

UT Southwestern
Medical Center

Department of Physical
Medicine & Rehabilitation



P M & R

C O N N E C T I O N

**Convergence Medicine:
Behavior to Biology**
p.4-8

SPRING 2020

8.

Message from the Chair

Dear friends and colleagues,

It is an extraordinarily difficult time to write a cheerful and inspirational message. The country and the world have been wrestling, sometimes ineffectively, with a covert killer that we can't diagnose well, can only treat symptomatically, and are hazy on preventing or predicting for the future. As a nation, we are struggling with another covert killer, the racism that seems baked into our national DNA. But that void of effective action has lasted decades, centuries – our young people cry out “how can this be in a democracy?”

We have been indicted in health care– negligence towards African Americans and Hispanics resulting in premature death, amputations, strokes: low expectations for training the next generation to be physicians and researchers with shockingly low numbers of African Americans and Hispanics; purposefully built-in economic barriers for African Americans and Hispanics to obtain health care in our architecturally pristine buildings and our healthcare systems with billions in reserves and endowments.

But none of us can get up in the morning without hoping for redemption. Kneeling in Seldin Plaza with our trainees and faculty in silence for such a long, long eight minutes and forty-six seconds brought us **together** examining our commitment to act and change our society. Donning our PPE and stepping up to face an unknown viral assailant has pushed us to learn by gathering data and discovering new ways to care for patients, acting **together** as a single community to shelter and wear our masks.



Kathleen R. Bell, MD
Professor/Chair
Kimberly-Clark Distinguished
Chair in Mobility Research
Department of PM&R

I am proud of our wonderful department, our specialties who look to the future, our rehabilitation focus on providing care for those who sometimes are unable to speak for themselves but I also challenge us to think deeply as we Zoom through this coming season of evaluation and recruitment: what are our obligations to our fellow citizens and how do we strengthen community in facing our national killers?

PM&R

C O N N E C T I O N

SPRING 2020

ON THE COVER

“Olfactory Groove Meningioma”

We are lucky to grace this issue’s cover with artwork created by a talented artist within our own department! It was originally painted for the O’Donnell Brain Institute’s BrainArt 2020 exhibit

Artist: Nelly Estefanie Garduno, MD
PM&R Clinical Research Coordinator

Medium: Pencil & Aquarelle
(watercolor) app enhanced.

“You see, brain tumors are like flowers. Some are bright and friendly. Some others might look benign but underneath they are full of thorns. Some tumors are like “invisible” flowers. Not much to look at. However under specific conditions their fluorescent glow can be detected. Some appear small and timid as to only inhabit a corner, but they can spread quickly

