

<p>Clinical Management of Scoliosis Series</p> <p>Evaluation and Management of Scoliosis for the non-surgical provider</p> <p>Scoliosis Systems LLP</p> <p>Module 1</p> <p>12 CE Credits Available.</p>	<table border="1" data-bbox="643 285 1393 449"> <tr> <td data-bbox="643 285 1042 449"> Module 1- Neuroskeletal Diagnosis and Management of Scoliosis </td> <td data-bbox="1042 285 1393 449"> Sat- 8-6pm Sun 8:30-4pm </td> </tr> </table> <p>This module is designed to introduce the Post Doctoral Learner to the plethora of topics of concern in the clinical Management of Scoliosis. Each section includes a clinical application.</p>	Module 1- Neuroskeletal Diagnosis and Management of Scoliosis	Sat- 8-6pm Sun 8:30-4pm
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<p>Day 1</p>	<p>Registration</p>		
	<p>Marc J. Lamantia B.S.,M.S., D.C.</p> <p><i>Diplomate of the ACNB 2006-2011</i></p> <p><i>MS in Neuropsychology Rehabilitation 2006</i></p> <p><i>Founder of Scoliosis Systems of Chiropractic LLP 2004</i></p>		
	<p>Scoliosis Etiopathology and Evolutionary Genetics</p> <p>Clinical Perspective: Scoliosis is an “entire entity” phenomenon which goes far beyond the curvature of the spine. The scientific literature provides a breadth of knowledge regarding etiopathology that will provide a framework for our approach to non-surgical interventions.</p> <p>Clinical Application: History Taking; Personal and Family medical history, Pertinent signs and symptoms associated with</p>		

	<p>different Scoliosis Phenotypes. I.e. metabolic, hormonal, neurologic, skeletal</p>
	<p>Evolutionary Perspective on Scoliosis</p> <p>Scoliosis is a uniquely human condition. The Science of evolutionary biology sheds light on how and why our bodies fail into disease states. Scoliosis progression, like spinal degenerative disease is a consequence of immuno-metabolic activity. Shear Forces from spinal asymmetry initiate a cascade of metabolic events.</p> <p>Clinical Application: Assessment of Postural Liabilities, stereotypical movement imbalances associated with each scoliosis curvature pattern.</p>
	<p>The New Science of Neuroskeletal Biology</p> <p>The term neuroskeletal biology was coined in 2007. The Scientific evidence supports the concepts that bone is a target tissue of the nervous system, and that the autonomic n.s. is directly responsible for the deformity of bone associated with scoliosis.</p> <p>Clinical Application: Focused Neurological Exams, Dorsal Column-Parietal lobe axis, Autonomic, Cerebellar, Reflexive, vestibular, oculomotor</p>
	<p>Autonomic influence on Bone Asymmetry</p> <p>Bone is a known target organ of the nervous system, but it has not been until recently that the mechanism by which the CNS communicates with bone has been identified. Via sympathetic pathways, neuropeptides are responsible for bone asymmetry.</p> <p>Clinical Application: Assessing for asymmetric vitals, Bowel Sounds, pupillary responses, sexual function, HRV</p>
	<p>Scoliosis as a Whole Organism Phenomenon</p> <p>Scoliosis is not only a curvature of the spine, it involves the connective tissues and is now considered an entire organism Phenomena. CNS imbalances commonly seen in Scoliosis.</p> <p>Literature Review</p> <p>Clinical Application: Superficial Abdominal Reflexes, Persistent Prenatal reflexes, Cognitive Vestibular Deficits, Vibratory Sense asymmetry, coordinative difficulties, depression, neurocognitive assessment</p>
	<p>Evolutionary Liabilities of the Spine</p>

