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SELECTED OCCUPATIONAL HISTORY

Clinic Director/Chiropractic Physician, Cascade Spine & Injury Center, Portland, Oregon, 2012 – Present

Chiropractic Physician, Accident Care Specialists, Portland, Oregon, 2011 - 2012

Locum Chiropractic Physician, Various Locations, Portland, Oregon, 2010 - 2013

Clinic Director/Chiropractic Physician, Vitality Health Center, Portland, Oregon, 2010 - 2012

Clinic Director/Chiropractic Physician, Community Chiropractic, Portland, Oregon, 2010

EDUCATION AND LICENSURE

Doctor of Chiropractic, Licensed in the State of Washington, License #CH60270962, 2012 - 2013

Doctor of Chiropractic, Licensed in the State of Oregon, License #3982, 2010 - Present

Doctorate of Chiropractic, University of Western States, Portland, Oregon, 2009

Internship, University of Western States, Portland, Oregon, 2008 - 2009

National Board of Chiropractic Examiners, Physiotherapy, 2009

National Board of Chiropractic Examiners, Part IV, 2009

National Board of Chiropractic Examiners, Part III, 2009

National Board of Chiropractic Examiners, Part II, 2009

National Board of Chiropractic Examiners, Part I, 2008

Bachelors of Arts in Psychology, University of Colorado at Boulder, Boulder, Colorado, 2003

SELECTED ACCREDITATIONS, CERTIFICATIONS, AND CREDENTIALS

Qualified Healthcare Professional for Oregon's Concussion Return-to-Play Law, ACCME Sponsorship with the Oregon Health and Science University School of Medicine, Portland, Oregon, 2021.

ACTAR Accredited Traffic Accident Reconstructionist, ACTAR #2872, Accreditation Commission For Traffic Accident Reconstruction, North Platte, Nebraska, 2015 and re-accredited: 2019.

Certification in MRI Interpretation, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2015.

Whiplash Biomechanics & Injury Traumatology, Advanced Certification, Spine Research Institute of San Diego, California, 2015.

Certification in Spinal Biomechanical Engineering, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

SELECTED POST-GRADUATE EDUCATION

Return-to-Play: Oregon Concussion Education, *Concussion diagnosis, treatment, return-to-play protocols, return-to-work protocols, state laws regarding concussion management, ICCS consensus statements, sideline evaluations, stepwise progressions, imaging, allied health professional collaboration, need for school services and role of licensed athletic trainers*, Oregon Health and Science University School of Medicine, Portland, Oregon, 2021.

TBI6: Concussion/mTBI Certification Program – Module 6, *Cognitive rehabilitation of abnormal visual fixation, clinical applications of normal and abnormal fixation behavior, clinical examination of predictive strategy and high pursuit gain, clinical understanding of concussion and central vestibular syndromes, clinical applications of super nuclear or nuclear ocular motor disorders, clinical understanding of sensory mismatch and therapy development, clinical laboratory evaluation of fixation and smooth pursuit, clinical understanding of concussion and unpleasant visual and somatic distortion, clinical applications and differential diagnosis of peripheral and central lesions*, Carrick Institute for Graduate Studies, Cape Canaveral, Florida, 2020.

TBI5: Concussion/mTBI Certification Program – Module 5, *Clinical understanding of pathology involved with deterioration of smooth pursuit, clinical skills simulation of smooth pursuit two predictable and non-unpredictable motion, clinical understanding of velocity saturation and pursuit gain, clinical strategies utilizing parietal lobe activation, clinical understanding and applications of the phenomenology of vision and age, designing a treatment plan based on a hypothetical scheme for*

smooth pursuit, clinical understanding and applications of open loop vestibular eye movements, clinical understanding of the adaptive properties of smooth pursuit, clinical understanding of human homologues in animal brain models, smooth pursuit and visual fixation, Carrick Institute for Graduate Studies, Cape Canaveral, Florida, 2020.

TBI4: Concussion/mTBI Certification Program – Module 4, Basal ganglia circuitry models, clinical understanding of the basal ganglia and its motor, cognitive and limbic circuitry, clinical understanding of the basal ganglia and visual saccades, clinical understanding of the neostriatum and mesencephalic function, clinical context specific VOR adaptation, concussion rehabilitation and recovery from static and dynamic vestibular imbalance, clinical understanding of peripheral vestibular lesions after head trauma, concussion rehabilitation and spatial tuning of labyrinthine efferent activity, concussion rehabilitation using gap and overlaps stimuli, concussion rehabilitation using superior colliculus phenomenology, concussion rehabilitation using antisaccades, clinical applications to engage the TBI patient in novel evidence-based therapy, Carrick Institute for Graduate Studies, Cape Canaveral, Florida, 2020.

TBI3: Concussion/mTBI Certification Program – Module 3, Skew deviation & the OTR vertical and cyclovertical strabismus, rehabilitation strategies utilizing the vertical & torsional VOR, concussion and the pathologic OTR, clinical applications of ipsilesional and contralesional head tilt, pathological skew deviation versus superior oblique palsy, parks 3-step test with Bielschowsky tilt test, the symptoms and signs of skew deviation, the clinical determinants of vestibulo-ocular reflex gain, concussion rehabilitation using active versus passive head rotation, concussion rehabilitation using fixation of stationary versus moving targets, concussion rehabilitation using head stationary and head and body rotation, bedside optokinetic testing, disequilibrium/unsteadiness/vertigo after concussion, clinical understanding of the pathophysiology central vestibular connections, Carrick Institute for Graduate Studies, Cape Canaveral, Florida, 2020.

TBI2: Concussion/mTBI Certification Program – Module 2, Understanding how vision is affected in TBI, understanding the utilization of joint receptor activation in TBI, understanding head rotations/translation/neck integrators, clinical applications of semicircular canals and otolith organs, rehabilitation strategies utilizing ocular counter roll, patterns of head motion and changing brain integration next line, perturbations of head and gait strategies, clinical applications of visual mediated eye movements, understanding skew deviation, clinical applications of head rotation and retinal meridians, clinical understanding of vertical ocular misalignment and foveal disparity, concussion and age, electrophysiological aspects of vestibulocerebellum control of the vestibular ocular reflex, role of the cerebellum in the vestibulo-ocular reflex adaptation, Carrick Institute for Graduate Studies, Cape Canaveral, Florida, 2019.