1

Spotlight on the Dhafer Lab

Delving into the biology of neuromuscular system from an engineering perspective

2

New Initiatives at the Frisco Clinic

Targeting patient behavior with lifestyle medicine & focus on sports medicine

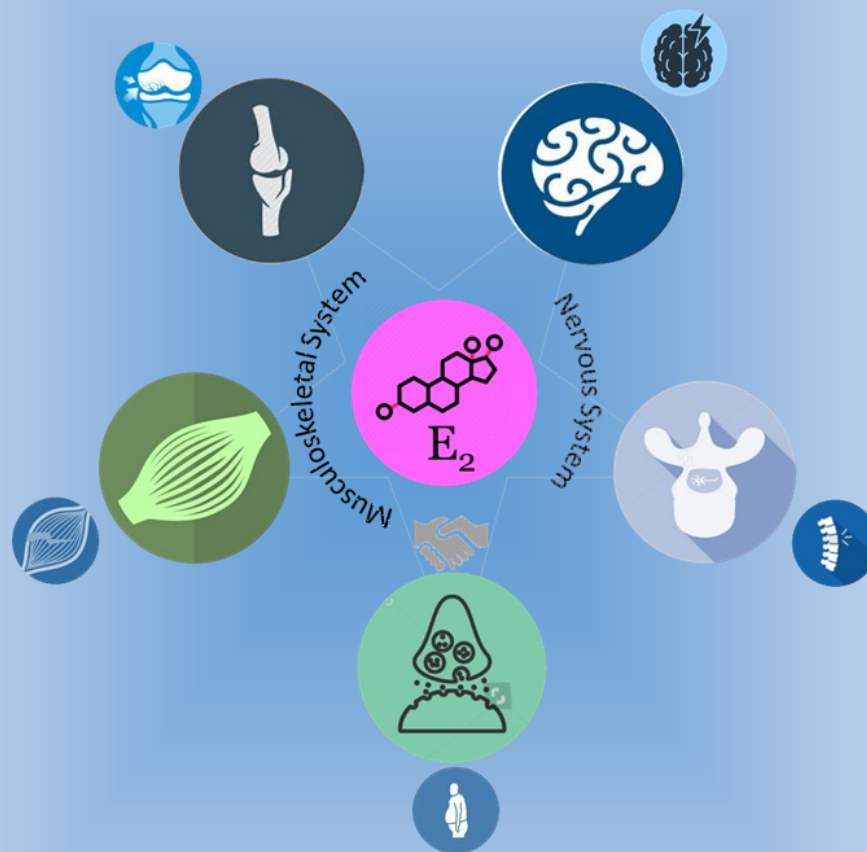
3

Annual PM&R Shark Tank

The ingenuity and marketing skills of our residents/trainees was on full display as they vied for much-needed funding!

1 | The Dhafer Lab: Convergence Medicine

Convergence medicine is the integration across disciplines including engineering, computer science, biology, chemistry, and various branches of medicine, with the goal of using the unique vantage point of each field to contribute to groundbreaking new solutions to various medical problems. Keeping this as the unifying principle, Dr. Dhafer's group pursues fascinating research tying together multiple disciplines. We wanted to take the opportunity to highlight some of this exciting research in this issue.



“The research we do is reflective of what PM&R is—a convergence practice, looking at the system as a whole, not organ-centered. To study systemic effects, you want to be in PM&R.”

Yasin Dhafer, Ph.D. | Vice Chair of Research, Dept. of Physical Medicine and Rehabilitation

Spinal Neurostimulation for Stroke Recovery



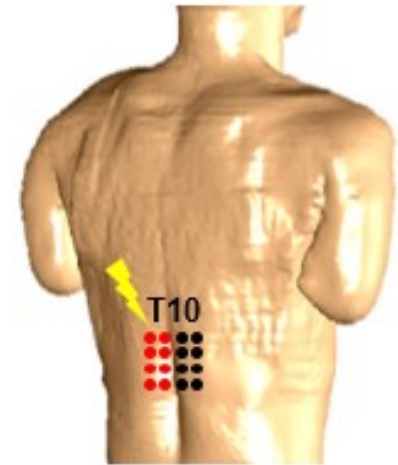
Nnaemeka Echebiri, MD | PGY3 PM&R Resident
Tony Kim, PhD Candidate | Graduate Student
Samuel Acuña, PhD | Postdoctoral Researcher

What is spinal neurostimulation?

Kim: Applying electrical stimulation to modulate lumbar spinal network excitability (see figure).

Why is it being done?

Acuña: The Dhaher lab's long-term goal is to use a grid of electrodes over the spinal cord to strategically and noninvasively stimulate spinal neurons to enhance functional recovery after stroke and spinal cord injury. In particular, we want to better understand the function of the neurons coming from the muscle spindle. As part of this study, we will utilize fMRI to study the blood flow during tendon reflexes from the biceps muscle. Understanding the relationships between the ascending and descending neurons as well as the spinal interneurons during reflex movement will allow us to choose specific areas that are most likely to result in neural improvement with spinal stimulation.



Transcutaneous spinal stimulation applied near T10 vertebrae using a multi-electrode array.

Echebiri: Current neuromuscular rehabilitative methods have mostly focused on activity-dependent plasticity and training. Yet, despite current methods, motor recovery after neurological insult is often incomplete. **Transcutaneous direct current spinal stimulation (tsDCS)** offers a potential new modality for enhancing neurorecovery and motor function in compromised individuals.

