



PENN PHYSICAL MEDICINE and REHABILITATION UPDATE

2016

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A MESSAGE FROM **THE CHAIR**



Dear Colleagues,

I'm very pleased to share with you some of the many exciting things happening in the Department of Physical Medicine and Rehabilitation (PM&R) at Penn Medicine in this issue of the Penn PM&R Update. We highlight some of our recent studies regarding spine care and the researchers who lead and participated in these foundational investigations. We are indeed fortunate that a former faculty member has continued to support the department's work after her retirement and we share with you her legacy and generous contributions to our continued scholarship.

As a growing department that supports Penn Medicine as it expands across the region, we also welcome four new faculty members who have joined us over the past year.

In our feature article, we explore the recent research of Christopher T. Plastaras, MD, Assistant Professor of Physical Medicine and Rehabilitation. With the goal of ensuring the safety and efficacy of spinal injection care for persons suffering from painful back pain conditions, Dr. Plastaras has published a significant body of research during his tenure at Penn. As one of the common treatments for patients with spine-related pain, Dr. Plastaras investigated the types and incidences of adverse events associated with spine injections and found several factors which may predict higher risks for patients.

You may recall from our previous issue that Margaret Stineman, MD, retired from Penn in 2015 following an accomplished career. After making countless contributions to our department as well as to the field of PM&R through her research and innovation, Dr. Stineman chose to continue her support by establishing two annual awards to further departmental education and research. These awards are both named after her mother—Margaret Grace Stineman—who never doubted Margaret's great potential even with the physical challenges she faced. Penn PM&R is immensely grateful for Dr. Stineman's generous gift.

We continue to expand our department with the addition of four new faculty members in the past year. Penn PM&R is proud to welcome Jessica B. Berry, MD, Ellen K. Casey, MD, Randel L. Swanson, II, DO, PhD, and Brad Tucker, MD. Three additional physicians will join Penn PM&R in 2016. We look forward to welcoming them in our next issue and sharing how they will join us and help to advance the department.

As the oldest PM&R department in the country, our rich academic tradition remains robust today as we advance the science and practice of rehabilitation medicine. We highlight recent presentations and publications from our faculty this past year. They reflect our passion for generating new knowledge and our commitment to teaching the current and next generation of PM&R clinicians.

I hope that you'll find the information inside this issue informative and stimulating, and I look forward to sharing more exciting news in the future.

—**Timothy R. Dillingham, MD, MS**

The William J. Erdman II, Professor and Chair
Department of Physical Medicine and Rehabilitation
The University of Pennsylvania



UNDERSTANDING ADVERSE EVENTS IN INJECTION CARE FOR SPINE PATIENTS

The impetus for research at Penn Medicine's Department of Physical Medicine and Rehabilitation can arise from a variety of sources. For **Christopher T. Plastaras, MD**, *Assistant Professor of Physical Medicine and Rehabilitation*, the research he pursues often develops from questions asked by patients.

Injections for spine-related pain are a common mode of treatment for many patients. Although the treatments can be helpful in alleviating pain and disabling spine conditions, patients frequently worry about the process, safety and dangers of the injections. In his research, Dr. Plastaras has investigated the type and incidence of adverse events (AEs) in injection treatments, factors that may predict higher risk, and ways to ensure safety.

Dr. Plastaras' passion for PM&R research began when he was a fourth-year student at the Perelman School of Medicine at the University of Pennsylvania and working on spine-centered research projects. He was particularly interested in the emphasis of exercise as a treatment, and how injection care could be used to complement treatment for spine-related pain and disability. He soon realized how much in the field was not yet known. After an internship at Albert Einstein Medical Center, he went on to a PM&R residency at Northwestern University Feinberg School of Medicine and practiced for nine years at the Spine & Sports Rehabilitation Center of Northwestern University/Rehabilitation Institute of Chicago. In 2009, Dr. Plastaras returned

"THE MAIN FOCUS OF MY RESEARCH HAS REVOLVED AROUND THE MOST COMMON QUESTIONS ASKED BY OUR PATIENTS. THE PATIENTS HAVE DRIVEN THE QUESTIONS AND I HAVE APPLIED MY RESEARCH METHODS ACCORDINGLY."