	<p>Evolutionary medicine provides a framework by which skeletal liabilities can be identified and targeted for treatment. We propose a multidisciplinary approach for the patient with Idiopathic scoliosis.</p> <p>Clinical Application: Adams Test, Foot Assessment, Leg Length Analysis, Radiological Procedures, ROM</p>
	<p>Break</p>
	<p>Evolutionary Liabilities of the Pelvis and Foot</p> <p>The foot evolved from a laterally deviated big toe to the plank like foot. We explore patterns of gait and interventions.</p> <p>Literature Review</p> <p>Clinical Application: Dynamic Computer Assessment and Observational Assessments, 3 Dimensional analysis of the Pelvis. Casting orthotics to restore spiral nature of gait.</p>
	<p>Evolutionary Liabilities of Nervous System</p> <p>With upright posture and bigger brains our nervous systems evolved to best support the changes influence by a nomadic lifestyle. Today's industrialized artificial environments expose weaknesses in our evolutionary path.</p> <p>Literature Review</p> <p>Clinical Application: Modification strategies for Activities of Daily Living (ADLs), habitual postures, resting postures, lifestyle hacks</p>
	<p>Introducing Neuroskeletal Scoliosis Phenotypes</p> <p>Scoliosis is not all the same. Some patients are hyper flexible due to ligamentous laxity, while others have low muscle tone. Treatment interventions are based on these differences. <i>We propose these categories are subtypes of Idiopathic Scoliosis.</i></p> <p>Literature Review</p> <p>Clinical Application: Assessment of Dynamic Spinal Stability, Signs of Ligament laxity, Connective Tissue Disorders, Marfan's syndrome, Erlos Danlos syndrome, Early Parkinsonian, Adult De Novo type.</p>

	<p>Orthostatic Disturbances Contributing to Scoliosis Progression</p> <p>Learn how to avoid successfully treated patients continuing to progress in adulthood. Learn the 5 mistakes Doctors make when treating patients with scoliosis.</p> <p>Literature Review</p> <p>Clinical Application: Assess Active ROM Passive ROM, Resisted ROM, Coupled motions of the spine. Upper Cervical Assessment.</p>
	<p>Phenotypes: Skeletal, Connective tissue, neurological</p> <p>Does every 45 degree Scoliosis require surgery?</p> <p>Why does one curvature stay stable why others progress?</p> <p>Why do some patients have pain and degeneration and others do not?</p> <p>Autonomic Type</p> <p>Sympathetic escape vs. low Parasympathetic activity. Neuroskeletal biology confirms sympathetic connections are responsible for bone deformity in scoliotic curvatures.</p> <p>Literature Review</p> <p>Case Report</p>
	<p>Cortical Type</p> <p>The brain, has been shown to be involved in Scoliosis. Identifying Sensory Disturbances, Vestibular Perceptual changes, Cortical hub changes can help direct more appropriate neuroskeletal interventions. The Insular Cortex revealed.</p> <p>Literature Review</p> <p>Case report</p>
	<p>Cerebello-vestibular Type</p> <p>The vestibulocerebellar system is implicated as a factor which is present even before the spinal deformity emerges.</p>

	<p>Cerebellar deficits may respond to specific rehabilitation methods and can improve postural integrity in an otherwise unstable spinal column. Vestibulospinal and vestibulo-ocular reflexes are explored.</p> <p>Literature Review</p> <p>Case Report</p>
	<p>Metabolic type</p> <p>Scoliosis is a problem with bone, ligament, platelets, and nervous and muscular. Scoliosis patients have been shown to have early onset, Osteopenia, low BMI and anorexia, vitamin and mineral deficiencies and other conditions related to metabolic health.</p> <p>Clinical Application: Blood work Essentials. Supplements for modulation of proinflammatory cytokines, Osteoporosis, Hormonal Imbalance, other common comorbidities.</p>
	<p>Case Studies</p>
	<p>Diagnostic and Treatment Algorithm</p> <p>Non-surgical management of scoliosis is specific to the patient's needs, individual clinical findings and the desired clinical goals of both the patient and the clinician. Scoliosis typing is an important concept for clinicians to understand in order to better tailor clinical interventions to the individual. Treatment goals should be clearly defined; Pain relief, cosmesis, cobb angle, postural functional improvement, stabilization for future.</p>
	<p>New Patient Exam</p>
	<ul style="list-style-type: none"> ● History- Amenorrhea, fractures, Dizziness, Pain ● Clinical Postural Exam-3 dimensional deformity ● Radiological procedures and assessment ● Define Treatment Goals ● Make appropriate referrals- MD,DO,DC,PT
	<ul style="list-style-type: none"> ● Bracing; Rigid vs. Dynamic ● Foot Orthotics proprioceptive vs. Corrective ● Dx Testing Vestibular Testing, Blood Work ● Supplements (bone health, Anti inflammatory ● Physical Therapist Referral (Schroth Method)vs Active Isometric Exercises ● Chiropractic Referral (Upper Cervical vs. DACNB) ● Functional Medicine Referral (Hormonal vs.