How does it work?

Echebiri: Dhaher lab engineers have developed a novel apparatus that safely delivers electrical current up to many times that of a TENS unit, in a transdermal manner. Therapy akin to this may allow us to activate and strengthen specific neural pathways through spinal as well as supraspinal mechanisms, which in turn may augment motor learning.

Future impact?

Kim: Results from this study will provide greater insight into the role of external electrical stimuli on short-term neuroplasticity in the spinal networks and help building a more effective strategy of utilizing spinal stimulation in future stroke research. If the spinal stimulation is shown to be beneficial in post-stroke lower-limb function, this study may allow physicians to take advantages of short-term spinal neuroplasticity in stroke rehabilitation.

Echebiri: We hope to begin to establish parameters for safe and effective use of tsDCS for motor recovery in post-stroke patients; as well as encourage future inquiries into other clinical applications.

Estrogen Effects on MSK Function

Two of the doctoral candidates in the Dhaher lab are studying the relationship between sex hormones and the musculoskeletal system.

Conner's research project focuses on the relationship between sex hormones and the health of articular cartilage, particularly in females. Clinical experiments are being conducted using a custom automated treadmill to investigate the changes of inflammatory biomarkers during a walking exercise regimen. We anticipate that results from this study will assist medical and scientific personnel in further understanding the importance of sex hormones in maintaining articular joint health, and also establish a platform for future biological studies. Physicians will be able to incorporate knowledge about the patient's hormonal profile in recommending proper treatment or preventative measures for joint injuries and pathology.



Conner Hutcherson
PhD Candidate



Luis Rodriguez
PhD Candidate

It is known that women are more likely to suffer anterior cruciate ligament (ACL) injuries than men. ACL injury incidence in women has been linked to certain phases of the menstrual cycle where estrogen levels fluctuate the most. My research seeks to explain some of the sex-differences in injury rate by investigating potential changes in muscle characteristics (e.g. muscle fiber composition) during injury associated phases of the menstrual cycle and determining how these changes may contribute to injury specific to women. This work will potentially inform injury prevention strategies for women and highlight the poorly understood role of estrogen in muscle.

Exploring Spinal Cord Form and Function



Samuel Acuña, PhD | Postdoctoral Researcher

Spinal neurostimulation has exciting potential to treat individuals with motor disability. The Dhaher Lab's long-term goal is to use an electrode grid over the spinal cord (SC) to noninvasively stimulate spinal neurons to enhance functional recovery after stroke and SC injury. However, the SC is a complex system of interconnected neurons with signals descending from the brain and arising from sensory organs. Also, we know little about the communication between nerves travelling from muscle spindles to spinal neurons. Previous investigations of spinal activity have used functional magnetic resonance imaging (fMRI) to measure blood flow during simple motor tasks (e.g., flexing biceps muscle), with little data on these particular neurons. Mechanical vibration over a tendon induces an isolated tonic vibration reflex from muscle spindles to the SC, but the effect of this reflex on SC activity has not been examined using fMRI. This project will use fMRI to examine SC changes during a tonic vibration reflex to better understand how the communication to the SC and from the brain modulates motor activity.

To do this, we have built an MRI-compatible testing apparatus in which subjects flex their right biceps muscle under load while we apply high frequency vibration directly to the biceps tendon. This vibration comes from a pneumatic actuator, powered with an air compressor and controlled outside the MRI testing room using a series of solenoid valves. We are excited at the prospect of improving neurorecovery for our patients.

2 | Frisco Clinic Initiatives

Reed Williams, MD, MBS, RMSK

At the new UT Southwestern Frisco Sports and Orthopedic Medicine clinic, we have physicians from Physical Medicine & Rehabilitation and Orthopedic Surgery and, with our superstar-staff of nurses, medical aides, and an orthopedic technician, we have created a comprehensive and multidisciplinary approach to sports and musculoskeletal care. Working alongside concussion experts like Juan Cabrera, MD and Nyaz Didehbani, Ph.D, with direct-access physical, occupational, speech, and pelvic-floor therapists using our on-site state of the art equipment and gym, and elite level neuropsychological care, we are able to provide full spectrum musculoskeletal care.