—CHRISTOPHER T. PLASTARAS, MD

to Penn Medicine to continue to apply his clinical interest in interventional spine medicine management of musculoskeletal conditions. Since 2009, he has also served as the Director of the Spine, Sports, & Musculoskeletal Medicine Fellowship.

To facilitate Spine research, Dr. Plastaras created a way to collect data without much expense. Through self-study, he devised and programmed a relational database that captured daily clinical care and patients' questions that could be analyzed subsequently to answer research questions. Information obtained from the database has been used for research for the past six years.



Evidence for Treatment Decision-making

Recently, Dr. Plataras has co-authored several studies addressing key concerns related to AEs in injection therapies as well as the clinical implications of this research.

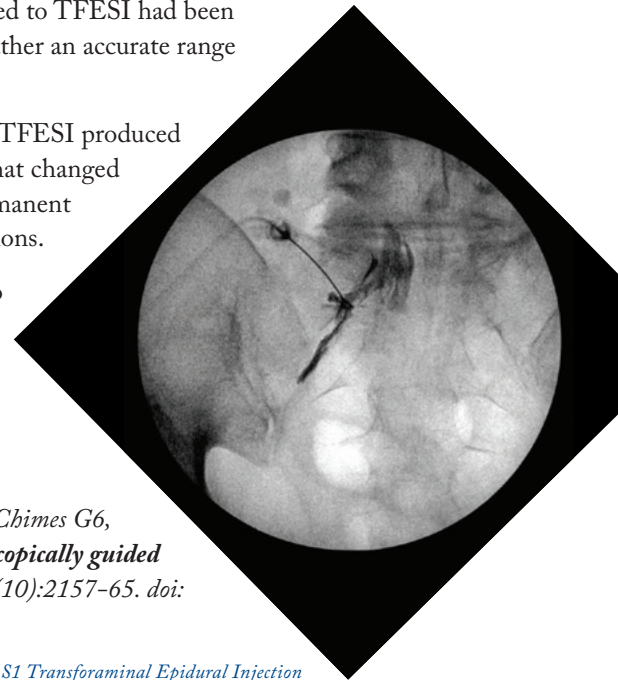
◆ Adverse Events (AEs) Associated with Fluoroscopically Guided Lumbosacral Transforaminal Epidural Steroid Injections (TFESI)

TFESI is commonly used to treat lumbosacral radicular pain. While AEs related to TFESI had been previously described, no study had systematically obtained patient reports to gather an accurate range and incidence of problems.

This study of 2,025 procedures found that fluoroscopically guided lumbosacral TFESI produced short-lived minor AEs. These included vasovagal episodes, intravascular flow that changed or interrupted the procedure, and pain exacerbation. There were no serious permanent complications. AE type and rate was similar to other axial corticosteroid injections.

- **Clinical Implications:** Male patients and younger patients are more likely to experience a vasovagal episode. Female patients more often have delayed AEs, including headache and facial flushing. Physicians might reduce patient anxiety by providing them with information about what to expect from TFESI, the possibility of common AEs, and this study's findings.
- **Resource:** *Plataras C1, McCormick ZL2, Garvan C3, Macron D4, Joshi A5, Chimes G6, Smeal W7, Rittenberg J8, Kennedy DJ9. Adverse events associated with fluoroscopically guided lumbosacral transforaminal epidural steroid injections. Spine J. 2015 Oct 1;15(10):2157-65. doi: 10.1016/j.spinee.2015.05.034. Epub 2015 Jun 9.*

Contrast enhanced fluoroscopically guided S1 Transforaminal Epidural Injection



◆ AE Rates for TFESI and Interlaminar Epidural Steroid Injection (ILES): A Multi-Institutional Study

This research study resulted in an incredible opportunity to collaborate with other experts at peer institutions, including the Mayo Clinic and Stanford University. In this study, TFESI has shown efficacy and effectiveness in treating radicular pain. Some clinicians use ILES as primary therapy for radicular pain because they perceive it to be safer since it is not placed near the exiting nerve, as TFESI is. In the largest study of its kind, this multi-institutional study of 16,638 consecutive procedures found that both routes (TFESI and ILES) are safe when performed using evidence-based procedural guidelines and showed low AE rates, with no major or permanent AEs.