	Immune)
	Programming for Follow up care

	<ul style="list-style-type: none"> • Serial Scheduling Clinical Visits • Imaging, When and Why
	<ul style="list-style-type: none"> • Break
	<p>Adult Scoliosis- Mechanisms of pain</p> <p>Sympathetically maintained pain vs. Chronic Micro-trauma Pain is approached as a cortical event that may or may not involve end organ pathology. Assessment of brain based mechanisms of pain are essential to differentiate possible etiologies.</p> <p>Clinical Application: Cross Cord Inhibition Techniques, Active Isometric Contractions, Spinal Orthotics</p> <p>Case Report</p>
	<p>Epigenetic response to Mechanical Load Profiles in Natural Environment</p> <p>Movement as a therapy for scoliosis, hacking the natural environment. Mechano-biology,, Osteocyte Biology</p> <p>Clinical Application: 3 Dimensional Physical Therapy for Scoliosis.</p>
	<p>Static Loads</p> <ul style="list-style-type: none"> • Sitting, standing, posture • Otolithic Influence on Postural Tone • Paleocortical influence on Postural Tone <p>Clinical Application: Standing Tea Pot Poses with visual Fixation, Standing Tea Pot on perturbable surface.</p>
	<p>Dynamic loads</p> <ul style="list-style-type: none"> • Unique Environment; athlete vs. truck driver • Rising, walking, running, industrialized environments, exercise <p>Clinical Application: Postural adaptations in the patient's natural environment, during walking, step ups, step downs, balancing. Use of "Pelvic Fixes"</p>

	<p>Mechanobiology</p> <p>This discipline of Biology is important in our clinical management strategies. Environmental factors change the non-coding portion of our genes and can change gene expression of the individual as well as the individual's offspring.</p> <p>Literature Review</p>
	<p>Changing Load Profiles</p> <ul style="list-style-type: none"> • Successful long term solutions. • Home vs. in office care <p>Clinical Application: Flexible dynamic Bracing, Conscious control of movement.</p>
	<p>Break</p>
	<p>Neuromuscular Rehabilitation for Pain</p> <ul style="list-style-type: none"> • Neurology of Pain • Movement and Pain • Compression, Isometric Exercise & Conscious Control
	<p>Head Direction Cells the Hippocampus and the Vestibular System</p> <p>Clinical Application: Fukada Step Test</p>
	<p>3 Dimensional Rib cage Deformity</p> <p>Breathing cannot be normal if the rib cage is deformed.</p> <p>Literature Review</p> <p>Clinical Application: Spirometric assessments, Chest wall excursion, "Breathing Fixes", diaphragm, chest wall, Posterior lateral rib, Radiological Assessment, Postural Changes to improve mechanics of Thorax</p>
	<p>Relative Anterior Spinal Overgrowth, Rotation and Hyperlordosis</p> <p>Clinical Application: Clinical and Radiological Sagittal Plane Analysis</p>

	<p>Kyphosation Exercises</p> <p>Active vs. Passive</p> <p>Clinical Application: Isometric Resistance exercises, Breathing Techniques, Spinal Orthotics</p>
	<p>Break</p>
	<p>Corrective Movement Principles Christine Colliard MD</p> <ul style="list-style-type: none"> • Normal Thoracic spinal coupling • Normal Lumbar Spinal coupling
	<p>Abnormal Scoliosis Coupling</p> <ul style="list-style-type: none"> • Thoracic curvature • Lumbar curvatures • Thoracolumbar curvatures • Cervicothoracic curvatures • Single Curvatures • Multiple Curvatures • Sagittal profile
	<p>Right Thoracic Left Lumbar Scoliosis</p> <ul style="list-style-type: none"> • Apex of Curvature • Levels involved • Thoracic Rotation greater • Lumbar Rotation greater • Equal rotation • Center of gravity left • Center of gravity right • Left Cervicothoracic, Right Thoracic, Left Lumbar Curvatures
	<p>Thoracolumbar Scoliosis</p>
	<p>Special Types</p> <p>Apex at T11</p> <p>Adult Considerations</p>

	Case Reports
	Risk Management- Referred Pain Abdominal aortic aneurysms IVD Herniations Stenosis Osteoporosis Arthritides Clinical Application: Progression risk, Referring, co-management. Questions/Answers Adjourn