

# **Shane A. Boroditsky, D.C., FICPA**

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## **SELECTED OCCUPATIONAL HISTORY**

Doctor of Chiropractic and Clinic Director, Minnesota Chiropractic and Rehabilitation, Plymouth, MN 2009 – present.

Doctor of Chiropractic and Clinic Director, Shane A. Boroditsky, P.A., Maple Grove, MN 2005 – 2009.

Associate Doctor of Chiropractic, Maple Grove, MN 2000 – 2005.

## **LICENSURE AND EDUCATION**

Doctor of Chiropractic, Licensed State of Minnesota, License # 3976, 2000 to present.

Acupuncturist, Licensed State of Minnesota, License # 550, 2000 to present.

Independent Chiropractic Examiner, Licensed State of Minnesota, License # 863, 2010 to present.

Board Certification, Minnesota Board of Chiropractic Examiners, Minneapolis, MN 2000.

Board Certification Part I, II, PT, III, IV, National Board of Chiropractic Examiners, Greeley, CO 2000.

Doctorate of Chiropractic, Summa Cum Laude, National University of Health Sciences, Lombard, IL 2000.

Internship, National University of Health Sciences Outpatient Facility, Lombard, IL, 1999-2000.

Meridian Therapy – Acupuncture Certification, National University of Health Sciences, Lombard, IL 2000.

Fellowship, International Chiropractic Pediatric Association / Cleveland Chiropractic College, Chicago, IL 1999.

Bachelor of Science, National University of Health Sciences, Lombard, IL 1999.

Bachelor of Arts, University of Winnipeg, Winnipeg, Canada 1994.

## **SELECTED TEACHING/INSTRUCTING/LECTURING/CONSULTING**

*Personal Injury Boot Camp: Traumatologically Injured Clients: Intervertebral Disc Injuries, Module II, Minneapolis, MN 2017.*

*Personal Injury Boot Camp: Traumatologically Injured Clients: Sprain/Strain Injuries, Module I, Minneapolis, MN 2017.*

*Traumatologically Injured Clients: The Medical and Legal Impact – Minor Impact Soft Tissue Injuries (MIST), Minneapolis, MN 2016.*

*Traumatologically Injured Clients: The Medical and Legal Impact – Personal Injury Bootcamp Complete Seminar Series, Minneapolis, MN 2016.*

*Personal Injury Boot Camp: Traumatologically Injured Clients: Facet Injuries, Fractures, Cervico-Brachial Syndrome, Thoracic Outlet Syndrome & Extremity Injuries, Module IV, Minneapolis, MN 2016.*

*Personal Injury Boot Camp: Traumatologically Injured Clients: Traumatic Brain Injuries, Module III, Minneapolis, MN 2016.*

*Personal Injury Boot Camp: Traumatologically Injured Clients: Intervertebral Disc Injuries, Module II, Minneapolis, MN 2016.*

*Personal Injury Boot Camp: Traumatologically Injured Clients: Sprain/Strain Injuries, Module I, Minneapolis, MN 2016.*

*Traumatologically Injured Clients: The Medical and Legal Impact: Getting The Best Outcome For Your Clients, Part V: Extremity Injuries, Minneapolis, MN 2015.*

*Traumatologically Injured Clients: The Medical and Legal Impact: Getting The Best Outcome For Your Clients, Part IV: Fractures, Facet Injuries, Thoracic Outlet Syndrome, Cervico-Brachial Syndrome, Minneapolis, MN 2015.*

*Traumatologically Injured Clients: The Medical and Legal Impact: Getting The Best Outcome For Your Clients, Part III: Traumatic Brain Injuries, Minneapolis, MN 2015.*

*Traumatologically Injured Clients: The Medical and Legal Impact: Getting The Best Outcome For Your Clients, Part II: Intervertebral Disc Injuries, Minneapolis, MN 2015.*

*Traumatically Injured Clients: The Medical and Legal Impact: Getting The Best Outcome For Your Clients, Part I: Sprain/Strain Injuries*, Minneapolis, MN 2015.