- **Clinical Implications:** Because both injection types are safe when performed according to guidelines, this study suggests that physician choice can be based on demonstrated efficacy and effectiveness, not on safety concerns. Future research could examine which patients are more likely to benefit from which types of injections.
- **Resource:** *El-Yabchouchi CA1, Plataras CT2, Maus TP3, Carr CM3, McCormick ZL4, Geske JR5, Smuck M6, Pingree MJ7, Kennedy DJ6. Adverse Event Rates Associated with Transforaminal and Interlaminar Epidural Steroid Injections: A Multi-Institutional Study. Pain Med. 2015 Nov 23. doi: 10.1111/pme.12896. [Epub ahead of print]*

◆ AEs Associated with Fluoroscopically Guided Intra-articular Zygapophyseal Joint (IAZJ)

Although IAZJ injections are widely performed to alleviate pain in spinal facet joints, there was no systematic analysis of AEs related to treatment. This study found minimal associated AEs. Most common were vasovagal reaction and injection site soreness.

- **Clinical Implications:** Fluoroscopically guided IAZJ injections have a low rate of AEs immediately and 24-72 hours after the procedure. Physicians can provide these findings to patients as part of the informed consent process.
- **Resource:** *Plastaras C, McCormick Z1, Macron D, Garvan C, Joshi A, Chimes G, Smeal W, Rittenberg J. Adverse events associated with fluoroscopically guided zygapophyseal joint injections. Pain Physician. 2014 Jul-Aug;17(4):297-304.*

In conclusion, Dr. Plastaras' research has shown that not only are these procedures safe, but his team is also committed to finding ways to reduce and manage the AEs that are known to cause anxiety in patients.

"IT IS REASSURING FOR OUR PATIENTS TO KNOW THAT NOT ONLY ARE WE USING THE BEST AND SAFEST TREATMENTS KNOWN, BUT THE MEDICAL TEAM THAT THEY ARE ENTRUSTING THEIR CARE TO IS PART OF CREATING THE RESEARCH THAT HAS DEVELOPED THESE PRACTICES. WE ARE TRULY LOOKING OUT FOR OUR PATIENTS' SAFETY AND WELL-BEING."

—CHRISTOPHER T. PLASTARAS, MD



RESEARCH INITIATIVES

In 2016, Dr. Plastaras will collaborate with investigators at University of Colorado, Cleveland Clinic, and the University of Florida to investigate patients with lumbar disc herniation that resulted in leg weakness. This study will describe the evolution of strength recovery featuring non-surgical treatments.

Generous Estate Gift

from Retired Faculty Member

MARGARET G. STINEMAN, MD, Establishes Two Prestigious Awards



"This gift is dedicated to my mother" says Dr. Margaret Stineman of her gift to the Department of Physical Medicine and Rehabilitation at Penn Medicine.

"Born with physical disabilities that affected my musculoskeletal system, neurological system, eyes, internal organs and my lungs, I was a physically disabled child. Despite this, my mother gave me her own name: which through my life filled me with a sense of unconditional love and acceptance."

Not expected to live to adulthood, let alone achieve a medical degree, Margaret's mother never doubted that her daughter would achieve great things in her life. The elder Margaret Stineman, at the age of 90, remains supportive of her daughter and is touched by the gift dedication.

Through a provision in her estate, Dr. Stineman is establishing two awards, both named in honor of her mother:

◆ **The Margaret Grace Stineman Lectureship and Prize**

This endowment is intended to contribute to drawing world-wide candidates to the lectureship, thus directing attention to issues of relevance to empowering people with disabilities. The prize will honor and recognize those who, during their lifetimes, have generated the greatest benefit for people with disabilities.

◆ **The Margaret Grace Stineman Bridge/Seed Award:**

In contrast, this second award will be to support exceptionally gifted junior faculty members at the University who have demonstrated the potential to achieve meaningful research or other types of scholarly work of major benefit to those with disabilities.