McKenzie Mechanical Diagnosis and Therapy – Part B: Cervical Spine, Epidemiology of cervical spine pain, pathophysiology and biomechanics of the cervical spine, subjective and objective assessment, review and treatment of the three syndromes, cervical headache and trauma ('whiplash'), contraindications and outcome predictors, thoracic spine anatomy/pathology, thoracic examination/treatment, patient demonstration/analysis/discussion, recurrences and prophylaxis, McKenzie Institute International, University of Western States, Portland, Oregon, 2020.

TBI1: Concussion/mTBI Certification Program – Module 1, *TBI and eye movements, sensory integration, neurological compensation of head/ neck/ postural/ visual systems, chronic traumatic encephalopathy, integration of cortical and subcortical structures, coordination of head/neck/trunk/limb functions, eye movement therapy and Carrick eye movement strategies, integration of multi-sensory systems and perception, best practices treatment of concussion measuring human motor and perceptual performance, testing of balance after concussion understanding stability scores, eye movements and sensory feedback, clinical attributes of eye movements and spatial localization, adaptive strategies in acute and chronic TBI treatments, brain integration and compensation after concussion*, Carrick Institute for Graduate Studies, Cape Canaveral, Florida, 2019.

McKenzie Mechanical Diagnosis and Therapy – Part A: Lumbar Spine, *Epidemiology of lumbar spine pain, connective tissue properties and pain, mechanical diagnosis classification, history and physical exam, anatomical considerations, clinical presentations and procedures, management of derangement syndrome, management of dysfunction syndrome, management of postural syndrome, follow-up evaluations, recurrences and prophylaxis*, McKenzie Institute International, University of Western States, Portland, Oregon, 2019.

Course Review of Hands on Practical NCS and Needle EMG Techniques and Program Examinations, *Review of instrumentation set up and basic operational parameters, action potential generation and cell membrane physiology as it relates to EDX, axonal loss and focal conduction block, motor unit potentials and spontaneous potentials, polyphasia and neuropathic motor unit recognition, review of the innervation and practical localization for needle EMG placement of all commonly sampled muscles, review of BAER techniques and clinical applications, ambient noise reduction techniques in evoked potentials, final comprehensive lab practical examination*, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Case reviews, Interpretative Reporting, and Coding/Reimbursement and Medicolegal Issues of EDX, *Electrodiagnostic report writing, proper cursor marking correction in reports, relevance of electrophysiological data to final clinical impression, case reviews: carpal tunnel, ulnar neuropathy at the elbow, ulnar neuropathy at the wrist, cervical herniated nucleus pulposus, tarsal tunnel syndrome, fibular head lesion of fibular nerve, lumbar stenosis, lumbar radiculopathy, polyneuropathy, CMS guidelines, ICD and CPT codes, age related changes in the H-reflex and motor neuron excitability, F-waves evaluation criteria: F-min latency, F-max latency, chronodispersion – clinical applications in polyneuropathy, principles of EDX interpretation*, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Evoked Potentials, Theory and Principle Behind Evoked Potentials, *Clinical utility of types of evoked potentials: SSEP, BAER, VEP, TcMEP, sEMG, tEMG, evaluation of the peripheral nervous system and the large-fiber sensory tracts in the CNS, localization of the anatomical site of somatosensory pathway lesions, axonal loss vs. demyelination, confirmation of a non-organic cause of sensory loss, differential amplification, EP montage nomenclature – 10-20 system of electrode placement, obligate peaks – cortical, subcortical, spine and peripheral, anatomy and pathways for SSEP, dermatomal evoked potentials (DEPs) and clinical utility, anatomy and physiology of auditory evoked potentials and the*

location of peaks and their neural generators, anatomy and physiology of visual evoked potentials (VEPs) and their elicitation, concepts and principles of intraoperative neuromonitoring and common modalities employed during IONM, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Needle EMG of the Upper and Lower Extremity Practicum Laboratory, EMG instrumentation settings, monopolar versus concentric needle montage, ground placement and noise reduction techniques, protocol and steps in performing EMG studies, spontaneous potential analysis including fibrillation potentials and positive sharp waves, needle EMG techniques in the paraspinal muscles, needle EMG techniques of the upper limb, needle EMG techniques of the lower limb, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Introduction to Needle Electromyography (EMG), Peripheral anatomy for needle EMG, insertional activity, analysis of spontaneous activity including positive sharp waves (PSW) and fibrillation potentials, analysis of motor unit action potentials (MUAPs), recruitment patterns of MUAPs, mononeuropathies of the upper and lower extremities and lumbar/brachial plexuses, electrophysiological evidence of denervation and reinnervation, motor unit potentials and morphology, disorders of neuromuscular junction, myopathies, universal precautions, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Motor and Sensory Nerve Conduction Studies of the Lower Extremity Practicum Laboratory, Tibial and femoral and medial/lateral plantar and peroneal nerve motor nerve conduction studies, tibial H reflex, tibial and peroneal F-waves, sensory nerve conduction studies of sural and saphenous and superficial fibular nerves, ancillary lower extremity sensory nerve conduction studies, input of site-to-site measurement for accurate nerve conduction velocity, tarsal tunnel syndrome and its effect on NCS, interpretation of lower extremity NCS, case presentations, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Polyneuropathy, Neuropathy and Radiculopathy of the Lower Extremity, Comprehensive review of lower extremity neuromusculoskeletal anatomy emphasized relative to electrodiagnostic applications, review the H reflex arc, anatomy and motor nerve conduction studies of the tibial and peroneal nerves, sciatic nerve anatomy and its influence on the motor nerve conduction study of the tibial and peroneal nerves, sensory nerve conduction studies of the sural and superficial peroneal (fibular) and saphenous nerves, relevance of superficial fibular nerve anatomy and studies, sural nerve anomalies, lumbar radiculopathy and electrodiagnostic protocols, review needle EMG selection for lumbar radiculopathy, various types of polyneuropathy, clinical signs and symptoms associated with DM induced polyneuropathy, review of all upper lumbar pure sensory nerves and their receptive fields, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Motor and Sensory Nerve Conduction Studies of the Upper Extremity Practicum Laboratory, Median nerve motor and sensory nerve conduction techniques, ulnar nerve motor and sensory nerve conduction techniques, radial nerve motor and sensory nerve conduction techniques, specialized secondary nerve conduction techniques for carpal tunnel syndrome confirmation, carpal tunnel syndrome protocols, laboratory exercises, medial/lateral antebrachial cutaneous nerve studies, dorsal ulnar cutaneous nerve

