Diagnostics for PT ISSUE 8

Bart McDonald Wins 2021 Practice of the Year Award Meet "The Diagnostic Team"

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FROM THE EDITOR

If ever there was a beacon of light at the end of the tunnel, then I'd say the 8th annual HODS Symposium fits the bill. In mid-September, in spite of the ongoing Pandemic, about one-hundred attendees showed up in person, along with over 30 virtual attendees for the San Antonio-based clinical, business, and festive live event.

This year was a record turnout for this annual conference that focuses upon Diagnostics in PT. On hand were some of the brightest clinicians in the PT industry, including over 25 Physical Therapy practice owners from across the nation, plus their clinicians and admin teams.

In this issue, read about the many talented, dedicated physical therapists and PT practice owners who were awarded honors for their work in the field of Diagnostics in PT.

VIP speakers included Heidi Jannenga of WebPT and Mike Horsfield, Rock Valley Physical Therapy's Chief Executive Officer and President of the Private Practice Section (PPS) of the APTA. Both leaders reflected the Symposium's high energy at every turn, which was remarkable considering this was the first time in over a year that people traveled to an in-person event.

Bart Mcdonald, owner of Superior PT and author of a new book, 'Debt-Free PT,' was awarded the HODS 2021 Practice of the Year Award. His story, included in this issue, will inspire you.

Be sure to read the emotional, exhilarating keynote and welcome remarks from Dr. Dimitrios Kostopoulos, who captured the dynamics of moving ahead during these challenging times.

Discover three new clinical articles about: Hirayama Disease, also called monomelic amyotrophy (MMA); Electrodiagnosis of Focal Mononeuropathies of the Elbow and MSK Ultrasound for Elbow Pathologies: Sonographic Evaluation Of The Elbow Joint.

Be inspired by two hard-working physical therapists and practice owners who somehow found the time to grow their business, offering PT patients Diagnostics including MSK and EMG, even during a pandemic. And of course, there is much more in this exciting issue!



I hope you enjoy our new issue.

DIANE LILLI Editor-in-Chief Diagnostics for PT

Diagnostics for PT

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ON THE COVER From left to right: Top Row: Jordan Wickham, DPT; Jonathan Goodman, DPT; Ryker Spackman, DPT; Bart, Anna and Morgan Mcdonald. Bottom Row: Kasey Egbert, DPT; Zachary Daniels, DPT; Marcial Lemos, PTA

Bart McDonald of Superior PT & Practice of the Year Award

Meet the "The Diagnostic Team"

By Diane Lilli

Clinical Diagnostics in PT Forges the Future of the Profession

Bart McDonald, PT, MPT, ECS, FMSK, president and owner of the iconic Superior Physical Therapy & Diagnostics in Idaho, and author of the new book "Debt-Free PT," is the 2021 HODS Practice of the Year Award. With a new book, 4 clinics and another new location opening soon, McDonald's candle may seem like it's been burning at both ends, but don't be fooled by the non-stop work.

As Bart sees it, his work in PT, along with his love for his family and faith, completes the perfect arc of his own true love: a mission to serve and offer the world only the highest level of patient care.

"I am very humbled to receive such a prestigious award," said McDonald. "When I first learned that Superior PT & Diagnostics was receiving the Practice of the Year Award, I was so excited for our team of diagnostic therapists to be recognized for the hard work exerted every day to give their patients the best care based on the best diagnostic evaluation. EDX and MSKUS have been a vital part of our PT practice for the past six years and has become the patient and physician expectation for what makes us Superior."

Adding Diagnostics in his clinics has elevated not only patient care, but also the trajectory of the staff at Superior PT.

"Therefore, because of diagnostics, we are privileged to see so much more, to offer so much more, and have become so much more as PT providers. It is with extreme gratitude that we enjoy the daily mentorship and association with Hands On Diagnostics that has opened the doors to a truly superior PT practice."

-Bart McDonald

"Because of diagnostics, our patient experience includes the ability for them to fully understand their pain and dysfunction," added McDonald. "Because of diagnostics, our physicians have come to rely on the information that comes from MSKUS and EDX to more accurately guide the plan of care. Because of diagnostics, our therapists can objectively measure the impact treatment is having on the healing process. And while the sacrifice in time and effort to learn to become proficient in MSKUS and EDX is significant, HODS makes it achievable."

As a seasoned physical therapist and practice owner, Bart realized he had a responsibility to help new and even older PTs deal with the overwhelming burden of student debt. Almost 93 percent of recent physical therapist graduates have significant student debt, at an average of \$152,882 (excluding mortgages).

After seeing numerous colleagues "decimate their PT dreams,", he committed to writing the first book and guide for all PTs overwhelmed by student debt.

"Debt Free PT was written for the PT and the PT practice owner," he explained. "The book creates a step by step process to eliminate student debt for the therapist. It also addresses how to build revenue streams for practice owners through diagnostics that will benefit both the practice, the patients and debt burdened therapists. Debt Free PT analyzes the problem and explores solutions that can save our industry."

One of the key steps McDonald recommends in his new book, among others, is for physical therapists and private practice owners to embrace Diagnostics in PT.

"Utilizing diagnostics in the PT practice changes the way we treat our patients every day," said McDonald. "Just a few weeks ago, I had a patient that came into my office for a new patient evaluation after a motor vehicle accident. He was recovering

Diagnostics Wins HODS 2021



"Whether utilizing EMG to assess the peripheral nervous system, neuromuscular junction or muscles, or musculoskeletal ultrasound to create an image to view pathology of soft or connective tissues, the diagnostic data improves PT outcomes every day. Additionally as a PT owner, while each of our tests is saving patients money by effectively directing care, the increased revenue stream helps the practice to thrive and become financially successful. During an era of decreasing reimbursements from insurance companies, our practice has enjoyed growth and stability."