The support will enable the beginning, the continuation, or the completion of a specific project.

"Margaret's career at Penn is something to behold." says Timothy Dillingham, MD, MS, Chair of the Department of Physical Medicine and Rehabilitation. "During her 30 year tenure, she was a trailblazer in our field of practice, both clinically and as a researcher. Dr. Stineman garnered uninterrupted funding from the NIH beginning in 1990—and her lab is still running today despite her retirement. For Margaret to make this incredibly impactful gift, it really speaks to her love for her past patients and those future patients of the department. We are honored and humbled by her decision."

"FOR MARGARET TO MAKE THIS INCREDIBLY IMPACTFUL GIFT, IT REALLY SPEAKS TO HER LOVE FOR HER PAST PATIENTS AND THOSE FUTURE PATIENTS OF THE DEPARTMENT. WE ARE HONORED AND HUMBLLED BY HER DECISION."

—TIMOTHY R. DILLINGHAM, MD, MS

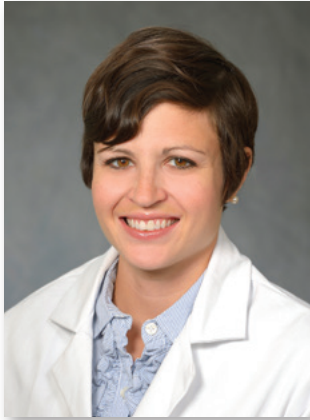
YOUR SUPPORT MATTERS!

Philanthropy plays a critical role in enabling the expert physicians and scientists at Penn Medicine to enhance the care of our patients and advance medical discovery. This would not be possible without the generosity of friends, patients and loved ones, who understand the impact of donations to our institution, and our science.

Penn Medicine offers many creative giving opportunities that enable you to **make a difference** in the lives of those touched by illness and disease. The Office of Development is ready to assist in finding a giving vehicle that is right for you. To make a gift, or to learn more about planned and creative options for giving, please contact Chris Evans at **215.746.4432** or **wcevans@upenn.edu**.

PENN PHYSICAL MEDICINE AND REHABILITATION

WELCOMES



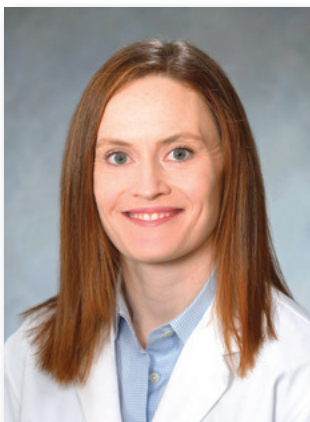
Jessica B. Berry, MD

*Assistant Professor of Clinical Physical Medicine and Rehabilitation
Director of the Spinal Cord Injury (SCI) Services, Good Shepherd Penn Partners*

Dr. Berry received her Bachelor of Arts in Biology and Biochemistry in 2006 from McDaniel College in Westminster, Maryland and received her medical degree in 2010 from the University of Maryland School of Medicine. She completed her internship in 2014 in internal medicine at the University of Maryland Medical Center and completed her residency in Physical Medicine and Rehabilitation as well as her fellowship in Spinal Cord Injury Medicine in 2015 at the University of Pittsburgh Medical Center.

Dr. Berry is board certified in Physical Medicine and Rehabilitation, has pending certification in Spinal Cord Injury Medicine, and is a member of the American Academy of Physical Medicine and Rehabilitation, the Association of Academic Physiatrists and the Academy of Spinal Cord Injury Professionals.

Dr. Berry's clinical interests include inpatient and outpatient treatment of spinal cord injuries and spinal cord-related disorders including longitudinal care. She is also interested in the management of spasticity of all etiologies, is proficient in chemodenervation procedures and has proficiency in management of intrathecal baclofen.



Ellen K. Casey, MD

*Assistant Professor of Physical Medicine and Rehabilitation
Hospital of the University of Pennsylvania*

After earning her medical degree from the University of Virginia School of Medicine, Dr. Casey completed residency in Physical Medicine and Rehabilitation and a fellowship in Sports Medicine at the prestigious Rehabilitation Institute of Chicago (RIC) where she also served as Chief Resident. She was the Co-Director of the Women's Sports Program at RIC from 2010-2014.