studies, artifacts and common technical difficulties, F-waves, clinical significance of H-reflexes, case studies, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Neuropathy and Radiculopathy of the Upper Extremity, Comprehensive review of neuromusculoskeletal upper extremity anatomy, common entrapment sites of the median/ulnar/radial nerve, clinical presentation of median/ulnar/radial mononeuropathy, review of common anomalies including Martin-Gruber anastomoses, motor and sensory nerve conduction studies of the ulnar and median and radial nerves, brachial plexus lesions, NCS interpretation guides EMG examination, SNAPs and pre-ganglionic lesions in radiculopathy, EMG for upper extremity neuropathies and radiculopathies, EMG for chronicity of injury, bi-phasic and tri-phasic and poly-phasic morphology, EMG signs of denervation and reinnervation, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Introduction to Principles and Practices of Electrodiagnosis, Detailed explanation of electrodiagnosis, clinical utility of electrodiagnostic studies, types of neuropathies, classifications of peripheral nerve injury, an overview of electrodiagnostic instrumentation, clinical utility of nerve conduction studies, most common peripheral neuropathies and clinical presentation, interpretation of nerve conduction data including amplitude and latency, overview of needle EMG principles and clinical utility in diagnosis, proper selection of needle electrodes, sequence and explanation of EMG exam, physiology of insertional activity, spontaneous activity, recruitment, MUAP (motor unit action potentials), overview of evoked potentials, types of evoked potentials: SSEP, VEP, BAEP, clinical utility and implication of evoked potentials, overview of macro/micro anatomy of the peripheral nervous system, principles of electrodiagnostic interpretation, Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, Port Orange, Florida, 2019.

Full-Spine Analysis and Adjustive Technique, Neurology, palpation and adjustive correction of biomechanical imbalances in spinal motion segments, including the sacrum, occiput, atlas, cervicothoracic junction, thoracolumbar junction, and sacroiliac joints. Motion Palpation Institute, National University of Health Sciences, Portland, Oregon, 2018.

Introduction to Functional Neurology and Overview of Central and Peripheral Nervous System Anatomy, Comprehensive and in-depth review of the anatomy of the human central and peripheral nervous systems, the chiropractic neurology specialty and fundamental concepts of modern evidence-based functional neurorehabilitation. Anatomy and function of the brain and brainstem, meninges, gyri, lobes, forebrain, midbrain, hindbrain, vascular supply and pathological syndromes; spinal cord anatomy and function including vascular supply, ascending and descending tracks, pathological syndromes; anatomy and function of the peripheral nervous system including plexi and nerves of the upper and lower extremities. Clinical Neurosciences Institute, Palmer College of Chiropractic – Florida, 2018.

Connective Tissue Spinal Disc Permanent Pathology, Primary Spine Care, Herniated, bulged, protruded and extruded discs, etiology and morphology. Age-dating disc pathology inclusive of Modic changes, piezoelectric effect, Wolff's Law and radicular clinical presentation, Academy of Chiropractic Post-Doctoral Division, Texas Chiropractic College, 2017

Connective Tissue Pathology and Research, Primary Spine Care, *Utilization in spinal models considering the opioid abuse and various spinal models in contemporary health care. Care paths for mechanical spine pain and the evidence for conservative chiropractic care*, Academy of Chiropractic Post-Doctoral Division, Texas Chiropractic College, 2017

Bio-Neuro-Mechanical Lesions and Spine Care, Primary Spine Care, *Mechanoreceptor, proprioceptor, nociceptor innervation and control of the spinal system with central nervous system action and interaction. The integration of the pain processing network and the HPA Axis (hypothalamus, adrenal and pituitary) with the chiropractic spinal adjustment*, Academy of Chiropractic Post-Doctoral Division, Texas Chiropractic College, 2017

Ethics, Documentation and Research, Primary Spine Care, *Maintaining ethical Interprofessional relationships based upon an evidenced based practice inclusive of triage, diagnostics and reporting. Creating thorough documentation that reflects your complete findings encompassing descriptive ICD-10 codes and concludes the presence or absence of pathology*. Academy of Chiropractic Post-Doctoral Division, Texas Chiropractic College, 2017

Kinesiology Taping Redefined: Fascial Movement Taping Level 1, *The history of therapeutic taping, published literature on the mechanism and efficacy of taping with elastic tapes, the skin-brain connection including sensory receptors and fascial layer decompression via taping, methods and applications for taping spinal and extremity regions for pain, posture, fluid dynamics, and nerve entrapment*. Tony Mikla, DPT, MSPT, CSCS, National University of Health Sciences, Lincoln College of Post-professional, Graduate and Continued Education, Portland, OR 2017.

WATAI 2017 Spring Conference, *Testifying in court as an expert or fact witness, expert witness standards including Frye and Daubert, use of visual aids, accident reconstruction case studies including scene analysis, data collection, Google Earth photos and measurements, tire marks, principal direction of force, crush analysis, witness statements, and human factors*. Washington Association of Traffic Accident Investigators, Burien, WA 2017.

Forensic Biomechanics, *The biomechanical properties of human tissue under external loading, viscoelasticity, creep, hysteresis, permanent set, forensic analysis of vehicle kinetics and occupant kinematics, mechanisms of intervertebral disc and facet and ligament/muscle injury, instantaneous axis of rotation alteration during whiplash, ligamentous subfailure/sprain, central sensitization and pain referral patterns, lack of correlation between property damage and injury risk, individual occupant risk factors for acute and late whiplash injury*. Frank McDiarmid, DC, FRCCSS (C), Seattle, WA 2016.

