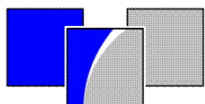


CNI Diagnostic Testing

<u>DIAGNOSTIC TEST</u>	<u>USED TO DETECT / EVALUATE / MEASURE</u>	<u>DIAGNOSTIC TEST</u>	<u>USED TO DETECT / EVALUATE / MEASURE</u>
<u>Clinical Examination</u>		<u>Clinical Neurophysiology</u>	
Audiometry	Function of tympanic membrane & bones in inner ear Integrity of the 8 th (auditory portion) cranial nerve Integrity of the auditory region of temporal lobe of brain	Needle Electromyography	Identify and characterize muscle denervation Evaluate the degree of nerve recovery Identify muscle inflammation (polymyositis) Identify intrinsic muscle disease (myopathy) Evaluate the health of muscle fiber groups Measure the of recruitment muscle fibers Measure signaling from brain and spinal cord Assess the integrity of motor nerve fibers
Digital Stethoscope	Record normal and abnormal heart valve closure sounds Congenital heart defects with associated murmur Record and quantify heart murmurs of any kind Abnormal blood flow through large arteries Obstructive peripheral arterial disease Turbulent blood flow associated with arterial aneurysms	Nerve Conduction Studies	Measure nerve signal transmission speed Measure the strength of the nerve signal Assess the quality of the nerve signal Localize the site of nerve compromise Determine degree of nerve demyelination Determine degree of nerve fiber damage
Panoptic Retinal Examination	Integrity of the optic nerve Structural integrity of retinal blood vessels Retinal hemorrhage or infarcts Evidence of increased intracranial pressure Retinal aneurysms	Sensory Evoked Potential	Integrity of spinal cord sensory pathways Evaluate deep sensory relay areas of the brain
<u>Electrocardiography</u>		<u>Human Performance Testing</u>	
Resting 12 Lead EKG	Electrical flow though the heart Abnormal heart muscle thickening Determine if there has been a myocardial infarct Evaluate for heart chamber enlargement Assess heart rhythm Lack of adequate blood supply (ischemia/artery disease)	Gait Evaluation	Assess function of nervous system pathway Spinal cord reflexes Identify mechanical compensation Pattern of fatigue with nerve damage Measure foot and ankle biomechanics
Holter (Ambulatory EKG)	Detect the frequency and intensity arrhythmia Correlate electrical activity in the heart to signs/symptoms To assess for silent myocardial ischemia Hearts electrical response to daily activity	Balance Assessment	Integrative function of nervous system Integrative function of sensory systems Measure of core stability and ankle stability
EKG Event Recorder	To assess hearts electrical activity during symptoms To detect heart irregularities (arrhythmia)	Quantitative Sensibility Testing	Measure of sensory nerve pathways Measure of sensory receptor integrity Measure of interpretive higher brain function
<u>Cardiovascular Imaging</u>		<u>Special Imaging</u>	
Echocardiogram	Structural and dynamic integrity of all heart valves Measure heart chamber size Assess regional and global heart muscle function Characterize area of heart muscle injury (infarct) Rule out intracardiac (chamber) blood clot (thrombus) Structural (congenital) heart defects Evaluate blood flow dynamics through heart chambers	Neurosonography	Assess integrity of a peripheral nerve Identify a tumor near or within a nerve Structural evidence of nerve compression Assess the anatomical location of a nerve
Carotid Ultrasound	To detect arterial wall structural abnormalities To identify and characterize the degree intra-arterial plaque Assess dynamics of blood flow across a blockage Measure arterial wall thickness Rule out ulcerative plaque (risk for embolization)	Musculoskeletal Ultrasound	Evaluate the integrity of a joint Evaluate the integrity of tendons Assess the integrity of the joint lining
Abdominal Aortic Ultrasound	Arterial wall defect or dissection Arterial wall dilation (ectasia/aneurysm) Measure artery wall thickness (arteriosclerosis) Identify and characterize atherosclerosis Identify and characterize arterial blockage (stenosis) Assess the pattern of atherosclerosis (focal and/or diffuse) Assess the dynamic of blood flow across a blockage	Digital X-ray	Structural bone density and integrity Structural evaluation of joint
Peripheral Arterial Doppler	Evaluate segmental blood flow dynamics and pressure Determine blood pressure above and below blockage Evaluate artery wall compliance Identify critical limb ischemia	Bone Densitometry	Evaluate and measure bone density
Pulse Oximetry	Evaluate oxygen delivery to site being tested Indirect measure of blood flow Indirect measure of lung health Indirect measure of red blood cell availability		