Dr. Casey's clinical practice focuses on the conservative treatment of acute sports medicine injuries and spine disorders, with particular expertise in treating female athletes. She is skilled in fluoroscopically-guided spine injections and ultrasound-guided peripheral joint and soft tissue injections.

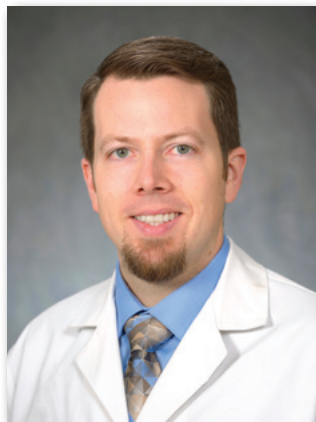
Dr. Casey is actively involved in research regarding injury prevention in the female athlete with a focus on stress fractures and the role of sex hormones in knee injuries (particularly anterior cruciate ligament tears). She has received several research awards, including a K-12 grant from the National Institutes of Health from 2011-2014. She and her team are the recent recipients of an NIH R01 which will support their continued investigations in this area.

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PENN PHYSICAL MEDICINE AND REHABILITATION

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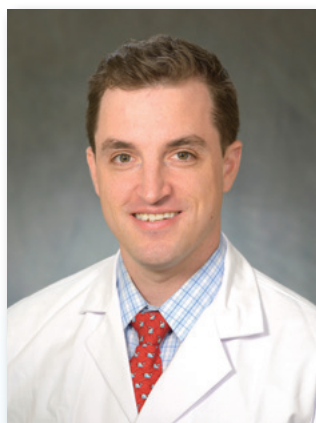
Randel L. Swanson, II, DO, PhD

*Assistant Professor of Physical Medicine and Rehabilitation
Hospital of the University of Pennsylvania*

Dr. Swanson served in the United States Marine Corps until 2001. He received his Regents Bachelor of Arts in pre-medical studies in 2003 from Shepherd University in Shepherdstown, West Virginia—graduating *magna cum laude* and receiving the Joseph McMurrin Scholar Award for 2004, the highest academic honor granted by Shepherd University.

He received his PhD in 2010 in Cell and Molecular Biology and his Doctorate of Osteopathic Medicine in 2011 from the University of Medicine and Dentistry of New Jersey—receiving the Outstanding Achievement in Physical Medicine and Rehabilitation Award and the Outstanding Achievement in Osteopathic Manipulative Medicine Award in 2011. He completed his residency in Physical Medicine and Rehabilitation at the Temple University School of Medicine/MossRehab in 2015.

Dr. Swanson's clinical responsibilities will involve inpatient and outpatient neurorehabilitation, with a focus on traumatic brain injury at the Philadelphia VA Medical Center and at the Penn Institute for Rehabilitation Medicine. His research interests include the role of IgG-autoantibodies in chronic post-TBI neuropathologies—examining their utility as novel biomarkers for advanced diagnostics and for prognostic testing.



Bradley G. Tucker, MD

Assistant Professor of Clinical Physical Medicine and Rehabilitation

Dr. Tucker received his Bachelor of Science degree in Mechanical Engineering from Cornell University in 2006, and received his medical degree from Temple Medical School in 2011 with Alpha Omega Alpha distinction. In 2011, he began a one year internship in the Department of Surgery at Temple and completed his residency in Physical Medicine and Rehabilitation in 2015—serving as Chief Resident.

Dr. Tucker has been a member of the American Academy of Physical Medicine and Rehabilitation since 2012. He was a physician volunteer for the Department of Veteran's Affairs Wheelchair Games, held in Philadelphia in 2014. As a resident, Dr. Tucker was part of the Clinical Leadership Team that helped build the first electronic inpatient record platform at Penn Medicine.

His areas of interest are in the management of persons with limb loss, electrodiagnostic medicine, and general rehabilitation. Dr. Tucker will focus on furthering clinical programs at the Penn Musculoskeletal Center and the Philadelphia VA Medical Center, as well as leading consultative care efforts at the Penn Center for Rehabilitation and Care to better coordinate rehabilitative care for complex patients.