WATAI 2016 Spring Conference, *Using limited vehicle data to estimate time/distance/speed relationships for accelerating cars and motorcycles, friction properties and relationship to braking, critical speed yaw analysis in the context of acceleration and braking, commercial motor vehicle brakes and braking characteristics, determining vehicle speeds in sideswipes, event data recorder analysis including electronic stability control and ABS braking during maneuvers, evaluating the sensitivity and range of*

numerical results with finite differences and Monte Carlo analysis. Wade Bartlett, PE, Washington Association of Traffic Accident Investigators, Burien, WA 2016.

Practical Applications for Orthopedic Conditions, Diagnosis and management of a variety of orthopedic conditions including upper cervical syndrome, vertigo, traumatic brain injuries, sacroiliac joint sprain, rheumatoid arthritis, DISH, stenosis, degeneration of spine, lumbar disc bulge vs herniation vs annular tear, sacroiliac vs lumbar conditions, documentation, and the neurology of cranial nerves and the spine. Daniel P. Dock, DC, DABCO, DACAN, FACO, Portland, Oregon, 2016.

DynaROM Evaluation and Hands-On Training, Neurological foundation for needle and surface electromyography testing, use of static and dynamic surface electromyography testing and resulting objective documentation of function, muscular imbalance, muscle guarding, muscle irritability, and pain, static and dynamic surface electromyography coupled with range of motion testing procedures, documentation, and interpretation of normal, acute, and chronic studies. Precision Biometrics, Inc/Myovision, Seattle, Washington, 2015.

2015 Washington Association of Technical Accident Investigators Spring Conference, Flashing yellow left turn arrows and their mechanism of function, phasing diagram case studies and practice, red light cameras and the yellow light formula, advances in signal detection for both bicyclist and pedestrians, bicycle MUTCD control devices, traffic circle (roundabout) concerns, traffic calming devices, "streetscapes", intersections and proper sight distances. Daren Marceau, Professional Engineer, Washington Association of Technical Accident Investigators Spring Conference, Burien, Washington, 2015.

Biomechanics of Musculoskeletal Injury, Biochemical, mechanical, and physical functions of the human body as viewed through a systematic approach to the analysis of human movement based on the mechanical laws of motion, biomechanical analysis of bone, joint cartilage, and collagenous tissues, as well as the forces and moments acting across the joints of the human body. University of California Los Angeles Extension, Los Angeles, California, 2015.

Nimmo Receptor-Tonus Technique, The neurophysiological basis for myofascial pain syndromes and their causation including myofascial trigger points, pathophysiological spasm-reflex arcs, neural facilitation and plasticity, and the application of manual pressure techniques in the correction of joint dysfunction through the removal of muscular interference secondary to abnormal myofascial facilitation. Sheila K. Laws, DC, Tukwila, Washington, 2015.

MRI Protocols Clinical Necessity, MRI slices, views, T1, T2, STIR axial, stacking, FFE, FSE and sagittal images. Clinical indication for the utilization of MRI and pathologies of disc in both trauma and non-trauma sequelae, including bulge, herniation, protrusion, extrusion and sequestration. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2015.

MRI Interpretation of Lumbar Degeneration/Bulges, *MRI slices, views, T1, T2, STIR axial, stacking, FFE, FSE and sagittal images in the interpretation of lumbar degeneration. With the co-morbidities and complications of stenosis, pseudo-protrusions, cantilevered vertebrate, Schmorl's nodes and herniations. Central canal and cauda equina compromise interpretation with management.* ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2015.

MRI Interpretation of Lumbar Herniations, *MRI slices, views, T1, T2, STIR axial, stacking, FFE, FSE and sagittal images in the interpretation of lumbar herniations. With the co-morbidities and complications of stenosis, pseudo-protrusions, cantilevered vertebrate, Schmorl's nodes and herniations. Morphology of lumbar disc pathologies of central and lateral herniations, protrusions, extrusions, sequestration, focal and broad based herniations are defined and illustrated. Central canal and cauda equina compromise interpretation with management.* ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2015.

MRI Interpretation of Cervical Degeneration/Bulges, *MRI slices, views, T1, T2, STIR axial, stacking, FFE, FSE and sagittal images in the interpretation of cervical degeneration. With the co-morbidities and complications of stenosis, pseudo-protrusions, cantilevered vertebrate, Schmorl's nodes and herniations. Spinal cord and canal compromise interpretation with management.* ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2015.

MRI Interpretation of Cervical Herniations, *MRI slices, views, T1, T2, STIR Axial, FFE, FSE and sagittal images in the interpretation of cervical herniations. With the comorbidities and complications of stenosis, pseudo-protrusions, cantilevered vertebrate, Schmorl's nodes and herniations. Morphology of cervical disc pathologies of central and lateral herniations, protrusions, extrusions, sequestration, focal and broad-based herniations are defined and illustrated. Spinal cord and canal compromise interpretation with management.* ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2015.

MRI Interpretation of Degenerative Spine and Disc Disease with Overlapping Traumatic Insult to Both Spine and Disc, *MRI slices, views, T1, T2, STIR Axial, FFE, FSE and sagittal images in the interpretation of degenerative spondylolisthesis, spinal canal stenosis, Modic type 3 changes, central herniations, extrusions, compressions, nerve root compressions, advanced spurring and thecal sac involvement from an orthopedic, emergency room, chiropractic, neurological, neurosurgical, physical medicine perspective.* ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2015.

19th Annual Spine Research Institute of San Diego Scientific Conference, *Presentation of the most recent research on injury biomechanics, treatment, prognosis, and epidemiology regarding whiplash and injury; 2013 Stapp car crash conference proceedings, 2014 IRCOBI conference proceedings, 2014 proceedings of the 58th AAAM Conference*. Southern California University of Health Sciences, Los Angeles College of Chiropractic, Seattle, Washington, 2014.