-Bart McDonald

from a fracture and surgery, but was also concerned about low back pain that started just after the accident. The patient was also frustrated that a MRI of his low back was being denied by the insurance company and he was concerned, due to the severe pain and radiating symptoms down his right leg, that PT might not help. I performed an EMG and confirmed that the patient had a back problem with moderate axonopathy or nerve death affecting the L5 nerve root. The findings were also consistent with the timeframe of the accident rather than being a more chronic problem. Finally, the EMG findings gave the physician the evidence needed to authorize further imaging and that PT treatment was the correct course of action to resolve the issue with good rehab potential. Therefore, the patients' confidence and compliance in the PT plan moving forward skyrocketed."

As per his own staff at Superior PT & Diagnostics, McDonald said adding Diagnostics education for his team has reaped benefits for all involved.

LEFT: McDonald's family, from left: Daughter Morgan, Bart and wife Anna

BELOW: Bart McDonald is the recipient of the HODS 2021 Practice of the Year Award.



"Staff members that become proficient in diagnostics join the ranks of some of the most cutting edge pioneering PTs in the country," he said. "These specialties go beyond the level of care offered in most PT practices and enable the clinician to become a greater professional. Those of us that have stepped into the world of diagnostics with full commitment could never step backward and essentially treat blind."

Considering his new Practice of the Year Award, McDonald said he owes a debt of gratitude to the visionary pioneers who lead him to Diagnostics in PT.

"I just want to say thank you so much to Hands On Diagnostics (HODS). Dr. Dimitrios Kostopolous, Dr. Kostas Rizopolous, Dr. Mark Brooks, Dr. Mohini Rawat, Dr. Rick McKibben, Dr. John Lugo, and many others have transformed our clinical practice," said McDonald. "We are so very grateful for their continuous teaching and mentorship that has taken our practice to a Superior level."

Approach to Hirayama disease

By Filipp M. Filippopulos, MD

1 University Hospital of the LMU Munich, Department of Neurology, Marchioninistr. 15, 81377 Munich, Germany

Dr. Filipp Filippopulos is a Board Certified Neurologist for over 10 years. He is a member of the German Society for Clinical Neurophysiology and Functional Imaging (DGKN) and certified in NCS/EMG. He specializes in the diagnosis of neuromuscular disease, vestibular and headache disorders. He has been teaching at the Ludwig-Maximilians-University in Munich, educating medical students and future neurologists. He has published numerous research articles and lectures nationally and internationally.

INTRODUCTION

Hirayama disease was first described by Keizo Hirayama in 1959¹. It constitutes a benign cervical myelopathy with insidious onset and a slow clinical progression over a few years (mostly 2-4 years). It mostly affects male patients with an onset of the disease between the age of 15-20 years. The main manifestation is a painless paresis of one distal upper limb with involvement of the small hand muscles and wrist/finger flexors and extensors.² There is no sensory involvement and only rarely an affection of the contralateral upper limb after a certain time period.³ In 1982 Hirayama et al. first described the pathophysiological substrate for the disease. They found focal ischemia and atrophy of the anterior horn cells in the gray matter of the cervical spinal cord in a postmortem case.⁴ With the emerging development of magnetic resonance imaging (MRI) in the late 80's, they demonstrated spinal cord compression by anterior displacement of the dural sac during neck flexion as the cause of the focal spinal ischemia (see Figure 1 and 2).⁵

EXAMINATION

In physical examination patients show a progressive muscle weakness and after some time significant atrophy of the involved muscles. The muscles most affected include the hand muscles and the distal and ulnar muscles of the forearm. The brachioradialis muscle, biceps and triceps mostly remain unaffected. Strech reflexes are unaffected but might be reduced due to weakness of the contracting muscle. Sensory deficits might occur in up to 20% of patients.⁶ Further "cold paresis" might be present, referring to a considerable increase of weakness of the fingers with exposure to cold. Nerve conduction study (NCS) shows axonal damage to the involved motor nerves, while sensory NCS is typically normal. Electromyography typically shows spontaneous activity (fibrillations, positive sharp waves) as well as signs of chronic neurogenic denervation such as polyphasia and amplitude increase of the motor unit potentials. Furthermore, fasciculations may be present.

MAIN AFFECTION	AETIOLOGY	DISEASES
Upper Motor Neuron	degenerative	Primary lateral sclerosis
	structural	tumors
		Spinal canal stenosis
		Myelopathy (e.g. infectious, autoimmune, etc.)
	Genetic/metabolic	Mitochondrial disease
		Leukodystrophies
		Spastic paraplegia
		Spino cerebellar ataxias (e.g. SCA3)
	metabolic	Vitamin B12 deficiency
		Vitamin E deficiency
	intoxication	lead
Lower Motor Neuron	genetic	Spinal muscular atrophy (SMA)
		Distal hereditary motor neuropathy
		Hereditary motor and sensory neuropathy (HMSN)
	autoimmune	Multifocal motor neuropathy (MMN)
	Paraneoplastic	e.g. small cell lung cancer, neuroendocrine tumors,
	(e.g. Anti-Hu, CV2-antibodies)	uterus, prostate tumors
Upper and Lower Motor Neuron	structural	Cervical myelopathy
	infectious	HIV
		Lyme disease
		Lues
	paraneoplastic	Small cell lung cancer
	Genetic/metabolic	GM2-Gangliosidosis
	traumatic	Chronic traumatic encephalopathy

DIFFERENTIAL DIAGNOSES'

Table 1: List of important differential diagnoses in patients with clinical and electrodiagnostic affection of the upper or lower motor neuron.