As the clinic's non-operative physician I see patients for muscle, tendon, nerve, bone, and joint injuries, as well as providing expertise in concussion, preventative health, and exercise prescription. As an expert in musculoskeletal ultrasound I can also provide in-room, live, immediate diagnostic imaging and use ultrasound for the delivery of interventional and micro-invasive therapies. Our goal is to act as a true resource for the community here in Frisco and function as a one-stop shop for patient with musculoskeletal and sports injuries.

My major interests are in sports and musculoskeletal medicine, applications of diagnostic and interventional musculoskeletal ultrasound, preventative and regenerative musculoskeletal care, and medical education. My personal goal is to see students and

residents training in the Frisco clinic in the



future and I would love to help start a UT Southwestern Sports Medicine Fellowship. Our group has established a shoulder research consortium and hope to overlap operative and non-operative modalities to improve our understanding of the shoulder. And lastly, all of us at Frisco came to work in order to be a part of the community itself. We opened our doors in December 2019 and look to weave ourselves into the fabric of the local community by bringing the medical experience, scientific tradition, and rich history of the UT Southwestern brand to a rapidly growing – and eager - city. ■

Lifestyle Medicine



Juan Cabrera, MD, and Nyaz Didhehani, PhD

Expanding the Interdisciplinary Concussion Clinic to Frisco always seemed to be a no-brainer (pun totally intended). After all, Frisco is the self-proclaimed Sports City, USA and home to many professional and amateur sports teams. At the same time, there is no shortage of medical providers offering concussion expertise in the area. When Nyaz Didehbandi, PhD and Juan Cabrera, MD started seeing patients in the new Frisco clinic, the challenge was going to be how to stand out in a potentially crowded area.

As a long-time Frisco resident and concussion expert, Dr. Didehbandi already knew that most concussion clinics in Frisco used a particular approach focusing on acute sports-related concussions using computerized testing and patient self-reports. This left many individuals with slower symptom resolution beyond three weeks and those with non-sports related concussions looking for a clinic to call home. Drs. Didehbandi and Cabrera have created a unique, comprehensive and evidence-based approach using lifestyle interventions for concussion care. Lifestyle interventions puts the person recovering from concussion in the driver's seat for their own recovery.

Dr. Cabrera joined the PM&R department in July 2019 with an interest in Lifestyle Medicine and sub-specialization in Brain Injury Medicine and Dr. Didehbandi is trained in health psychology and neuropsychology. Educating patients on the pillars of lifestyle medicine gives them a plan and strategy for recovery instead of feeling out of control. Those pillars of lifestyle medicine include: physical activity, sleep, nutrition, stress management and social connectivity. The goal is to combine these evidence-based strategies with current treatment approaches for concussion care to optimize recovery and build resiliency.

Rehab services at Frisco for concussion incorporate neuropsychological assessment and counseling, physical therapy, occupational therapy, cognitive therapy and individualized lifestyle program. ■

Annual PM&R Shark Tank!



Isabel Huang, MD and Candice Osborne, PhD, MPH, OTR/L
Co-Committee Chairs of Shark Tank

The sharks definitely had something to chew on this year at our annual Shark Tank Trainee Research Competition! Audience and sharks alike were on the edge their seats listening to the wide variety of studies proposed by our medical and research residents. The winners provide a brief synopsis of their projects below:

Dr. Kayla Williams: Awarded \$1600.00

My project is entitled “Neonatal Brachial Plexus Injury (NBPI) and Early Development: A Preliminary Profile” with the mentorship of Dr. Rinaldi and Dr. Lott. This will be a cross-sectional, observational study of approximately 40 children ages 1 through 6 years old with confirmed NBPI and their parents using two standardized, validated, parent reported psychometric tools (The Vineland-3 and the Parental Stress Index). The aim is to delineate patterns of early childhood development across several domains in children with NBPI as well as assess stress factors impacting parent-child relationship quality, which to date is not well described in literature despite common clinically observed patterns of family stress.