*Traumatically Injured Clients: The Medical and Legal Impact: Commonly misdiagnosed injuries and how they impact your case*, Minneapolis, MN 2014.

*Commonly Seen Traumatic Injuries*, Ramsey County Bar Association, St. Paul, Minnesota, 2013.

*Personal Injury Bootcamp: Spinal Trauma*, Hennepin County Bar Association, Minneapolis, Minnesota, 2012.

*Traumatically Injured Clients - The Medical and Legal Impact, Part II & III: Sprain/Strain Injuries, Traumatic Brain Injury/Mild Traumatic Brain Injury*, Ramsey County Bar Association, St. Paul, Minnesota, 2012.

*Traumatically Injured Clients - The Medical and Legal Impact, Part I: Intervertebral Disc and Associated Injuries*, Ramsey County Bar Association, St. Paul, Minnesota, 2012.

*Traumatically Injured Clients - The Medical and Legal Impact, Part III: Traumatic Brain Injury/Mild Traumatic Brain Injury, Overlooked Injuries*, Hennepin County Bar Association, Minneapolis, Minnesota, 2011.

*Traumatically Injured Clients - The Medical and Legal Impact, Part II: Sprain/Strain Injuries, Facet Syndromes, Cervico-Brachial Syndromes*, Hennepin County Bar Association, Minneapolis, Minnesota, 2011.

*Traumatically Injured Clients - The Medical and Legal Impact, Part I: Intervertebral Disc and Associated Injuries*, Hennepin County Bar Association, Minneapolis, Minnesota, 2011.

*Traumatically Injured Clients – The Medical and Legal Impact: Preview*, Hennepin County Bar Association, Minneapolis, Minnesota, 2011.

*Traumatically Injured Clients – The Medical and Legal Impact: Preview*, Ramsey County Bar Association, St. Paul, Minnesota, 2011.

Associate Clinical Faculty, Department of Clinical Education, Northwestern Chiropractic College, Northwestern Health Sciences University, Bloomington, MN 2010 – present.

## SELECTED POST-GRADUATE EDUCATION

Mild Traumatic Brain Injury/Traumatic Brain Injury/Concussion, *Differentially diagnosing mild traumatic brain injury vs. traumatic brain injury and the clinical and imaging protocols required to conclude an accurate diagnosis for head trauma.* Texas Chiropractic College, Academy of Chiropractic Post Doctoral Division, Long Island, NY, 2016.

MRI Spine Interpretation and Spinal Biomechanical Engineering-Primary Spine Care, *Correlating spinal biomechanics secondary to trauma and MRI findings inclusive of herniation, bulging, protruded and extruded discs. Correlating co-efficient of forces translated from the bullet vehicle to the target vehicle to the occupant in determining causality of bodily injury,* Academy of Chiropractic, PACE approved for the Federation of Chiropractic Licensing Boards, Texas Chiropractic College, Las Vegas, Nevada, 2015.

Evidenced Based Inter-Professional Collaboration – Primary Spine Care, *Chiropractic as Primary Spine Care based on literature conclusions and the documentation requirements to support those conclusions in an ethical and collaborative environment inclusive of hospitals, emergency rooms, primary care medical doctors and medical specialists.* Academy of Chiropractic, PACE approved for the Federation of Chiropractic Licensing Boards, Texas Chiropractic College, Las Vegas, Nevada, 2015.

Contemporary Literature Review of the Chiropractic Adjusting Mechanisms – Primary Spine Care, *The latest scientific evidence of the effects of the chiropractic spinal adjustment on the central nervous system, both upper and lower motor neurons. A comparative analysis of chiropractic vs. other modalities and therapies,* Academy of Chiropractic, PACE approved for the Federation of Chiropractic Licensing Boards, Texas Chiropractic College, Las Vegas, Nevada, 2015.

Documentation and Evidence in a Medical-Legal Practice (2015), *The role of scientific research conclusions with contemporary documentation to effectively support the necessity for clinically indicated care. The role of timely evaluations and re-evaluations in coordinating care inclusive of history, physical and evaluation report and concludes with the correlation of the SOAP note and HCFA that correlates the conclusion of the of the evaluator findings. Coordinating research and clinical findings with primary care providers and medical specialists in the rehabilitation process inclusive of insurance requirements and contemporary MRI research and nomenclature,* PACE recognized for the Federation of Chiropractic Licensing Boards, Boca Raton, Florida, 2015.