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Considering the described clinical presentation, diagnosticians should have a couple of important differential diagnoses in mind, a list of which you can find in Table 1. Special attention should be paid to the motor neuron disease amyotrophic lateral sclerosis (ALS), especially the subtypes "flail arm syndrome" (Vulpian-Bernhart) and "progressive muscular atrophy". The difficulty of distinguishing these subtypes lies in the fact that both mainly (flail arm or leg syndrome) or exclusively (progressive muscular atrophy) affect the lower motor neuron and therefore missing all clinical features of upper motor neuron affection such as spasticity, hyperreflexia or pathological reflexes (e.g. Babinski). One way to differentiate ALS and it's subtypes to other pathologies (including Hirayama disease) is by determination of a biomarker called neurofilament light chain (NFL) in the cerebrospinal fluid (CSF).

NFL is believed to indicate neuroaxonal breakdown and shows a sensitivity and specificity of around 80% in detection of all ALS types.⁷ Although detection of NFL in CSF is more invasive than detection in blood, consider it has a better sensitivity/specificity.

Finally, multifocal motor neuropathy (MMN) should be ruled out because of its high clinical implication for the patient's prognosis and treatment. Clinically and in electrodiagnostics MMN can closely mimic ALS or Hirayama disease, but there are a few distinct markers to watch out for. Most importantly conduction block (CB) is found in MMN at noncompressible (often proximal) sites of motor nerves, while there is no affection of sensory fibers.⁸ Furthermore in 40-50% of cases elevated GM1-IgM-antibodies can be found in the patient's serum and patients respond to treatment with intravenous immunoglobulins, rituximab or cyclophospha-mide.

THERAPY

Because of the low prevalence (probably also due to a high number of undetected cases) there are no randomized trials on therapeutic proceedings in Hirayama disease. Expert's opinion suggest the application of a cervical collar for 3-4 years to slow and/o stop the progression of the disease.⁹ Further, especially in cases not responding to conservative treatment different surgical procedures have been suggested and shown to be effective.¹⁰ Nevertheless, there is no surgical "standard" procedure so far, so that surgery should only be considered on an individual level. Finally, physical therapy to strengthen the affected muscles, as well as the upper and middle back muscles should be applied throughout the whole disease course.

SUMMARY

Hirayama disease is an rare, but important differential diagnosis in patients with painless amyotrophic paresis of the upper limb.^{1, 9, 11} MRI during neck-flexion is considered the diagnostic gold standard, since only neck flexion reveals the spinal cord compression by the displaced dural sac.^{2, 12, 13} Hirayama disease leads to an irreversible functional disability of the distal upper limb. Early and correct diagnosis might open a therapeutic window to stop the disease progression and reduce functional disability. The most important therapeutic measure is considered conservative management by application of a cervical collar.^{5, 10, 14} Surgery is mainly indicated in individual cases with clinical deterioration despite conservative treatment.^{15, 16}



ABOVE: Figure 1: Atrophy of the spinal cord with T2-weighted signal change indicative of myelopathy. BELOW: Figure 2: MRI in neck flexion showing forward displacement of the

BELOW: Figure 2: MRI in neck flexion showing forward displacement of the spinal cord with expanded posterior extradural space and anterior compression.



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Ground-Breaking 8th HODS the Future of the Physical

Opinion leaders in the Physical Therapy profession: Heidi Jannenga, Mike Horesefield, Dimitrios Kostopoulos, Konstantine Rizopoulos, among other entrepreneur panelists, present the requirements for a successful private practice for the next decade.

Though the event may have been held during the pandemic, with health safety protocols in place, guests were obviously happy to be with their colleagues in person.

At the Awards Dinner, on hand were over 100 guests, including many who donned little Sombreros during the Tex-Mex themed dinner.

Kicking off the popular Awards dinner in true San Antonio style was a local Mariachi Band. The emotionally moving songs, sometimes somber but more often upbeat, reflected the emotions of the attendees, who shared their own pandemic experiences with their friends and fellow physical therapists and practice owners.



HODS Co-founders Dr. Kostas Rizopoulos and Dr. Kostopoulos give the Entrepreneur Award to Heidi Jannenga, founder of WebPT

Though these HODS attendees hail from towns across the country, one thread of conversation remained true for all: in spite of the unpredictable, frightening Pandemic, their practices have survived — and in many cases, thrived.

Known as the "most advanced conference for EMG and Ultrasound," the clinical portion of the event included new topics, new approaches for Diagnostics in PT, and new voices.

With a mission to discuss 'Diagnostics and Treatment Combined: Clinical Reasoning for Upper Extremity Pathology,' the MSK and EMG PT specialists shared the newest research in clinical application for upper extremities. Each presentation reported on clinical competencies, clinical correlations and increased patient management based upon testing outcomes.

