-concussion or brain injury.

Assessing breathing post-concussion and brain injury in both rate, mechanics and carbon dioxide tolerance.

Share my personal story of healing a scar on my brain from a bleed on the brain I sustained from an injury playing professional rugby union in 2013

Breathing exercise has been scientifically proven to improve cerebral blood flow and oxygen delivery to the brain to help it recover from concussion and brain injuries.

TIME: 1 HOUR

INSTRUCTOR: Jim Otis, DC, FACFN, FABCDD, DACNB

TITLE: TBI - How to Give Your Brain the Best Shot to Recover After Injury

In this presentation we discuss how to enhance plasticity and increase our patients' capacity to respond to therapy.

The ongoing creation and destruction of synaptic connections that enable plasticity, as well as the shifting patterns of neurological coherence that guides functional connectivity, is all timed to the millisecond or it doesn't work.

The brain's ability to coordinate neurons in real time can and does degrade for many reasons including inflammation, brain injuries, stress, toxicity, and accumulated cellular debris. This leads to or impedes recovery from a variety of conditions, including brain injuries, cognitive decline, and insomnia.

In this session we explore the timing mechanics that are foundational to brain function, strategies to optimize those mechanisms, and ways to harness the increased plasticity and connectivity to achieve better and faster patient outcomes.

The practitioner will learn practical tools to enhance plasticity and get a bigger "bang for your buck" with your rehabilitation efforts with all clients, and especially clients with brain injury, cognitive decline, or insomnia.

The presentation suggests new avenues of research in the fields of Synaptic Timing Dependent Plasticity and Function Connectivity.

Progress in our ability to facilitate positive clinical outcomes requires both an increasing finesse in how we stimulate the brain, and the development of effective strategies to increase the brain's capacity to respond to our rehabilitation efforts.

Key Presentation Points:

Understand the millisecond-precise constraints of neuronal signaling, how it can go wrong, and how it can be optimized.

Understand how oscillations and shifting patterns of coherence drive functional connectivity and neuroplasticity.

Understand the role of plasticity and connectivity across the lifespan, from neurodevelopment to neurodegeneration.

Understand how to use timing-based applications to increase the brain's capacity to learn, grow, and heal.

Understand how to combine synaptic timing dependent plasticity (STDP) and experience dependent plasticity (EDP) to create an effective rehabilitation program for a variety of conditions.

Understand common stressors that degrade neurological timing, functional connectivity and neuroplasticity, and steps to reverse them.

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Tatiana Habanova, DC, DACNB

TITLE: COGNITION - Menopause as a Neurological Condition: A Paradigm Shift

Discussing the neurological aspects of menopause is important because it challenges the traditional view of menopause as simply a hormonal change and highlights the complexity of this life transition. Neurological symptoms and changes during menopause can often go undiagnosed and untreated, leading to significant impacts on women's cognitive function, the quality of life for them and their family, plus the financial burden placed on society. According to the Women's Brain Health Initiative, 70% of Alzheimer's sufferers are women and one-third of these cases may be preventable with non-pharmaceutical interventions if detected early. By providing practical strategies for clinicians to optimize women's brain health before and during menopause, and reviewing the latest research on hormone replacement therapy, lifestyle factors, and brain-based therapies, this talk provides valuable insights and information for all doctors who care for women during this important life transition. By understanding the neurological impacts of menopause, doctors can better support their patients and provide proactive care that improves women's cognitive health and overall well-being.

In this talk, "Menopause as a Neurological Condition: A Paradigm Shift", I explore the idea that menopause is more than just a hormonal change, but rather a complex neurological condition that can impact cognitive function. I discuss the neuroscience behind menopause, the cognitive symptoms associated with it, and practical strategies for women to optimize their brain health during this time. I also reviewed the latest research on hormone replacement therapy and its impact on cognitive function, as well as the importance of lifestyle factors such as exercise, nutrition, sleep, and stress reduction for preventing cognitive decline during menopause.

Overall, the talk aimed to shift the paradigm of understanding menopause and empower women and physicians to take proactive steps toward protecting women's cognitive health during this important life transition.

1. A deeper understanding of menopause as a neurological condition: Physicians will gain a better understanding of the neurological changes that occur during menopause and the impact these changes can have on cognitive function. This knowledge will help them recognize and diagnose neurological symptoms related to menopause more effectively.
2. Practical strategies for preventing cognitive decline during menopause: My talk will provide physicians with evidence-based strategies for preventing cognitive decline during menopause. These strategies can be incorporated into their practice to help their patients maintain optimal brain health during this important life transition.
3. A review of the latest research on hormone replacement therapy: My talk will review the latest research on hormone replacement therapy and its impact on cognitive function. This information can be used by physicians to help their patients make informed decisions about whether or not to use hormone replacement therapy.
4. Guidance on the role of lifestyle factors in cognitive health during menopause: My talk will provide guidance on the role of exercise, nutrition, sleep, and stress reduction in preventing cognitive decline during menopause. Physicians can use this information to help their patients make lifestyle changes that can improve their brain health during this time.

Overall, my talk can help physicians better understand and address the neurological impacts of menopause in their patients, and provide practical strategies and guidance for improving cognitive health during this important life transition.