Mr. Andrew Nabsny: Awarded \$1000.00

This sub-study, under the ITBI Model Systems research program, will investigate the relationship between autonomic nervous system (ANS) function during inpatient rehabilitation for a traumatic brain injury (TBI), and trauma history. ANS will be assessed via : beat-to-beat heart rate and blood pressure to calculate heart rate variability and blood pressure variability, and pain sensitivity assessments. Our study will characterize the relationship between past trauma [TBI history (i.e., age of first TBI, single versus multiple TBIs) and past adverse events (i.e., Adverse Childhood Experiences)] and physiologic measures of ANS dysfunction during in-patient rehabilitation for moderate to severe TBI. I am working with Drs. Juengst, Matthews, Gaffney, Huang and Moralez.



Thanks to the wonderful judges who joined us this year: Dr. Shawn McClintock Associate Professor (Psychiatry), Dr. Kimberly Kho (Obstetrics and Gynecology), and Dr. Deborah Dierks (Chair , Emergency Medicine) -who joined us post-call! Always great to have cross-pollination between departments. We look forward to next year's Shark Tank for more jaw-some research ideas!

Shark Tank, cont.

Dr. Annie Abraham: Awarded \$800.00

The Centers for Medicare and Medicaid Services (CMS) identifies avoidable acute care readmission 30 days after discharge from inpatient rehabilitation as a negative outcome. Approximately 20% of patients in inpatient rehabilitation are admitted for stroke rehabilitation, and these patients carry a high risk of rehospitalization. This study aims to characterize 30-day hospital readmission risk factors as well as implement an education-focused intervention to reduce preventable readmission rates for this patient population. I am working with Dr. Audrie Chavez and our mentor Dr. Nneka Ifejika.

Dr. Audrie Chavez: Awarded \$800.00

Stroke is a leading cause of long-term disability in the United States, and ethnic minorities are more likely to have severe outcomes from stroke. Research has also shown that ethnic minorities and non-English speakers receive fewer minutes of therapy on the acute care floor despite controlling for disease severity. This retrospective cohort study will use data from the Texas Stroke Outcomes Registry to evaluate rates of recommendation for IPR by ethnicity after controlling for stroke type/severity and insurance status. I am working with Dr. Annie Abraham and our mentor, Dr. Nneka Ifejika.

Ms. Brittany Wright: Awarded \$800.00

My project is focused on predictors of neurobehavioral and emotional functioning following a mild traumatic brain injury. More specifically, I would like to look at the impact of premorbid and injury characteristics (i.e. age at first concussion, pattern of past TBI, prior psychiatric disorders, loss of consciousness, and time since injury) on outcomes as well as comparing adult and adolescent neurobehavioral symptom expression. I am working with Drs. Juengst, Barkshikar, Didehbani, and Jija Wang.

Graduating Trainees

Amir Ahmadian, DO	Pain Fellowship	UT San Antonio
Avinash Chavda, MD	Spine Fellowship	Centeno-Schulz Clinic - Broomfield, CO
Haibi (Daniel) Cai, MD	Neuromuscular Fellowship	University of Washington
Chen Cui, MD	Pain Fellowship	University of Wisconsin
Antonio Imbarlina, DO	Pediatric Rehabilitation Fellowship	UT Southwestern
Donald Kasitinon, MD	Sports Medicine Fellowship	Stanford University
Alexa Royston, DO	Private Practice	Spine Team Texas - Richardson, TX
Dominique Van Beest, MD	Spinal Cord Injury Fellowship	University of Washington
Christopher Vacek, MD	Academic faculty Position	CHI Health Immanuel - Omaha, NE

Resident Awards

Ursula Krusen Award

The Ursula Krusen Award is given each year to a PMR resident judged to have completed the best research. This competition is open to all residents throughout the state of Texas. We are proud to announce this year's award winner, Dr. Dominique Van Beest, UTSW R-4. Dr. Van Beest's presentation was entitled "What Killed Superman": her research done under the mentorship of Dr. Weihan Tan, demonstrated the financial and personal costs of pressure injuries to North Dallas veterans. Dr. Van Beest will be moving to the University of Washington for a Spinal Cord Injury Fellowship next year.