Whiplash Injury, Biomechanics, and Traumatology: Medicolegal Fundamentals for Practitioners and Experts, *Medical photography, record keeping, providing testimony, rules of evidence, use of learned treatises*. Southern California University of Health Sciences, Los Angeles College of Chiropractic, Seattle, Washington, 2014.

Whiplash Injury, Biomechanics, and Traumatology: Principles of Impairment: Writing & Expert Documentation, *Intake forms, SOAP notes, re-examinations, effective writing, narrative reports, AMA guides and personal injury claims, 5th edition, DRE method, range of motion method, 6th edition, diagnosis-based impairments, pain-related impairments, class assignment, alteration of motion segment integrity (AOMSI), disability questionnaires, rebuttals, affidavits and declarations*. Southern California University of Health Sciences, Los Angeles College of Chiropractic, Seattle, Washington, 2014.

Whiplash Injury, Biomechanics, and Traumatology: Management Principles: Diagnostics, Forensic Documentation & Auto Crash Reconstruction, *Accident reconstruction, causation, vehicle dynamics, computer based solutions to low speed rear-end collisions, conservation of momentum and coefficient of restitution, occupant kinematics, history taking, physical examination, radiographic examination, CT scans, MRI scans, special diagnostic imaging, electro diagnostics, soft tissue healing, report of findings, treatment plans, activities of daily living, chiropractic manipulative therapy and deep tissue massage, physical therapy modalities, temporomandibular disorder and trauma, and maximum medical improvement*. Southern California University of Health Sciences, Los Angeles College of Chiropractic, Seattle, Washington, 2014.

Whiplash Injury, Biomechanics, and Traumatology: Biomechanics, Injury Mechanisms, Epidemiology, *Biomechanics, force vectors, moment, torque, equilibrium, stress, strain, viscoelasticity, linear kinematics, impulse, momentum, biomechanical properties of human tissue, CAD grading system, epidemiology, risk of injury, incidence, prevalence, rear/frontal/side crash vectors, vehicular factors, human factors, whiplash kinematics, LOSRIC, HISRIC, soft tissue injuries, common syndromes (CADS, TOS, TMD, TBI, mTBI, PCS, MPD, FS), neurogenic/scleratomal/discogenic/referred/chronic pain, risk factor analysis, recovery times, effects of litigation, and consequences of trauma*. Southern California University of Health Sciences, Los Angeles College of Chiropractic, Seattle, Washington, 2014.

Clinical and Practical Documentation of Chiropractic, *Problem oriented medical records, medical necessity, outcome assessments, subjective vs objective diagnostics, outcome questionnaires, range of motion assessment, ICD9 and CPT codes, causation, risk factors for occupant injury in motor vehicle collisions, impairment ratings, and dynamic surface electromyography*. Gregg Friedman, DC, CCSP, FIACA, Portland, Oregon, 2014.

Traffic Crash Reconstruction 1, *Basic equations of motion, newton's laws of motion, weight shift in slowing, resultant drag factor, heavy truck crash reconstruction, braking capabilities, speed estimates, roll-overs, speed from gear ratios, conservation of momentum, collinear collisions, oblique collisions, vector diagrams, energy, kinetic energy, speed estimates from damage, vehicle collapse and direction of thrust, angle of collision and maximum engagement, marks on the road, driver strategy and tactics, the computer in reconstruction, testimony, report writing, exhibits, and case studies (opposite-direction collision, same-direction collision, single-vehicle collision, angle collision, pedestrian collision, car-train collision, truck collision)*. Northwestern University, Center For Public Safety, Henderson, Nevada, 2014.

Crash Investigation 2, *Vehicle damage analysis - description, reporting and determination of direction of forces, vehicle behavior in crashes, results of the crash on the road - identifying and interpreting tire marks and road scars, lamp filament analysis - determining whether headlamps, tail lights and turn signals were on or off at moment of impact, tire damage analysis - role of tire failure, measurement methods - perspective grid, photogrammetry, measurement techniques, diagram drawing and systematic methods for organizing and illustrating data, interpretation of data - use of all information obtained through investigation, specialized data gathering - measuring devices and other testing, laser-based measurement and use of mapping software*. Northwestern University, Center For Public Safety, Evanston, Illinois, 2014.

Crash Investigation 1, *Preparation for traffic crash investigation, use of electronic devices to collect and record at-scene data, information from and about people, information from vehicles, information from roads, measuring and mapping the crash scene, photographing the crash scene and damaged vehicles, creating sketches and after-crash diagrams, and how collected data is used to reconstruct crashes*. Northwestern University, Center For Public Safety, Evanston, Illinois, 2014.

Spinal Biomechanical Engineering: Cartesian System, *The Cartesian Coordinate System from the history to the application in the human body. Explanation of the x, y and z axes in both translation and rotations (thetas) and how they are applicable to human biomechanics*. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Spinal Biomechanical Engineering: Cervical Pathobiomechanics, *Spinal biomechanical engineering of the cervical and upper thoracic spine. This includes the normal and pathobiomechanical movement of both the anterior and posterior motor units and normal function and relationship of the intrinsic musculature to those motor units. Nomenclature in reporting normal and pathobiomechanical findings of the spine*. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Spinal Biomechanical Engineering: Lumbar Pathobiomechanics, *Spinal biomechanical engineering of the lumbar spine. This includes the normal and pathobiomechanical movement of both the anterior and posterior motor units and normal function and relationship of the intrinsic musculature to those motor units. Nomenclature in reporting normal and pathobiomechanical findings of the spine*. ACCME Joint

Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Spinal Biomechanics in Trauma, To utilize whiplash associated disorders in various vectors of impact and whiplash mechanisms in determining pathobiomechanics. To clinically correlate annular tears, disc herniations, fractures, ligament pathology and spinal segmental instability as sequelae to pathobiomechanics from trauma. The utilization of digital motion x-ray in diagnosing normal versus abnormal facet motion along with case studies to understand the clinical application. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Spinal Biomechanical Engineering & Organizational Analysis, Integrating spinal biomechanics and pathobiomechanics through digitized analysis. The comparison of organized versus disorganized compensation with regional and global compensation. Correlation of the vestibular, ocular and proprioceptive neurological integration in the righting reflex as evidenced in imaging. Digital and numerical algorithm in analyzing a spine. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Spinal Biomechanical Engineering: Cervical Digital Analysis, Digitizing and analyzing the cervical spine in neutral, flexion and extension views to diagnose pathobiomechanics. This includes alteration of motion segment integrity (AOMSI) in both angular and translational movement. Ligament instability/failure/pathology are identified all using numerical values and models. Review of case studies to analyze pathobiomechanics using a computerized/numerical algorithm. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Spinal Biomechanical Engineering: Lumbar Digital Analysis, Digitizing and analyzing the lumbar spine images to diagnose pathobiomechanics. This includes anterior and posterior vertebral body elements in rotational analysis with neutral, left and right lateral bending in conjunction with gait analysis. Ligament instability/failure/pathology is identified all using numerical values and models. Review of case studies for analysis of pathobiomechanics using a computerized/numerical algorithm along with corrective guidelines. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Spinal Biomechanical Engineering: Full Spine Digital Analysis, Digitizing and analyzing the full spine images to diagnose pathobiomechanics as sequelae to trauma in relation to ligamentous failure and disc and vertebral pathology as sequelae. This includes anterior and posterior vertebral body elements in rotational analysis with neutral, left and right lateral bending in conjunction with gait analysis.

Ligament instability/failure/pathology is identified all using numerical values and models. Review of case studies for analysis of pathobiomechanics using a computerized/numerical algorithm along with corrective guidelines. ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Buffalo, New York, 2014.

Orthopedics for Primary Care: The Shoulder, Comprehensive framework for assessing common shoulder injuries and complaints in the clinical setting. Clinical presentations of injury and disease, update on best therapies and treatment, anatomy, history-taking, systematic and comprehensive physical examination, ultrasound evaluation, rehabilitation and injections, differentiating labral tears, impingement, rotator cuff, and bursal conditions. Oregon Health & Science University, Portland, Oregon, 2013.

Validating Chiropractic - 2013, Comprehensive review of recent research and its application in the fields of neuromotor control and spinal manipulation, natural history of spinal pain, clinical prediction rules, micro-ruptures of collagen fibers, functional assessment and dynamic stability training, spinal manipulation and its effects of brain organization and pain modulation, spinal surgery efficacy and complications, spinal manipulation indications prior to spinal surgery, ligamento-muscular reflexes and effects of tissue creep on dynamic stabilization, Life Chiropractic College West, Seattle, Washington, 2013.

Documentation and Compliance, Record-keeping best practices, coding of procedures, proper documentation of clinical necessity, communication with third-party payers, fraud and abuse avoidance, compliance program and self-audits, compliant financial policies. Kathy Mills Chang, MCS-P, Portland, Oregon, 2013.

Traumatic Lumbar Syndrome, The etiology, clinical examination, diagnosis and management of traumatic lumbar spine injuries, clinical indications for imaging/specialist referrals, objective signs of physiologic pain, patient education regarding the natural history of low back injuries, load-bearing functional imaging, post-surgical complications, clinical and prognostic implications of pre-existing degeneration, differential diagnosis of lumbar annular tear with leaking disc. Daniel P. Dock, DC, DABCO, DACAN, FACO, Portland, Oregon, 2013.

Comprehensive MRI Imaging Of The Spine, Review of basic physics and the history of the discovery of MRI, review of normal MRI spinal anatomy, disc lesions including differentiating between bulges, herniations, protrusions, extrusions, sequestrations, and annular tears, spondylolysis and spondylolisthesis including natural history, return to sports, and management of active and pending spondylolysis, degenerative changes including degenerative stenosis, trauma, neoplasm, contrast use decision making, review of challenging unknown case studies, University of Western States, Portland, Oregon, 2012.

Diagnosing and Managing Mild Traumatic Brain Injury Cases, Clinical signs and presenting symptoms of concussion and mild traumatic brain injury, diagnosis, triage and referral decision making, imaging protocols and imaging decision making including MRI diffusion tensor imaging w/ tractography,

neuropsychological testing in MTBI cases, treatment options, and community resources for MTBI patients. Aaron DeShaw, DC, JD & The Brain Injury Association of Oregon, Portland, Oregon, 2012.

Diagnosing & Imaging C1 Instability After Trauma, Clinical symptomatology of C1 instability, diagnosis, imaging protocols and imaging decision making, including plain film radiography and craniocervical MRI techniques by Volle and Krakenes, conservative and surgical interventions, and natural history of this condition. Aaron DeShaw, DC, JD, Portland, Oregon, 2012.

Worker's Compensation and Going To Court, The administrative rules of Oregon Worker's Compensation system and their application to clinical practice. Clinical examination, diagnostic imaging, and management of the trauma victim, including outcomes assessments, malingering assessments, and functional radiographic ligamentous examinations. Techniques to simplify medical explanations to a jury and appropriate handling of direct and cross examinations. Vern Saboe, DC, DACAN, FICC, DABFP, FACO, Portland, Oregon, 2012.

MRI Clinical Application, The clinical application of the results of space occupying lesions. Disc and tumor pathologies and the clinical indications of manual and adjustive therapies in the patient with spinal nerve root and spinal cord insult as sequelae. New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, AACME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences and CMCS Post Doctoral Division, Buffalo, New York, 2012.

MRI Methodology of Analysis, MRI interpretation sequencing of the cervical, thoracic and lumbar spine inclusive of T1, T2, STIR and 3D gradient studies to ensure the accurate diagnosis of the region visualized. New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, AACME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences and CMCS Post Doctoral Division, Buffalo, New York, 2012.

MRI Spinal Pathology, MRI interpretation of bone, intradural, extradural, cord and neural sleeve lesions. Tuberculosis, drop lesions, metastasis, ependymoma, schwannoma and numerous other spinal related tumors and lesions. New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, AACME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences and CMCS Post Doctoral Division, Buffalo, New York, 2012.

MRI Disc Pathology and Spinal Stenosis, MRI interpretation of bulged, herniated, protruded, extruded, sequestered and fragmented disc pathologies in etiology and neurological sequelae in relationship to the spinal cord and spinal nerve roots. New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, AACME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences and CMCS Post Doctoral Division, Buffalo, New York, 2012.