Symposium Sets the Stage for Therapy Profession





ABOVE LEFT: The Mariachi Band welcomed the crowd to the 2021 HODS Awards Dinner ABOVE RIGHT: Attendees including, in part, Will Humphreys, Kay and Dana Connor Israel and Lesley Powers

CLINICIANS AT THE TOP OF THEIR FIELD SHARED NEW STUDIES TO THE EAGER CROWD. SOME OF THE CLINICAL HIGHLIGHTS INCLUDED:

Introduction to EMG/NCS Evaluation of the Upper Extremity Dr. Greg Ernst; Chair, Department of Physical Therapy, UT Health San Antonio

Electrodiagnosis of Focal Mononeuropathies of the Elbow Dr. John Lugo; Senior Vice President of Clinical Education Hands-On Diagnostics

Electrodiagnosis of Focal Mononeuropathies of the Wrist Dr. Mark Brooks; Director of Education Hands-On Diagnostics Original Pathway

> Treatment of Common Entrapment Neuropathies of the Upper Extremity using Data of ENMG Evaluation Dr. Jennifer Hauskey: Clinical Director OnetoOne PT &

Dr. Dimitrios Kostopoulos; Co-founder Hands-On Companies

Neurological Evaluation for Hirayamas Disease Dr. Filipp Filippopulos

Electrophysiologic Approach to Brachial Plexopathies and Proximal Mononeuropathies Dr. Rick McKibben; Senior Partner Mentor Hands-On Diagnostics & Dr. Nancy Mansell; Partner Mentor American Academy of Clinical Electrodiagnosis (article published in this issue)

> **Electrodiagnostic Approach to Upper Limb Radiculopathy** Dr. Scott McCauley: Neurodiagnostic Specialist Wellness Solutions

Treatment of Cervical Radiculsopathy using Data of ENMG Evaluation Dr. Daniel Neff; Founder Neff Physical Therapy and Diagnostics

2021 HODS AWARDEES

2021 HODS Practice of the Year Award Bart McDonald, Superior PT & Diagnostics

HODS Star Awards

Jeff Courcier Dr. Jennifer Hauskey Dr. Breck Leonard Bart McDonald Dr. Joe McGilvrey

HODS Ambassador Awards

Will Humphreys, Healthcare Business Academy (HBA) & In the Black Bart McDonald, Superior PT & Diagnostics Joe & Angie McGilvrey, Apex PT & Diagnostics Kelly Chick-Comstock & Chris Comstock, Optimum Health & Wellness & Diagnostics Nathan Shields, Physical Therapy Owners Club

> HODS Entrepreneur Award Heidi Jannenga, WebPT

HODS Approved Practice Awards

Dr. Brian Lee & Diagnostics Arlington PT & Diagnostics Neff Physical Therapy & Diagnostics Leisure PT & Diagnostics

Diagnostics Offers New PT Model for Dr. Scott Paskiewicz

By Diane Lilli

A long career in physical therapy surprised a very successful physical therapist and business owner in ways he never imagined, with Diagnostics the inspiration to him to keep practicing. Over the course of eighteen years, Dr. Scott Paskiewicz built three successful PT private practices, and eventually sold them all, but still wanted to fashion a new way to stay involved with patients.

"I missed Interacting with patients, and developing relationships with them," said Paskiewicz, "I realized this in 2019, after working with Breakthrough and meeting HODS at one of the big conferences in Dallas. When I met them, I knew if I was to sell my last PT practice, Leisure PT, I needed something else to go into to, since I was not going to retire."

Learning about Diagnostics in PT offered Paskiewicz a new perspective about physical therapy.

"HODS Diagnostics resonated with me," he said. "I could see the potential in adding a whole other dimension in Diagnostics and treatment in PT. It checked two major boxes off for me.



At the 2021 HODS Symposium, Dr. Scott Paskiewicz accepted his HODS Approved Practice award. From left to right awardees are: Dr Brian Lee, Dr. Scott Paskiewicz, Dan Neff, Nicole Horner, AnnaMaria Morales, Guillermo Morales, and HODS Deputy CEO James Savas.

Firstly, I could see a future starting a new company, doing Diagnostics & integration into physical therapy. Secondly, I knew that of no other PT practice that was doing Diagnostics with physical therapy, near me."

With 2019 setting new records for Leisure PT, Paskiewicz committed to HODS, but then the unthinkable happened: Covid-19 hit.

"Basically I let go of our staff, and furloughed them, except for one aide," he said. "We never shut down though. I did everything. During that time HODS went online with classes, and

I was trying to learn diagnostics and battle a pandemics at the same time. I worked sixty days straight, 70 hours a week, just to survive."

Paskiewicz reports his experience with Dr. Kostas Rizopoulos and HODS, "was amazing. At that time, Kostas had spent a day with him, and showed me Ultrasound. Dr. Mohini Rawat came out to my practice, and Dr. John Lugo did one-on-one training with me."

The result was a dramatic change in Paskiewicz's practice, for the better.

"What happened is that it distracted me, since I had the Diagnostics to focus on, instead of my crumbling clinic the during pandemic. I Came out of he pandemic, due to the advice Dr. Dimitrios Kostopoulos offered, successful."

As 2021 arrived, Paskiewicz took all the classes for both MSK and EMG. His advise to anyone considering adding Diagnostics to PT?

"Keep moving forward," he said. "If we as PTs ever want to be considered primary care providers, we ned to up our ability to do Diagnostic testing. I hope all PTs come along for the ride!"

Paskiewicz is sitting for the ECS in Feb, and will have his scholarship with Fellowship in MSK in the spring of 2022.

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The 8th Annual HODS Symposium was held in San

It's Time for Diagnostics in Physical Therapy: Create Now the Future You've Always Imagined

By Dr. Dimitrios Kostopoulos

On behalf of the Hands-On Diagnostics Franchising (HODS) President and the Chief Executive Officer, as well as the Boards of Directors of the American Academy of Clinical Electrodiagnosis (AACE), and the American Academy of Musculoskeletal Ultrasound (AAMU), I would like to welcome all of our HODS partners, AACE & AAMU students, and all of our other colleagues here in the United States and abroad to this 8th HODS symposium and International Conference in EMG and MSK Ultrasound.

I want to give a sincere thanks to our event sponsors: Esaote, Paychex, Cadwell, Neufit, In the Black, Debt-Free PT, Healthcare Business Academy, Hands-On Seminars, and Bradley & Parker, all of who have made this event possible.