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,* Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Long Island, NY, 2014.

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*, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Long Island, NY, 2014.

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*, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Long Island, NY, 2014.

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 restraint*, Academy of Chiropractic Post Doctoral Division, Recognized by the PACE Program of the Federation of Chiropractic Licensing Boards, Long Island, NY, 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*. Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

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*. Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

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*. Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

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 sequellae 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.* Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

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.* Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

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 (AMOSI) 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.* Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

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 gate 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.* Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

Spinal Biomechanical Engineering: Full Spine Digital Analysis, *Digitalizing and analyzing the full spine images to diagnose pathobiomechanics as sequellae to trauma in relation to ligamentous failure and disc and vertebral pathology as sequellae. This includes anterior and posterior vertebral body elements in rotational analysis with neutral, left and right lateral bending in conjunction with gate 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.* Federation of Chiropractic Licensing Boards, ACCME Joint Sponsorship with the State University of New York at Buffalo, School of Medicine and Biomedical Sciences, Academy of Chiropractic Post-Doctoral Division, Buffalo, NY, 2013.

Head Trauma, Brain Injury and Concussion, *Brain and head physiology, brain mapping and pathology as a sequella to trauma. Traumatic brain injury, mild traumatic brain injury, axonal shearing, diffuse axonal injury and concussion are detailed in etiology and clinically. Clinical presentation, advanced diagnostic imaging and electrodiagnostics are detailed in analysis to create a differential diagnosis. Balance disorders that often occur as a result of trauma are also explored from clinical presentation to advanced imaging and differential diagnosis.* CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Long Island, NY, 2011.

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 a sequella,* Academy of Chiropractic Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Long Island, NY, 2011

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 sequellae.* CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Magdy Shady MD, Neurosurgeon, Long Island, NY, 2011.

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.* CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Robert Peyster MD, Neuroradiologist, Long Island, NY, 2011.

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.* CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Robert Peyster MD, Neuroradiologist, Long Island, NY, 2011.

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*. CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Robert Peyster MD, Neuroradiologist, Long Island, NY, 2011.

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*. CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Robert Peyster MD, Neuroradiologist, Long Island, NY, 2011.

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*. CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Department of Education, Board for Chiropractic, Long Island, NY, 2011.

Patient Intake, History and Physical Examination, *Determining the etiology of the patient's complaints in a traumatic or non-traumatic scenario. Analysing the patient's past history and review of systems along with the performance of a complete orthopaedic, neurological and clinical examination to correlate both past, current and causality issues to formulate an accurate diagnosis, prognosis and treatment plan. Triaging both the trauma and non-trauma patient*, Academy of Chiropractic, Post-Doctoral Division, New York Chiropractic Council, New York State Education Department, Long Island, NY, 2011.

Utilization of Research in the Clinical Setting, *Utilizing peer reviewed scientific literature in creating a diagnosis, prognosis and treatment plan for the chronic and acute patient. How to implement and stay current on techniques and technology in healthcare*, Academy of Chiropractic Post-Doctoral Education Division, New York Chiropractic Council, New York State Education Department, Board for Chiropractic, Long Island, NY, 2011.

The Evolution of Head Injury: *Diagnosis, Treatment and Common Sense Precautions*. Noran Neurological, Minneapolis, MN, 2011.

Practical Orthopedics for Primary Care Conference, *Diagnostic examination and pertinent treatments for common orthopedic conditions. Use of appropriate casting, splinting and bracing techniques of the upper and lower extremities. Imaging of common orthopedic conditions*. Minnesota Medical Association and Twin Cities Orthopedics, Minneapolis, MN, 2011.

Got Concussion on the Brain? *Advanced Imaging for Mild Traumatic Brain Injury, Utilization of advanced imaging for the diagnosis and treatment of traumatic and mild traumatic brain injury. Physical examination, assessment and treatment of mild traumatic brain injury*. Center For Diagnostic Imaging, Minneapolis, MN, 2011.