MRI Spinal Anatomy and Protocols, Normal anatomy of axial and sagittal views utilizing T1, T2, 3D gradient and STIR sequences of imaging. Standardized and desired protocols in views and sequencing of

MRI examination to create an accurate diagnosis in MRI. New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, AACME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences and CMCS Post Doctoral Division, Buffalo, New York, 2012.

MRI History and Physics, Magnetic fields, T1 and T2 relaxations, nuclear spins, phase encoding, spin echo, T1 and T2 contrast, magnetic properties of metals and the historical perspective of the creation of NMR and MRI. New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, AACME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences and CMCS Post Doctoral Division, Buffalo, New York, 2012.

Accident Reconstruction: Research, Causality and Bodily Injury, Delta V issues correlated to injury and mortality, side impact crashes and severity of injuries, event data recorder reports correlated to injury, frontal impact kinematics, crash injury metrics with many variables and inquiries related to head restraints. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Accident Reconstruction: Skid Marks, Time, Distance, Velocity, Speed Formulas and Road Surfaces, The mathematical calculations necessary utilizing time, distance, speed, coefficients of friction and acceleration in reconstructing an accident. The application of the critical documentation acquired from an accident site. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Accident Reconstruction: Causality, Bodily Injury, Negative Acceleration Forces, Crumple Zones and Critical Documentation, Factors that cause negative acceleration to zero and the subsequent forces created for the vehicle that get translated to the occupant. Understanding critical documentation of hospitals, ambulance reports, doctors and the legal profession in reconstructing an accident. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Accident Reconstruction: Terms, Concepts and Definitions, The forces in physics that prevail in accidents to cause bodily injury. Quantifying the force coefficients of vehicle mass and force vectors that can be translated to the occupant and subsequently cause serious injury. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Patient Intake, History and Physical Examination, Determining the etiology of the patient's complaints in a traumatic or non-traumatic scenario. Analyzing the patient's past history and review of systems along with the performance of a complete orthopedic, neurological and clinical examination to correlate both past, current and causality issues to formulate an accurate diagnosis, prognosis and treatment plan. There is an emphasis on triaging both the trauma and non-trauma patient. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Documenting Clinically Correlated Bodily Injury to Causality, Understanding the necessity for accurate documentation, diagnosis and clinical correlation to the injury when reporting injuries in the medical-legal community. Documenting the kinesiopathology, myopathology, neuropathology, and

pathophysiology in both a functional and structural paradigm. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Documentation and Reporting for the Trauma Victim, Understanding the necessity for accurate documentation and diagnosis utilizing the ICD-9 and the CPT to accurately describe the injury through diagnosis. Understanding and utilizing state regulations on reimbursement issues pertaining to healthcare. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Neurodiagnostic Testing Protocols, Physiology and Indications for the Trauma Patient, Electromyography (EMG), Nerve Conduction Velocity (NCV), Somato-Sensory Evoked Potential (SSEP), Visual Evoked Potential (VEP), Brain Stem Auditory Evoked Potential (BAER) and Visual-Electronystagmography (V-ENG) interpretation, protocols and clinical indications for the trauma patient. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

MRI, Bone Scan and X-Ray Protocols, Physiology and Indications for the Trauma Patient, MRI interpretation, physiology, history and clinical indications, bone scan interpretation, physiology and clinical indications, x-ray clinical indications for the trauma patient. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Crash Dynamics and Its Relationship to Causality, An extensive understanding of the physics involved in the transference of energy from the bullet car to the target car. This includes G's of force, newtons, gravity, energy, skid marks, crumple zones, spring factors, event data recorder and the graphing of the movement of the vehicle before, during and after the crash. Determining the clinical correlation of forces and bodily injury. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Diagnostics, Risk Factors, Clinical Presentation and Triaging the Trauma Patient, An extensive understanding of the injured with clinically coordinating the history, physical findings and when to integrate neurodiagnostics. An understanding on how to utilize emergency room records in creating an accurate diagnosis and the significance of "risk factors" in spinal injury. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Neurodiagnostics, Imaging Protocols and Pathology of the Trauma Patient, An in-depth understanding of the protocols in triaging and reporting the clinical findings of the trauma patient. Maintaining ethical relationships with the medical-legal community. CMCS Post Doctoral Division, Federation of Chiropractic Licensing Boards, Long Island, New York, 2012.

Triaging the Trauma and Non-Trauma Patients, Correlating clinical findings and the patient history in determining the correct course of care in triaging the patient utilizing orthopedic and neurological evaluations in the clinical setting. Understanding the parameters for immediate referrals vs. following the continuum of care to determine the necessity for referrals. Federation of Chiropractic Licensure Boards, Academy of Chiropractic Post Doctoral Division, Long Island, New York, 2012.

Credentials and Clinically Correlating Causality, *The significance documentation and credentials in the personal injury field with a focus on clinically correlating causality, bodily injury and persistent functional loss as sequelae.* Academy of Chiropractic Post Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Long Island, New York, 2012.

Auto Collision Differential Assessment, *Trauma as it relates to the car accident victim including post concussion syndrome, mild traumatic brain injury and brainstem related injury, post-traumatic stress disorder, cranial nerve trauma, temporomandibular joint pathology, and post-traumatic fibromyalgia. Focus on neurology and neural interconnections as they relate to identification and differential diagnosis of specific lesions.* Daniel P. Dock, DC, DABCO, DACAN, FACO, Portland, Oregon, 2012.

Whiplash Injuries, *Whiplash history, objective exam findings, causation, clinical correlation, and care plans. Correlation of causality to bodily injury and its implications for appropriate diagnosis and treatment. Research presentations demonstrating evidence-based reasoning for care.* Daniel P. Dock, DC, DABCO, DACAN, FACO, Portland, Oregon, 2012.

Pain Management, *Assessment, diagnosis, management with pharmaceutical and non-pharmaceutical interventions, including manual medicine, common prescription and over-the-counter medications, and the psychosocial ramifications of pain. The importance of interdisciplinary approaches to pain, referral indications, and the psychosocial implications of chronic pain.* University of Western States, Portland, Oregon, 2011.