First Annual Quality Improvement Award Competition.

We were delighted to have our first Annual Quality Improvement Competition in which teams of residents discussed plans or results of their QI projects. Judges included Dr. Gary Reed, Associate Dean for Quality, Safety and Outcomes Education .

First Place: Improving Spasticity clinic dwell time (Kayla Williams, Dominique Van Beest, Kyle Wentz)

Second Place: Opioids (Derek Boyd, BI Fellow)

Third Place: Improving Efficiency for Parkland DME ordering (Alexa Royston , Caroline Smith, Marissa Marcotte)

The winners can renew their energy for more QI with a \$20 Starbucks gift card each.

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GO-PMR

**GIVING BACK
TO
PPROMOTE
RESIDENCY
DEVELOPMENT**



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New Faculty & Staff



Nitin Jain, MD MPH Tenured Professor, PM&R, Vice Chair Musculoskeletal and Sports Medicine.

Dr. Jain completed medical school at Baroda Medical College, and his MPH at the University of North Carolina at Chapel Hill. After a research fellowship in Epidemiology and Outcomes at Brigham and Women's Hospital, he did his PMR residency at Spaulding Harvard and a Shoulder/Elbow Surgery Fellowship at Brigham and Women's. He was on the faculty at Harvard and most recently, at Vanderbilt University. He is funded by NIH and PCORI for his work on shoulder disorders. We welcome Dr. Jain and his family to UTSW and Dallas.



Marielisa Lopez, MD | Assistant Professor, PM&R. Inpatient Spinal Injury/Surgery Service Attending.

Dr. Lopez completed medical school at the University of Puerto Rico and her PMR residency at Marianjoy Rehabilitation Hospital in Illinois. She has been working in private practice in the Dallas area in both acute inpatient and in skilled nursing facilities since 2016. She and her husband spend their spare time wrangling their two little boys and brand new puppy.



Terrell Robinson, MHA | Administrative Coordinator/Operations Manager

Terrell joined us in March 2020, and has been doing an excellent job assisting in department operations such as position management, supervising the administrative staff, and overseeing procurement and other processes.

Terrell joins us from the University of Rochester Medical Center in Rochester, New York, from where she brings with her 26 years of administrative experience, including as office manager and administrator for the Chief Operating Officer/ Executive Vice President. Terrell has a Bachelor's in Organizational Management and a Master's in Healthcare Administration from Roberts Wesleyan College. Terrell was looking to move to Dallas since her husband had a job transfer here at the end of 2019, and we are very lucky to have discovered her!



Kristina Billington, *** | Chairman's Office Coordinator

Kristina joined us in February 2020 and has been doing an excellent job as the primary administrative assistant to Dr. Bell as well as our Faculty Affairs liaison.

Kristina has worked a number of years in academic healthcare as an administrative assistant and office manager and comes to us from The University of Florida Medical Center's Thoracic and Cardiovascular Surgery Division. A career opportunity for her husband saw them moving to the DFW area in October 2019 from Gainesville, Florida, and she has found her new home with PM&R at UTSW. She has a refreshing perspective to bring to the department, and has a lot to share with her new coworkers – her hobbies include dressage, meteorology, and her precocious three year old little girl. "Go Gators!"

SAVE THE DATE

RESIDENCY GRADUATION:

Friday, June 19, 2020
Zoom platform

ADAPTIVE SPORTS EXPO:

Saturday, September 26, 2020
UT Arlington's Maverick's Athletic Center
Virtual vs. Hybrid, Platform TBD

RECENT EVENTS

The Second Annual Traumatic Brain Injury Seminar themed **Mission Possible: Emotional Wellness after TBI** was a great success given the challenge of converting to an online [event](#) kicking off the week of March 29th with [recorded presentations](#). Having these session available for the future is just a silver lining!