PUBLICATIONS AND PRESENTATIONS

Priya Varma, MD, MPH

PUBLICATIONS

Hill CE, Varma P, Lenrow D, Price RS, Kasner SE. **Reducing Errors in Transition from Acute Stroke Hospitalization to Inpatient Rehabilitation.** *Front Neurol.* 2015 Oct 27;6:227. doi: 10.3389/fneur.2015.00227. eCollection 2015.

Temme, K; Varma, P; Charboneau, M. **Posterior Knee Pain with Swelling.** *AAPM&R Online Case Study, MSK Case #50.* October 2015. <http://me.aapmr.org>.

Ellen K. Casey, MD

PUBLICATIONS

Plastaras C, McCormick Z, Nguyen C, Rho M, Nack SH, Roth D, Casey E, Carneiro K, Cucchiara A, Press J, McLean J, Caldera F.: **Is Hip Abductor Strength Asymmetry Present in Female Runners in the Early Stages of Patellofemoral Pain Syndrome?** *American Journal of Sports Medicine.* 2015;44(1):105-112.

Casey E, Okafor E, Chun D, Reese M, Shah F and Dhaher YY. **Motor neuron excitability throughout the Menstrual and Contraceptive Pill Cycle.** *PMR.* 2016:1-9.

Krabak BJ (Chair), Diamond M (Vice-Chair), Aagesen AL, Casey E, Davis B, Ellen MI, Mautner KR, McInnis KC, Nichols JT, Semakula BN, Zaremski JL: **Musculoskeletal and Sports Medicine PM&R Curriculum Guidelines, 2015.** Retrieve from <http://www.aapmr.org/Pages/default.aspx>.

Caldwell M, Casey E, Powell B, Shultz S. **Hormonal Influences on Sex Differences in Sports Medicine, in: Sex Differences in Sports Medicine 2016 (Demos).**

PRESENTATIONS:

Gymnastics Medicine. *AAPMR Annual Meeting.* October 2015.

Avoiding Peripartum Musculoskeletal Problems in the Peripartum Female. *AAPMR Annual Meeting.* October 2015.

Anatomy and Function of the Core. *AAPMR Annual Meeting.* October 2015.

Multifactorial Nature of ACL Injury. *Mid Atlantic American College of Sports Medicine Annual Meeting.* November 6, 2015.

Course Director and speaker for the Resident/Fellows Workshop at the Association of Academic Physiatrists Annual Meeting. February 17, 2016.

Pearls for Treating Low Back Pain in the Athlete. Speaker and course director. *American Medical Society for Sports Medicine Annual Meeting.* April 19, 2016.

Evaluation and Management of Lumbar Radiculopathy in the Athlete. *American College of Sports Medicine Annual Meeting.* June 3, 2016.

Randel Swanson, DO, PhD

PRESENTATIONS

Chronic Neuropathology Following Traumatic Brain Injury. *AOCPMR Mid-Year Meeting & Scientific Seminar.* Philadelphia, PA.

Rehabilomics: Moving Toward Personalized Rehabilitation and Medical Management Following TBI. *4th Annual Trauma Symposium.* Penn Presbyterian Medical Center, Heart and Vascular Pavilion. April 6, 2016.

Franklin Caldera, DO

PUBLICATIONS

Plastaras C, McCormick Z, Caldera F et al. **Is Hip Abductor Strength Asymmetry Present in Female Runners in the Early Stages of Patellofemoral Pain Syndrome?** *AJSM Vol. 44, No.1,* 2016. DOI:10.1177/0363546313611632.

PRESENTATIONS

Diagnostic and Interventional Musculoskeletal Symposium with Cadaver Lab. NYU Bellevue MSK Course. May 2016.

Veterans Disparities in Medicine. Panel Discussion. Disparities Leadership. Feb 2-3, 2016.

USMSK Cadaver Workshop Knee AOCPMR. March 20, 2016.