In 2020, despite the unprecedented COVID-19 situation, we hosted this Symposium and conference online with international participation. Now, we are delighted to offer this 8th HODS Symposium and International Conference in EMG and MSK Ultrasound both online and also live, here in San Antonio, Texas.

San Antonio is the most visited city in Texas, with its beautiful San Antonio Riverwalk. A city with amazing history, it's the city of the San Antonio Commanders and YES the city of the famous San Antonio Puffy Tacos.

You see, technology and innovation brings together some of the most prolific minds and scientists of our professions.

COVID-19 has brought in front of humanity a huge challenge and it would be perhaps appropriate to spend time to talk about the pain and suffering that many people have endured or talk about the over 4.5 million deaths because of Covid 19 worldwide. And some of this has come very close to home; family members of our extended HODS family have passed and they will always be with us in the memories we keep.



Antonio, Texas from September 17 - 19, 2021

I will offer a huge acknowledgement to those who have suffered and are still suffering from the consequences of this disease and I will remind them that as humanity has done in the past, we will again overcome this situation and life will go on. Moments like these bring the best out of most people and kindness, cooperation and understanding prevail.

For those of you who are new to HODS, I want to say a few words about the fast trajectory that our organization has achieved. HODS was established in 2014 with with a main purpose to advance the physical therapist as the provider of choice for Electroneuromyography and MSK diagnostic testing technologies.

As we started developing our organization we realized that establishing a national franchise would be beneficial to the members of the organization who could capitalize on and benefit from the voices of all the members of the Franchise group. In 2017 we were established as a Hands-On Diagnostics Franchising LLC, providing territories of exclusivity and the creation of HODS Approved Diagnostic centers around the country.

In 2018 HODS acquired the AACE APTA approved EMG residency and with delivery of competent educational and mentorship programs led by Drs Ernst, Lugo, Brooks, McKibben and others, along with the Brooks/McKibben ECS prep curriculums, HODS graduates achieve year after year the highest number of ECS certifications.

The same year, efforts by the Orthopedic section of APTA, along with advocacy from HODS and our Director of MSK studies Dr Mohini Rawat, AIUM officially recognized PTs as providers authorized to perform and interpret MSK Ultrasound studies.

2020 became the year where HODS demonstrated unconditional dedication to the PT profession. HODS has been in the forefront of the fight against COVID-19 and in the preservation of PT practices in the midst of the pandemic.

HODS started hosting daily town hall meetings since early March 2020, bringing you all relevant data you needed to deal with the pandemic as private practice owners. Many of these meetings featured APTA leadership that helped to communicate all information we needed at that time.

HODS hosted the first COVID online forum that brought together experts from all fields to provide you with valuable information on compliance, Telehealth, insurance, PPP loan help and other information and helped you navigate through the crisis.

And then, I am sure you remember this: HODS sponsored and funded the PT for Heroes campaign: a nationwide campaign that brought the PT, OT and SLP professions in the front of major media organizations while helping our first responders.

We also hosted weekly webinars: Coffee with our HODS personalities. You got to enjoy Coffee with Angie McGilvrey, Christina Panetta, Nathan Shields, Will Humphreys, Bart McDonald and Jeanine McLellan, while networking with your peers and getting new ideas to help you expand your practices. A huge thank you to them for tirelessly putting this program together week after week. I am truly grateful that all of you have made time from your busy schedules to be here. Our purpose is to come together to share clinical and business ideas, learn from each other, and create strategies for the advancement of our professions for the next decade and beyond.

I am so proud of all members of our HODS family. We have now grown to more than 210 facilities across 27 states, where you are carrying out some truly outstanding work servicing your patients and your referring doctors...while giving back to your communities in so many ways.

Over the past several years, our HODS partners have performed thousands of tests and helped thousands of patients, while driving steady revenue growth in their facilities...creating affluence and expansion for their businesses.

All through this process, the HODS partners, faculty, staff, and board made significant strides on a nationwide level: a staggering 157 Clinical Rounds Webinars with 2,590 attendee hours the past 12 months. And yes, our faculty produced 28 courses, 81 teaching days, 22 EMG Diplomates, 14 EMG graduates, and 9 MSKUS Fellowship graduates.

Our rate of success in the Board Certification Exams - both for EMG and MSKUS – ranges from 90% to 100% and tonight during our awards ceremony we will celebrate your wins and achievements!

So with all that, what is the future of the HODS Franchise? We remain steadfast to the 4 core purposes of HODS. The HODS purposes and strategy, closely aligns to many of the purposes of the APTA and we work closely with APTA and ACEWM leadership to further advance the purposes of our profession.



HODS not only advocates especially for the resolution of the reimbursement issues of the profession but offers solutions to bypass Medicare and other insurance cuts. We are poised to continue disseminating the "Healing Hands Guided by Technology" message and put to work our new branding, marketing and sales strategies, with the help of our existing franchisees, while expanding our alliances with leaders in the healthcare space.

And how about the future of our HODS franchisees? With clear goals for 2021-2022 and with resources such as our roadmap, business manuals, automation and others we are creating Ideal HODS approved Diagnostic Centers running in parallel with Physical Therapy practices. These centers create not only Business to Consumer opportunities but also B2B opportunities

My friends, we are in a unique time in the healthcare professions and especially the profession of physical therapy, and as private practitioners. We are at the crossroads of deciding to fundamentally transform our profession to the most powerful ones among the healthcare professions...or to give up and succumb to the financial challenges of our time.