Publications & Presentations

PUBLICATIONS

Barker K, Kasitinon D. Exercise prescription and basic principles of therapeutic exercise. PM&R Knowledge Now. <https://now.aapmr.org/exercise-prescription-and-basic-principles-of-therapeutic-exercise/>. Published October 2019. Accessed December 5, 2019

Barker K, Vacek C. Peripheral neuropathies associated with drugs and toxins. PM&R Knowledge Now. <https://now.aapmr.org/peripheral-neuropathies-associated-with-drugs-and-toxins/>. Published November 2019. Accessed December 5, 2019.

Barker K, Eickmeyer S. Therapeutic Exercise. *Medical Clin North Am.* 2020;104(2):189-198.

The NIDILRR Burn Model System Program: Selected Findings II – A Supplement to Archives of Physical Medicine and Rehabilitation. Archives Supplement Editors – Schneider JC, and Holavanahalli RK. Volume 101, No1, January 2020, Supplement 1.

Srinivasan R and **Chaviano, K.** (2019). AAPMR Knowledge Now: Acute Flaccid Myelitis. Dallas, TX; 2019 Oct 8 [updated 2019 Oct 8]. Available from: <http://now.aapmr.org/acute-flaccid-myelitis/>

Chaviano K, Early D, Estler P, and R Srinivasan. (2019). “Functional outcomes in a three-year-old with Guillain-Barre syndrome using a multimodal therapeutic approach across a continuum of care: a case report.” Poster presentation. American Academy of Physical Medicine and Rehabilitation. San Antonio, TX.

Marcolina A, **Chaviano K**, and R Srinivasan. (2019). “Intestinal pseudo-obstruction as a complication of intrathecal baclofen in a pediatric patient: a case report.” *Pediatric*

Rehabilitation Symposium. 17 August 2019. University of Texas Southwestern. Dallas, TX.

Holavanahalli RK, Schneider JC, Miller CA. Introduction to the NIDILRR BMS Program: Selected Findings II. *Arch Phys Med & Rehabil* 2020;101:S1-4.

Holavanahalli RK, Helm PA, Kowalske KJ, Hynan LS. Effectiveness of Paraffin and Sustained Stretch in Treatment of Shoulder Contractures Following a Burn Injury. *Arch Phys Med & Rehabil* 2020;101:S42-9.

James, EG, Hausdorff, JM, Leveille, SG, Trivison, T, & Bean, JF (in press). Ankle control differentiation as a mechanism for mobility limitations. *Neuroscience Letters*.

James, EG., Conatser, P., Karabulut, M., Leveille, S.G., Hausdorff, J.M., Trivison, T., Bean, J.F. (in press). Walking speed affects gait coordination and variability among older adults with and without mobility limitations. *Archives of Physical Medicine and Rehabilitation*.

Javaid, S, Henke, A., and Inanoglu, D. “Pediatric Traumatic Brain Injury”. AAPMR Knowledge Know 2020.

Javaid, S, Leung, E., Pelshaw, C., and Erlandson, E. “Superimposed Guillain Barre Syndrome in Pediatric Hypoxic Injury”. *Journal of Pediatric Rehabilitation Medicine*.

Kasitinon D, Royston A, Wernet L, Garner D, Richard J, and Ramey Argo L. Health-Related Incidents among Intercollegiate Wheelchair Basketball Athletes. *Research oral presentation at the 2020 UTSW PM&R Scientific Day*. Dallas, TX. May 2020.

Kasitinon D, Abraham L, Bunt S, Davenport E, Sabo T, Cullum M, and Bell K. The Associations Between Structural Brain MRI Findings and Immediate and 3 Month Outcomes in Children with Concussion. *Research oral presentation at the 2020*

UTSW PM&R Scientific Day. Dallas, TX. May 2020.