CNI Diagnostic Testing

<u>DIAGNOSTIC TEST</u>	<u>INDICATIONS FOR TESTING</u>	<u>DIAGNOSTIC TEST</u>	<u>INDICATIONS FOR TESTING</u>
<u>Clinical Examination</u>		<u>Clinical Neurophysiology</u>	
Audiometry	Tinnitus Known/ Suspected loss of hearing	Nerve Conduction Studies	Persistent or progressive numbness /tingling Persistent or progressive muscle weakness Suspected peripheral nerve compromise Muscle atrophy Persistent or progressive muscle fasciculations Suspected myoneural junction disorder
Digital Stethoscope	Heart murmur Congenital heart defect with flow murmur Known heart valve disease Lightheadedness/dizziness Peripheral arterial bruit/ obstructive disease	Needle Electromyography	Diffuse or focal muscle atrophy Recurrent or progressive muscle fasciculations Persistent or progressive muscle weakness Abrupt onset muscle weakness Suspected muscle inflammation Abnormal motor nerve conduction study Recent or suspected muscle denervation Radiculopathy with muscle weakness Suspected or known motor neuron disease
Panoptic Retinal Examination	Impaired vision Headaches Hypertension Diabetes Carotid artery disease		
<u>Electrocardiography</u>			
Resting 12 Lead EKG	Chest discomfort/ pain or shortness of breath Tachycardia/ Bradycardia/ Arrhythmia Heart murmur Heart disease/coronary artery disease Arterial hypertension	Sensory Evoked Potential	Extremity numbness and tingling Spinal cord compression/compromise Sensory radiculopathy w/o confirmation CNS demyelinative disease
Holter (Ambulatory EKG)/ EKG Event Recorder	Sleep apnea History of arrhythmia or heart rate disorder Heart palpitations Chest discomfort/pain Intermittent lightheadedness or dizziness	Brainstem Evoked Potential	Progressive subjective tinnitus Loss of hearing Balance disorder/vertigo CNS demyelinative disease
<u>Cardiovascular Imaging</u>		Visual Evoked Potential	Vision disturbance with normal eye exam Suspected CNS demyelinative disease
Echocardiogram	Heart murmur Extremity edema Lightheadedness/dizziness/SOB Heart rate or rhythm disorder History of or suspected congestive heart failure Myocardial infarction (MI) Suspected myocarditis/pericarditis	<u>Human Performance Lab Testing</u>	
Carotid Ultrasound	Transient ischemic attacks (TIA) Declining cognitive function Lightheadedness/dizziness/ vertigo Known carotid artery disease, CAD or PAD	Gait Evaluation	Low back pain/ sciatic neuralgia History of falls/ difficulty with balance Spinal stenosis Polyneuropathy Lumbar radiculopathy Abnormal gait Lower extremity joint arthritis/arthropathy Lower extremity claudication Known or suspected foot drop
Abdominal Aortic Ultrasound	Low back pain with peripheral arterial disease Abnormal abdominal pulsation/bruit Abdominal pain w/o orthopedic indicators Abnormal aortic/iliac changes on lumbar X-ray Extremity arterial insufficiency/ claudication	Balance Assessment	Recurrent falls/ Risk for falls Inner ear disease Spinal stenosis Lumbar radiculopathy Foot/ankle pronation Suspected or known foot drop Lower extremity weakness / pain Abnormal gait
Peripheral Arterial Doppler	Exertional leg pain Severe resting leg pain Cold extremities Extremity hypoxia Known peripheral artery disease (PAD) Diabetes	Quantitative Sensory Testing	Numbness or tingling (paresthesia) Diminished or absent sensibility Known neurological compromise
Photoplethysmography	Suspected macro/ microvascular disease Poor distal extremity healing	Dynamic Muscle Testing	Muscle weakness / atrophy Exertional regional muscle fatigue Muscle denervation (abnormal needle EMG) Joint pain Spinal or joint dysfunction with symptoms
<u>Special Imaging</u>			
Neurosonography	Suspected neural mass/compression Focal peripheral mononeuropathy Peripheral nerve trauma Post-surgical evaluation of a peripheral nerve	Range of Motion Testing	Spinal or extremity joint pain Limited spinal or joint range of motion Spinal or extremity joint instability
Musculoskeletal Ultrasound	Wrist or shoulder pain/instability/ tendonitis Suspected peri-articular mass such as cyst Blood clotting disorders	Anthropomorphic Evaluation	Obesity Regional muscle atrophy Suspected increased cardiovascular risk