All of us stand at the leading edge of a major evolution in the physical therapy profession and those of you who are not PTs just brace for a major evolution in healthcare. Our generation of healthcare providers are the pioneers who will cure cancer, will send humans in Mars and will make healthcare affordable and accessible for each and every human in this planet.

We now have the opportunity to be a Catalyst in this major evolution.

Our HODS partners, AACE, AAMU, APTA, ACEWM and hundreds of forward thinking organizations and healthcare professionals around the country are participating in this movement to change and bring healthcare and society to a better state.

To all of you who are daring to dream and who are creating the future of the healthcare professions; to all of you who are helping people change their lives in a more positive direction; to all of you who believe that "It's time for Diagnostics in Physical Therapy," we would like to dedicate this 8th Annual Symposium and International conference in EMG and MSK Ultrasound.



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#KnowledgeHelpsPatients

"At the time, I sat down with two of my key therapists in the practice," explained St. Clair. "We were already aligned into three therapeutic focus teams. I was the PT board certified hand specialist, where I treat conditions from the shoulder. elbow, wrist, and hand. Our second Therapist, Jessica Collins, PT, DPT, Cert. MDT and a McKenzie Method specialist, focuses on the spine, and she sees patients with neck, mid and low back issues. And our third therapist, Beth Carr, DPT, CWS, handles lower extremity, hip, knee. ankle, balance, and prosthetics. We have had this model in place for 15 years, and it set us apart. As a private practice surround by large hospital systems, who have their own rehab systems, our model really worked well with patients." - Edward St. Clair

Three's the Charm Eddie St. Clair Embraces Diagnostics with 3-Prong Team

By Diane Lilli



From left to right are: Beth Carr, DPT, MSKUS Fellow; Jessica Collins, DPT, EMG/NCS Residency, and Eddie St.Clair, DPT, CHT, owner of West Park Diagnostics

5 years ago, Edward St. Clair, PT, DPT, Certified Hand Therapist and owner of West Park Rehab Physical Therapy, attended a Peer to Peer networking group. During the meeting, colleague Jeff Courcier introduced Diagnostics as an option for physical therapy, and St. Clair was intrigued.

"When we first met in that group, each of us were to present something that was unique about our practice, or our business, that could help others in the group," said St. Clair. "For example, one person had begun work on a a fitness center gym attached to this rehab clinic. Jeff brought along the MSK ultrasound idea for physical therapy in his presentation. From there, I led my own investigation into what was involved in Diagnostics for PT, and met with Hands-On Diagnostics."

At West Park Rehab Physical Therapy, the team was already employing a three-person team approach for their patients. This trifecta model was successful for fifteen years, with each lead therapist focused upon specific specialties. The system turned out to be exactly what local patients were searching for in their Pennsylvania area. The expert-based business model for West Park Rehab Physical Therapy was well established, and set them apart from other local practices. In their particular area of Pennsylvania, the practice is surrounded by large hospital systems with their own rehab systems, so patients were already searching for therapists who could handle their own specific needs plus offer Diagnostics on site.

Because the therapists were already specialists in specific areas, they each segued easily into training in MSK Ultrasound and EMG.

"At the time, I sat down with two of my key therapists in the practice," explained St. Clair. "We were already aligned into three therapeutic focus teams. I was the PT board certified hand specialist, where I treat conditions from the shoulder, elbow, wrist, and hand. Our second Therapist, Jessica Collins, PT, DPT, Cert. MDT and a McKenzie Method specialist, focuses on the spine, and she sees patients with neck, mid and low back issues. And our third therapist, Beth Carr, DPT, CWS, handles lower extremity, hip, knee. ankle, balance, and prosthetics. We have had this model in place for 15 years, and it set us apart. As a private practice surround by large hospital systems, who have their own rehab systems, our model really worked well with patients."

St. Clair said they now can do their evaluations to identify appropriate candidates for Diagnostics. The local acceptance by local physicians is robust. Adding PT patient care that would now include EMG and MSK Ultrasound was a perfect match for St. Clair and the practice.

"Rarely do we get a rejection, when we send our submittal for Diagnostic testing to the local physicians," he added. "They almost always say yes. We also reach out on our own to reach patients as well."

In regard to the new model of adding Diagnostics to their physical therapy practice, St. Clair said it was a seamless integration.

"We had launched the concept that followed the model traditionally recommended by HODS, where private practice owners within the franchise go through training to include EMG and MSK Ultrasound, but also may serve as the manager on the business side," St. Clair explained. "This manager would handle insurance contracts, marketing, and whatever was needed."

Currently, the practice boasts a large, spa inspired design for their Diagnostics room. The stylish atmosphere, coupled with the clarity of Diagnostics for physical therapy patients, has been a great success for the practice, especially since the patients embrace MSK Ultrasound and EMG.



Jessica Collins DPT

"Our patients get it," said St. Clair. "I have found that a our patients are definitely more bought into Diagnostics. MSK Ultrasound is probably the tool that really transcends their treatment, since it gets into the patient's mind. I can look at someone's shoulder as an upper extremist specialist, and I am seeing through the skin."

With MSK Ultrasound, St. Clair is able to translate a patient's results to each patient.

"I know where the muscles, tendons and ligaments are, but for me to explain that to patient is a big jump in conceptualization," he noted.

"You bring them a little closer to understanding their condition with Ultrasound. I can show them a tear every 3 weeks, and say 'look where that black spot used to be, now it's filling in,' and they appreciated seeing it."

When asked how they dealt with the Pandemic and lockdowns, St. Clair said they spent their time doing something priceless.