Yejia Zhang, MD, PhD

PUBLICATIONS

Shi P, Chen EY, Cs-Szabo G, Chee A, Tanoury C, Qin L, Lin H, An S, An HS, Zhang Y. **Biglycan Inhibits Capsaicin-Induced Substance P Release by Cultured Dorsal Root Ganglion Neurons.** *Am J Phys Med Rehabil.* 2016 Mar 4. [Epub ahead of print]; PMID: 26945213.

Lin T, Tong W, Chandra A, Hsu SY, Jia H, Zhu J, Tseng WJ, Levine MA, Zhang Y, Yan SG, Liu XS, Sun D, Young W, Qin L. **A comprehensive study of long-term skeletal changes after spinal cord injury in adult rats.** *Bone Res.* 2015 Oct 27;3:15028. doi: 10.1038/boneres.2015.28. eCollection 2015. PubMed PMID: 26528401; PubMed Central PMCID: PMC4621491.

Chandra, A., Lin, T., Zhu, J., Tong, W., Huo, Y., Jia, H., Zhang, Y., Liu, X.S., Cengel, K., Xia, B., and Qin, L. **PTH1-34 blocks radiation-induced osteoblast apoptosis by enhancing DNA repair through canonical Wnt pathway.** *J. Biol. Chem.* 2015 Jan 2;290(1):157-67. doi: 10.1074/jbc.M114.608158. Epub 2014 Oct 21. PubMed PMID: 25336648; PubMed Central PMCID: PMC4281718.

Zhang Y, Chee A, PhD, Shi P, Adams SL, Markova D, Anderson DG, Smith HE, Deng Y, Plastaras CT, An HS. **Intervertebral Disc Cells Produce Interleukins Found Elevated in Patients with Back Pain.** *Am J Phys Med Rehabil.* 2015 Oct 22. [Epub ahead of print]; NIHMS#:719503.

Yeja Zhang, MD, PhD (continued)

PUBLICATIONS

Zhang Y, Chee A, Shi P, Wang R, Moss I, Chen EY, He TC, An HS. **Allogeneic Articular Chondrocyte Transplantation Downregulates Interleukin 8 Gene Expression in the Degenerating Rabbit Intervertebral Disk *In Vivo***. *Am J Phys Med Rehabil*. 2015 Jul;94(7):530-8. PMID: 25133623; PMCID: PMC4329109 (selected for cover art).

PRESENTATIONS

Pathophysiological Role of ADAM8 (A Disintegrin and Metalloproteinase 8) in intervertebral disc degeneration. Presentation; *Gordon Research Conference (GRC)*, Matrix Metalloproteinases, 2015; Sunday River, Newry ME, United States. August 2015.

Intervertebral disc degeneration and regeneration. Orthopaedic Research Club (ORC), University of Pennsylvania. January 2016.

Pathophysiological Role of ADAM8 (A Disintegrin And Metalloproteinase 8) in intervertebral disc degeneration. Oral Platform Presentation. *The 2016 Association for Academic Physiatrists (AAP) Annual Meeting*, Sacramento, USA. February 18-20, 2016. February 2016.

Intervertebral Disc Degeneration and Regeneration. Squishy Physics Talk, Materials Research Science and Engineering Center, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA. February 2016.

MicroRNA (Mir)-140 and intervertebral disc degeneration. Mass General Hospital, Massachusetts General Hospital, Harvard Medical School, Boston, MA. February 2016.

Kelli Williams, PhD

PRESENTATIONS

Surviving and Thriving with Moderate to Severe Traumatic Brain Injury. Presented at the *Second Annual Mind Your Brain Conference*, Penn Neuroscience, Philadelphia, PA. 2016.

Panel Moderator for Survivors of Traumatic Brain Injury. Presented at the *Second Annual Mind Your Brain Conference*, Penn Neuroscience, Philadelphia, PA. 2016.

Being Present: Bringing Mindfulness to Your Personal and Professional Life. A continuing education webinar presented to the National Academy of Neuropsychology. July 2015.