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 kinesio pathology, myopathology, neuropathology, and pathophysiology in both a functional and structural paradigm.* CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Education Department, Board for Chiropractic, Long Island, NY, 2010.

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, New York Chiropractic Council, New York State Education Department, Board for Chiropractic, Long Island, NY, 2010.

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, New York Chiropractic Council, New York State Education Department Board for Chiropractic, Long Island, NY, 2010.

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, New York Chiropractic Council, New York State Education Department Board for Chiropractic, Long Island, NY, 2010.

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-Electronystagmosgraphy (V-ENG) interpretation, protocols and clinical indications for the trauma patient.* CMCS Post-Doctoral Division, New York Chiropractic Council, New York State Education Department, Board for Chiropractic, Long Island, NY, 2010.

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, New York Chiropractic Council, New York State Education Department Board for Chiropractic, Long Island, NY, 2010.

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, New York Chiropractic Council, New York State Department of Education Board for Chiropractic, Long Island, NY, 2010.

*Differential Diagnosis of Chest Wall Pain Syndromes, Thoracic Outlet Syndrome, Costosternal Syndrome, Costochondritis (Tietze's Syndrome), Sternalis Syndrome and Thoracic Radiculopathy.* Alfonso Morales, MD, DABPM, Spine Imaging MRI, Minneapolis, MN 2010.

*Protocols For Magnetic Resonance Imaging Referral, When and Why to Refer.* Scott Murray DC, DACBR, Spine Imaging MRI, Minneapolis, MN 2010.

*Head Trauma.* Carl Hansen, MD, SUMA MRI, Golden Valley, MN 2009.

*Colossus and Whiplash Injuries.* David Tucker DC, SUMA MRI, Golden Valley, MN 2009.

*Whiplash and Spinal Trauma.* Daniel Murphy, SUMA MRI, Golden Valley, MN 2009.

*Problematic Cervical Spine.* Terry Yocum, SUMA MRI, Golden Valley, MN 2009.

*Kinesio Taping Methodology and Usage.* Darren Hancock DC, Hockert Sales, Isanti, MN 2009.

*Colossus,* James Mathias, SUMA MRI, Golden Valley, MN 2009.

*Practical Spine Imaging.* Jeffrey Cronk, DC CICE, SUMA MRI, Golden Valley, MN 2008

*Lumbar Spine MRI Imaging.* Terry Yocum, SUMA MRI, Golden Valley, MN 2008.

*Cox Technique Treatment of IVD Injuries.* James Cox, DC, DACBR, SUMA MRI, Golden Valley, MN 2008.

*Spinal Stenosis.* Sabrina Walski, MD, SUMA MRI, Golden Valley, MN 2007.

*Sacroiliac Joint Dysfunction.* John Stark, MD, SUMA MRI, Golden Valley, MN 2007.

*Personal Injury Law.* David Cody, SUMA MRI, Golden Valley, MN 2007.

*Workman's Compensation Law.* Dean Margolis, SUMA MRI, Golden Valley, MN 2007.

*Seat Belt, Shoulder Strap, Headrest and Airbag Induced Injuries.* Auto Collision Injuries, Center For Diagnostic Imaging, St. Louis Park, MN 2005.

*Low Impact Collision Neurologic Injuries.* Auto Collision Injuries, Center For Diagnostic Imaging, Center For Diagnostic Imaging, St. Louis Park, MN 2005.

*Low Impact Collision Injuries,* Auto Collision Injuries, Center For Diagnostic Imaging, St. Louis Park, MN 2004.

*Trauma and non-trauma induced conditions of the spinal cord.* Stenosis, Anterior and Central and Posterior Cervical Cord Syndrome Post Trauma, Auto Collision Injuries, Center For Diagnostic Imaging, St. Louis Park, MN 2003.

*Permanent Concussion Syndrome.* Post trauma headaches, forehead headaches, post trauma migraines, irritations of vertebral artery and internal carotid artery, Auto Collision Injuries II, Center For Diagnostic Imaging, St. Louis Park, MN 2003.