"When we didn't have patients to see we used the time to practice diagnostics," he said. "We elevated our skills during the downtime. We also developed our patient education materials and videos and uploaded them to YouTube. As Dr. Kostopoulos advised us early in March, 2020, we stayed connected with our patients, and always looked forward." This study discusses the evidence and importance of electrodiagnostic testing in clinical examination for the clinician treating elbow pathology. It also demonstrates the findings of electrodiagnostic testing with its clinical correlates in mononeuropathies at or around the elbow.

The study shares integration of the clinical relevance of electrodiagnostic testing and appropriate use with respect to the patient plan of care. This report details how adding electrodiagnostic testing can advance the knowledge of the problem and results in better management of the patient.

Electrodiagnosis of of the Elbow

By John Lugo, PT DPT ECS

Healing Hands Guided by Technology

DIAGNOSTICS & TREATMENT COMBINED

Case Study 1

A 34 y/o RHD woman, a Professional bowler, experienced numbness R thumb, index, middle fingers. Her PMH/PSH was unremarkable, after a period of 4 months.Referred to EDX consultant.

Electrodiagnostic Examination (EDX) Results

- Normal median nerve distal motor & sensory latency @ wrist stimulation
- Slow conduction velocity median motor nerve conduction study (MNCS) between wrist & elbow
- Low amplitude median MNCS & sensory nerve conduction study (SNCS) at all stimulation sites
- Severe spontaneous potentials in APB (abductor pollicis brevis) & FCR (flexor carpi radialis) on needle electromyography (EMG) exam
- Rest of EDX results are normal including EMG of pronator teres

EDX results rule out CTS. Sensitivity of EDX for CTS = 86% (*Werner & Andary 2011*) EDX results point to proximal median nerve injury, in between the elbow and wrist.

Neuromuscular Anatomy of the Elbow



Radial Nerve

PICCRE 1:10: stallary serve (x) and solid serve (H) with its main terms alternal, posterior interments serve (C) and for massive day upply. The serve may may main or the stall (c), and games (C), or the alternal (c) is as the partner attransments are up optimized in the maximum and systems transmission for forman respective for hardworlds), which force the alternal (Modeled Torry, The Comparison of Stream States). After to Examination of for Prophesil States

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Kimura J: Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice. (4th edition). New York: Oxford University Press, 2013

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Focal Mononeuropathies

Case Study: Proximal Median Neuropathy

EDX can be helpful in differentiating CTS vs PS vs double crush (*Preston & Shapiro 2021*) Careful EMG examination of FCR, FDS (flexor digitorum superficialis), lateral FDP (flexor digitorum profundus), FPL (flexor pollicis longus), and PQ (pronator quadratus) are required and if abnormal, localize injury proximal to the wrist (*Preston & Shapiro 2021*).

Thorough & atypical clinical examination findings correlate with pronator syndrome (*Dang & Rodner 2009*) Abnormal sensation of thenar eminence

Provocation tests accompanied by paresthesia

- Resisted flexion of the elbow with forearm in supination (lacertus fibrosus)
- Resisted flexion of middle finger PIP with forearm in supination (sublimis bridge)
- Resisted pronation with elbow in extension (pronator teres)

Rehabilitation for Pronator Syndrome

Nelson & Kokkonen (2021), Dididze & Sherman (2020), Skirven (2011)

- Selective rest, modifications, & support
- Avoid repetitive grasping & forceful pronation
- Elbow orthosis elbow flexion with neutral forearm
- Ergonomic split keyboard & vertical mouse
- Therapeutic Exercise
- Median nerve flossing
- Pronator stretching
- Flexor stretching
- Myofascial release

Proximal Median Nerve Entrapment at/about the Elbow



Fig. 21.3 Median merve anatomy in the region of the antecohild fossa and potential sites of entragement. Left, In the anteculutal lossa, the median mem-trackit adjuants to the foschild artry. As it means the forumm, it rates first forwards the the lacetua threases, a thick librows have that must from the medial appot of the locups tenden to the proximal lossam flexar macculature. In most individual, the median merve them name between the two basis of the proximate merves. Bight Supericial head of the provinate resource to choose the underlying median merve. As the median merve them and distally, it passes deep to the flexor digitorum sublimis (102) made and its proximal apportenties tendenous edge, locues as the sublimis height. The provines yndrome eiters to opposing that occurs time structures the sweed potential states of entragement in the engines of the astistabilat lineae, includings (17) locues (29) within the provinate merverse / 14 and Suppy (AMI, 2020; 1430) (1915–1903).

- Entrapment at Ligament of Struthers
- Entrapment under hypertrophied lacertus fibrosus
- Entrapment within the pronator teres (PT) muscle

Pronator Syndrome

- Entrapment beneath sublimis bridge of flexor digitorum superficialis (FDS)
- Fracture/Crush injuries at mid forearm
 - Anterior Interosseous Syndrome

Preston, D., Shapiro, B. Electromyography and neuromuscular disorders: Clinicalelectrophysiologic-ultrasound correlations 4th ed. Philadel phia: Elsevier, 2021.

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The objective of this study is to discuss and share specific Sonographic images and the importance of MSK Ultrasound testing in clinical examination for the clinician treating elbow pathology. The study also demonstrates numerous elbow disorders in detail.