Kenyon C, Sederberg M, **Kasitinin D**, and Latzka E. Physical Activity and Shoulder Health Behaviors in Recreational Wheelchair Athletes. *Research poster presentation at the 2020 ACSM Annual Meeting*. San Francisco, CA (cancelled). May 2020.

Kasitinin D, Ramey Argo L, LeBlanc A, and Levine B. The Longest Swim: A Case Report of BMD Changes Following a 5,500 Mile Swim Across the Pacific Ocean. *Case poster presentation at the 2020 AMSSM Annual Meeting*. Atlanta, GA (online). April 2020.

Richard J, Lin YS, **Kasitinin D**, Royston A, Bristow K, and Ramey Argo L. Utility of the King-Devick Test for Suspected Concussion in Wheelchair Basketball Players. *Research podium presentation at the 2020 AMSSM Annual Meeting*. Atlanta, GA (online). April 2020.

Vu K, **Kowalske K**. Botulinum Toxin A for Improving Lack of Ankle Dorsiflexion Range of Motion After Major Burns – A Retrospective Chart Review. *Arch Phy Med & Rehabil* 2020;101:S50-4.

Kumar RG & Scott, K. (2020). Chronic Pelvic Pain and the Chronic Overlapping Pain Conditions in Women. *Current Physical Medicine and Rehabilitation Reports*. 10.1007/s40141-020-00267-3.

Shah, A. Audio/Online curriculum: Advances in Multiple Sclerosis Primer: A Practical Guide to Rehabilitation in Multiple Sclerosis, a collaboration between the Consortium of Multiple Sclerosis Centers, The France Foundation and the AAPMR. This free CME course is available on the AAPMR website. <https://www.francefoundation.com/education/instruction-type/moc/a-practical-guide-to-rehabilitation-in-multiple-sclerosis-2nd-edition-detail>

Shah, A. Chapter in Braddom: Multiple Sclerosis. In: Braddom, Physical Medicine and Rehabilitation, Sixth ED., Cifu D. editor Elsevier, New York, 2019

Shah, A. Wheelchair Seating Monthly Lecture Series - Created a monthly lecture series for

multiple disciplines to learn about aspects of wheelchair related topics including seating, fit, ordering, custom molding, and medical documentation. The attendees include faculty, residents, therapists and staff.

Tzen YT, Purohit R, Mei S, Tan WH (2020). Assessing skin blood flow and interface pressure in patients with spinal cord injury provided an alternating pressure overlay: a cross-sectional study. *Wound Management and Prevention*, 66 (3):16-28.

PRESENTATIONS

Barshikar, S, “Covid-19 Recovery Program” – PM&R Department, UTSW. DFW PM&R Society Virtual (Zoom) Meeting. Thursday, May 14, 2020.

Javaid S., Lindenberg, A. and Srinivasan, R. Can the Ketogenic Diet Lead to Wernicke's Encephalopathy? A Pediatric Case Report. *Research poster presentation at AAP/ISPRM 2020*. Spring 2020.

Javaid, S, Lindenberg, Amanda, and Srinivasan, Rajashree. Does Traumatic Brain Injury Exacerbate Mental Health Disorders? A Pediatric Case Report. *Research poster presentation at WISMAC 2020*. Spring 2020.

Javaid, S, Watch Me JUUL, then ECMO: A Case Report of ARDS Due to Vaping. *Research poster presentation at AAP/ISPRM 2020*. Spring 2020

Kumar RG. “Chronic Overlapping Pain Conditions and Central Sensitization in Chronic Pelvic Pain.” UT Southwestern Multidisciplinary Pelvic Conference. 13 January 2020.

Krishnan S, Hong I, **Tzen YT**, Couture G, Reistetter T (2020). Characteristics and rehabilitation utilization of preexisting superficial and deep pressure injury among stroke elderly admitted to skilled nursing facilities. National Pressure Injury Advisory Panel Annual Conference. Houston, TX: NPIAP Press.

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