Key Presentation Points (5-7 content categories): Here is an outline for my talk, "Menopause as a Neurological Condition: A Paradigm Shift", focused on helping physicians prevent cognitive decline:

I. Introduction

- * Define menopause as a neurological condition
- * Discuss the paradigm shift in understanding menopause as more than just a hormonal change

II. The Impact of Menopause on Cognitive Function

- * Explore the cognitive symptoms associated with menopause
- * Discuss the cognitive changes that occur during menopause and how they affect brain function

III. The Neuroscience of Menopause

- * Explain the neurological changes that occur during menopause
- * Discuss how these changes affect brain function and cognitive performance

IV. Strategies for Preventing Cognitive Decline during Menopause

- * Review the latest research on preventing cognitive decline during menopause
- * Discuss practical strategies for women to optimize their brain health during menopause

V. The Role of Hormone Replacement Therapy (HRT) in Cognitive Health

- * Discuss the pros and cons of HRT for preventing cognitive decline during menopause
- * Review the latest research on HRT and its impact on brain function

VI. The Importance of Lifestyle Factors for Cognitive Health during Menopause

- * Discuss the role of exercise, nutrition, sleep, and stress reduction in preventing cognitive decline during menopause
- * Provide practical tips for incorporating healthy lifestyle habits into daily life

VII. Conclusion

* Summarize the key points from the presentation

* Encourage physicians to take proactive steps to optimize women's brain health during menopause

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Nelson Marquina, MSc, PhD, DC

TITLE: TBI - Brain Neuroinflammation and Super Pulse Lasers: Mechanisms and Treatment Guidelines

The presentation focuses on the neuroinflammation processes and mechanisms of traumatic brain injuries (TBI) and concussions in adults, and the effects of superpulse lasers to mitigate the clinical presentations.

Research of the past 15 years provide the scientific background and the basis for the development of treatment guidelines. Superpulse lasers, with the ability to generate very high pulse powers of up to 135,000 watts, are non-surgical devices designed for deep tissue penetration with minimal thermal buildup suitable for brain tissue irradiation.

Treatment guidelines and resources will be presented to stimulate discussions and encourage doctors to find ways to help patients experiencing TBI or concussions.

TBI and concussions are difficult conditions to treat within the conventional medical system. Fortunately, nowadays we have better imaging and cognitive diagnostic tools to ascertain the patient's pathophysiological status. Participants will receive enough information during the presentation to be able to assist TBI and concussion patients at a minimum level. Participants will also obtain information on available diagnostic and therapy tools, clinical and technical resources, and training programs to expand their practice to manage TBI and concussion cases.

Key Presentation Points:

- Inflammation caused by TBI and concussions activate microglia and astrocytes affecting function and tissue repair.
- PBM with a laser can reduce inflammation and promote brain function.
- Depending on pulse rate and pulse power, a laser can stimulate gene expression and hence promote tissue repair.
- Depending on technical characteristics such as wavelength, and pulse and average powers, lasers used in PBM could safely penetrate deeply into tissues with minimal thermal buildup.
- Understanding the biophysics of laser-tissue interactions is essential for the development of safe and effective treatment protocols for brain tissues.
- Tools, techniques and training programs are readily available for practitioners interested in practice expansion to potentially include clinical cases in TBI, cognitive decline, AD, and PD.

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Tamara MacIntyre, MSc, DC, DNM

TITLE: DEMENTIA/ALZHEIMERS - Fostering Agency in Patients with Dementias: Advance Care Planning (ACP) Options

Fostering agency in our patients with dementias and Alzheimers includes a greater understanding of disease progression. In the medicalized illness landscape the clinical focus is most often on an extension of the quantity of days rather than the quality of life. Far too often conversations of prognosis and disease progression are not shared with the patient. This presentation will review the illness expression trajectory and the impending decisions and advance care planning strategies that can be put into place to ensure that the patient is clear about their end of life transition options both legally and medically.

The participant will have a better understanding of the illness trajectory of a patient with dementias and Alzheimers. A contrasting view of the decline through natural aging versus illness will be shared. Doctors will be introduced to the legal and medical advance care planning options unique to this population and its relevance to caring for this rapidly declining population.

Key Presentation Points (5-7 content categories):

- 1) Fostering patient's agency is critical in this population.
- 2) The illness trajectory of dementias and Alzheimer's is known.
- 3) Differentiating types of cognitive impairment in relationship to prognosis is key.
- 4) End of Life advance care planning is often not addressed
- 5) Health Care professionals bear a responsibility to share resources and appropriate congruent patient referrals.
- 6) Prognosis is known and often not shared with patients by their health care team.

MULTIPLE REFERENCES AVAILABLE UPON REQUEST

TIME: 1 HOUR

INSTRUCTOR: Jeffrey Cumro, DC, DACNB

TITLE: The Interplay of Stress and Neurodevelopmental Disorders on the Brain

Those with neurodevelopmental disorders are more likely to have aberrant stress responses.

Those under chronic stress often exhibit symptoms similar to those that have diagnoses of neurodevelopmental disorders.

This presentation will bring together some of the reasons these distinct issues present with commonalities and how our training can change the lives of these populations.

Stress is among the most common reasons patients see their physicians. While the cause behind each person's stress may be different, the firing of the stress pathways - both acute and chronic - leave lasting changes on the brain.

In this presentation we will explore how that stress impacts you and your patients, giving you the tools to better understand its impacts which will help your patients see better outcomes, as well as, helping you avoid common business setbacks like burnout.

Key Presentation Points:

Neurodevelopmental disorders present with aberrant stress responses.

Chronic, or high levels of stress, can present in many of the same ways that neurodevelopmental disorders do.

How the brainstem plays a role in the stress response. How

stress impacts the regions of the brain.

How developmental functional neurology can help people handle their stress in a healthier manner.

MULTIPLE REFERENCES AVAILABLE UPON REQUEST