MSK Ultrasound for Sonographic Evaluation of



By Dr. Konstantine Rizopoulos, PT, DPT, RMSK, APCA Registered in Musculoskeletal Sonography, APCA Co-Founder Hands-On Companies

Lateral epicondylitis "tennis elbow"

This is the most common elbow disorder. Microtrauma from repetitive pull on the osteotendinous attachment of the common extensor tendon (CET) causing tendinosis, and enthesopathy. ECR brevis is more commonly affected Symptoms: localized elbow and proximal forearm tenderness. Tendinosis: pain along over the CET. Enthesopathy: pain at tendon attachment, In chronic cases: pain at rest, decreased elbow extension, (Image 1a)







US: tendon is thickened, hypoechoic, dishomogeneous, with focal or diffuse areas of non fiber visualization, loss of the normal fibrillar pattern, fluid adjacent to the common tendon and lack of the normal tapering conformity. In advanced tendinosis, the angiofibroblastic infiltration creates a hypervascularity at color imaging (Image 1b)

Calcifications as part of crystal deposition diseases may be recognized. Cortical irregularities of the lateral epicondyle may also be present, although bony changes do not correlate with disease activity (*Image 1c*)

Partial tears under US can be recognized only when distinct anechoic clefts, oriented from the bony insertion distally, are visible in the tendon substance (Image 1d)









maae 1a

Lateral epicondylitis Treatment

PHYSIOTHERAPY • rest, • dry needling, • local steroid injections Surgical intervention • excision of the degenerated tissue, • resection of the common extensor tendon and debridement of the extensor tendon origin with release of the annular ligament may be recommended in stubborn cases. Differential diagnosis • posterior interosseous nerve entrapment • lateral collateral ligament injuries (Image 1e)





Elbow Pathologies: the Elbow Joint



Lateral Collateral Ligament Injury

Lateral ulnar collateral ligament is commonly injured in association with tears of the common extensor tendon due to overuse mechanisms. undiagnosed ligamentous tear can be the reason for failed lateral epicondylitis therapy (*Image 2a*)

Dynamic examination of lateral collateral ligament will cause widening of the joint space compared with the opposite normal side. (*Image 2b*)

Image 2a

lmage 2b







Medial Epicondylitis

Tendinosis including enthesopathy of common flexor tendon (CFT) due to overuse. FCR is more commonly affected, less common than lateral epicondylitis. Complete tear of the common flexor tendon is rare. Ulnar neuropathy can be connected to CFT tendinosis (*Image 3a*)

Medial Epicondylitis Symptoms

Discomfort and pain with: grasping activities, forearm pronation and repetitive valgus stress during sports such as baseball and golf. *(Image 3b)*







Image 3b





Medial Collateral Ligament Injury

The medial collateral ligament is stronger than the lateral collateral ligament. Acute or chronic overstretching due to: • valgus stress during throwing (Baseball pitching)

• Fall • Posterior dislocation (Image 4a)

Dynamic examination of medial collateral ligament will cause widening of the joint space compared with the opposite normal side. This is particularly useful in cases with partial-thickness tears, in which the ligament is continuous but lax. (*Image 4b*)

Image 4a





Olecranon bursitis

A localized fluid collection posterior to the olecranon. • Synovial wall hypertrophy within the subcutaneous tissue and hyperemia might be present. • Most common superficial bursitis. • A product of acute or repetitive local trauma

The causes of Olecranono bursitis include: rheumatoid arthritis, hydroxyapatite and calcium pyrophosphate deposition diseases, calcific enthesopathy of the distal triceps tendon, bilateral olecranon bursitis in cases with diabetes.

Gout, septic conditions with painful, skin warmth, erythema. In septic cases, US reveals edema and cellulitis. Needle aspiration of fluid is required for accurate diagnosis (Staphylococcus aureus most common bacteria) (*Image 5a*)





lmage 6a





Cubital Tunnel Syndrome, the Second Most Common Entrapment Syndrome

Causes include extrinsic compression of UN against the condylar groove, osseous space-occupying lesions: bone abnormalities from elbow fractures, osteophytes and loose bodies, heterotopic ossification, soft-tissue space-occupying lesions: thickening medial collateral ligament, ganglia. (*Image 6a*)

CSA > 9mm 2 narrowing at the level of compression, swelling proximal to the entrapment site, loss of the fascicular pattern, hypervascularity at color Doppler imaging.(*Image 6b*)

Symptoms include: Pain at medial elbow, sensory loss in the ring and little fingers, weakness of the ulnar- innervated hand muscles, Wasting at the first interosseous space and hypothenar eminence, "claw hand", metacarpophalangeal (MCP) hyperextension and proximal interphalangeal (PIP) and distal interphalangeal (DIP)



Image 6b





flexion. The little finger is slightly abducted (Wartenberg sign). (Image 6c)

Image 6c





During elbow flexion ulnar nerve can subluxate over the tip of the epicondyle or dislocate anterior to the epicondyle tip along with a snapping sensation. Although it can be normal variant, chronic microtrauma causes friction neuritis, where surgical nerve transportation is the only solution. Compete or partial absence of retinaculum Snaping triceps syndrome will dislocate ulnar nerve. Common in weight lifters.(*Image 7a*)

lmage 7a





Image 8b

Distal biceps tendon rupture

A common causes of acute anterior elbow pain. Usually presents in 40+ years of age, in manual labor, body building, weightlifting, strenuous eccentric contraction involving heavy weights, with complete or partial tears at: 1. at radial tuberosity 2. at myotendinous junction. Supination is more affected than elbow flexion. (*Image 8a & 8b*)

Tearing of the (lacertus fibrosus) might be present. If intact, then muscle retraction is limited and that makes difficult to evaluate the biceps tear. Complete tears: 1. Retracted: >8cm from radial tuberosity (torn bicipital aponeurosis) 2. Non-retracted: <8cm from radial tuberosity (intact bicipital aponeurosis) . hypoechoic fluid related to hematoma. *(Image 8c)*





Lateral Antebrachial Cutaneous Nerve irritation/entrapment can be related to hematoma or scar tissue after from BT tear/repair causing pain sensory changes along the anterolateral forearm. (*Image 8d*)

Image 8d



Image 8a

lmage 8c



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