Integrative Management of Common Clinical Disorders, *Evidence-based primary care, comprehensive patient management, and wellness promotion in a clinical setting, including common conditions seen in a clinical practice such as hypertension, diabetes, allergies/asthma, immune dysfunction, and headaches.* University of Western States, Portland, Oregon, 2011.

Over the Counter (OTC) Drugs, *Fundamental principles of pharmacology and toxicology of common over-the-counter non-prescription drugs for pain relief, respiratory and gastrointestinal conditions, infection, and skin and eye disorders, with a focus on non-steroidal anti-inflammatory drugs and overdose/poisoning.* University of Western States, Portland, Oregon, 2010.

Evidence Based Outcomes Assessment, *The value of outcome assessments in clinical practice, discussions of popular outcome tools such as Owsestry, neck disability index, patient specific functional score, and endurance testing, and the correct application of evidence-based assessment tools in clinical practice.* University of Western States, Portland, Oregon, 2010.

Functional Assessment & Treatment of the Upper Quarter, *Neurobiomechanical assessment and management of upper extremity and related cervical and thoracic dysfunctions using static and motion palpation, seated, standing, prone, supine, and drop piece assisted manipulation, and passive and active rehabilitative therapies.* National University of Health Sciences, Portland, Oregon, 2009.

Lower Quarter Functional Assessment & Treatment, *Neurobiomechanical assessment and management of lower extremity and related lumbar, sacral, and pelvic dysfunctions using static and motion palpation, seated, standing, prone, supine, and drop piece assisted manipulation, and passive and active rehabilitative therapies*. National University of Health Sciences, Portland, Oregon, 2009.

Nutrigenomic Therapies for Autoimmune Disease, *The genetic, environmental, and nutritional components of autoimmune disease. Clinical and laboratory presentations, differential diagnoses, and management using diet, lifestyle, and supplement therapies*. University of Bridgeport, Portland, Oregon, 2009.

Foundational Laboratory Analysis, *Clinical and laboratory diagnosis and treatment of nutritional deficiencies and functional imbalances and their effects on chronic conditions and disease prevention. Complete metabolic panel, complete blood count with differential, thyroid panel, ferritin, liver enzymes, etc.* Texas Chiropractic College, Portland, Oregon, 2009.

Functional Assessment & Treatment: Upper Quadrant, *Neurobiomechanical assessment and management of shoulder and related spinal dysfunctions using static and motion palpation, seated, standing, prone, supine, and drop piece assisted manipulation, and passive and active rehabilitative therapies*. National University of Health Sciences, Portland, Oregon, 2008.

Functional Assessment & Treatment - Low Back & Lower Extremity, *Neurobiomechanical assessment and management of lower extremity and related low back dysfunctions using static and motion palpation, seated, standing, prone, supine, and drop piece assisted manipulation, and passive and active rehabilitative therapies*. National University of Health Sciences, Portland, Oregon, 2008.

Neurotransmitters & Brain, *The physiology, neuroscience, neurodegeneration, and nutritional components of clinical and sub-clinical neurotransmitter imbalances including serotonin, GABA, acetylcholine, dopamine, their respective internal hormone feedback loops, and their conservative management*. University of Bridgeport, Portland, Oregon, 2008.

Environmental Toxins Are On The Attack, *The sources of toxins, including environmental, food, and pharmaceutical contributions. The clinical and laboratory diagnosis of functional toxicity, its sequelae in short- and long-term conditions, and its management utilizing conservative clinical detoxification protocols*. University of Bridgeport, Portland, Oregon, 2008.

Unlocking The Secrets of Gluten Sensitivity, *Clinical signs and symptoms of gluten sensitivity/celiac disease, proper differential diagnosis using history, physical exam, and laboratory testing, including blood, stool, and saliva, and conservative management including diet, lifestyle, supplements, and indicated referrals*. University of Bridgeport, Seattle, Washington, 2008.

Graston Technique: Module 1, *Physiology, technique, and practical instruction in instrument-assisted soft tissue therapy utilizing Graston tools. Case management and technique integration into existing treatment modalities*. University of Western States, Portland, Oregon, 2008.

Functional Assessment And Treatment Of The Spine, *Neurobiomechanical assessment and management of all spinal region dysfunctions using static and motion palpation, seated, standing, prone, supine, and drop piece assisted manipulation, and passive and active rehabilitative therapies*. National University of Health Sciences, Portland, Oregon, 2008.

Functional Blood Chemistry Analysis, *Comprehensive overview of laboratory blood panels for the diagnosis and conservative management of common clinical conditions, including traditional and functional interpretations of specific markers and marker patterns for dysglycemia, adrenal, thyroid, cardio, blood count, digestive, liver and gallbladder dysfunctions*. University of Bridgeport, Portland, Oregon, 2007.

SELECTED TEACHING/LECTURING/INSTRUCTING

Lecturer, Allergies and Asthma: Nutritional and Non-Drug Solutions, Portland Public Library/New Seasons Markets, Portland, Oregon, 2010 – 2011

SELECTED PUBLICATIONS

McClaren, J. W. (2012) Imaging and its relationship to outcomes assessment in the case of diffuse axonal injury – A review. *American Academy of Medical Legal Professionals*, Retrieved from <http://www.aamlp.org>

McClaren, J. W. (2012). The Clinical Efficacy of Radiofrequency Denervation For Chronic Pain. *American Academy of Medical Legal Professionals*, Retrieved from <http://www.aamlp.org>

SELECTED MEMBERSHIPS

Washington Association of Technical Accident Investigators, Member, 2014-Present

American Chiropractic Association, Member, 2010 - Present

Oregon Chiropractic Association, Member, 2010 - Present

SELECTED COMMITTEE POSITIONS

Regence/Cambria Credentialing Committee, Panel Member, Portland, Oregon, 2020 – Present

Regence/Cambria Level One Appeal Committee, Panel Member, Portland, Oregon, 2020 – Present

SELECTED COMMUNITY SERVICE

Habitat for Humanity, Volunteer Builder, Portland, Oregon, 2012 - Present