Chris Plastaras, MD

PUBLICATIONS

McCormick ZL, Slipman C, Kotcharian A, Chhatre A, Bender FJ, Salam A, Menkin S, Kennedy DJ, Plastaras C. **Percutaneous Lumbar Disc Decompression Using the Dekompressor: A Prospective Long-Term Outcome Study.** *Pain Medicine*. 2016 Feb 24;pnv122. PMID 26917626.

Plastaras CT, Popescu A, McLaughlin CA, Sanderson SO, Biaesch AG, Bosley JC, Kaplan B, Pukenas BA. **C-Arm Fluoroscope Angle Settings for Fluoroscopically Guided Lumbar Transforaminal Epidural Injections.** *Pain Medicine*. 2015; 0: 1-7 doi 10.1093/pnv013.

El-Yahchouchi CA, Plastaras CT, Maus TP, Carr CM, McCormick ZL, Geske JR, Smuck M, Pingree MJ, Kennedy DJ. **Adverse Event Rates Associated with Transforaminal and Interlaminar Epidural Steroid Injections: A Multi-Institutional Study.** *Pain Medicine*. 2015 Nov 23. doi: 10.1111/pme.12896. [Epub ahead of print] PMID: 26593277.

Plastaras C, McCormick Z, Nguyen C, Rho M, Nack SH, Roth D, Casey E, Carneiro K, Cucchiara A, Press J, McLean J, Caldera F. **Is Hip Abduction Strength Asymmetry Present in Female Runners in the Early Stages of Patellofemoral Pain Syndrome?** *The American Journal of Sports Medicine* 43(11), November 2015: doi: 10.1177/0363546515611632. PMID 26566993.

Joshi AB, McCormick ZL, Sully K, Garvan C, Plastaras CT. **Factors That Predict Satisfaction With Medical Care: Data From 27,212 Injured Workers Surveyed for 14 Years.** *Journal of Occupational and Environmental Medicine*. Nov 12 2015. [Epub ahead of print]. DOI: 10.1097/JOM.0000000000000578. PMID: 26565708.

Zhang Y, Chee A, Shi P, Adams SL, Markova DZ, Anderson DG, Smith HE, Deng Y, Plastaras CT, An HS. **Intervertebral Disc Cells Produce Interleukins Found in Patients with Back Pain.** *American Journal of Physical Medicine & Rehabilitation*. Publish Ahead of Print, October 22, 2015. PMID 26495812

Plastaras C, McCormick Z, Garvan C, Macron D, Joshi A, Chimes G, Smeal W, Rittenberg J, Kennedy DJ. **Adverse Events Associated With Fluoroscopically Guided Lumbosacral Transforaminal Epidural Steroid Injections.** *The Spine Journal*. Volume 15, Issue 10, 1 October 2015, Pages 2157–2165. PMID 26065819; <http://dx.doi.org/10.1016/j.spinee.2015.05.034>

McCormick Z, Cushman D, Caldwell M, Marshall B, Ghannad L, Eng C, Patel J, Makovitch S, Chu SK, Babu AN, Walega DR, Marciniak C, Press J, Kennedy DJ, Plastaras C. **Does Electrodiagnostic Confirmation of Radiculopathy Predict Pain Reduction after Transforaminal Epidural Steroid Injection? A Multicenter Study.** *Journal of Nature and Science*. 1(8) 2015:e140. PMID:26251843

McCormick Z, Kennedy DJ, Garvan C, Rivers E, Temme K, Margolis S, Zander E, Rohr A, Smith MC, Plastaras C. **Comparison of Pain Score Reduction Using Triamcinolone vs. Betamethasone in Transforaminal Epidural Steroid Injections for Lumbosacral Radicular Pain.** *American Journal of Physical Medicine & Rehabilitation*. 2015. DOI: 10.1097/PHM.0000000000000296. PMID:25888660

Sung W, Abraham M, Plastaras C, Silfies SP. **Trunk Motor Control Deficits in Acute and Subacute Low Back Pain are Not Associated with Pain or Fear of Movement.** *The Spine Journal*. 2015, Volume 15, Issue 8, Pages 1772–1782.

Cushman D, McCormick Z, Casey E, Plastaras CT. **Discrepancies in Describing Pain: Is There Agreement Between Numeric Rating Scale Scores and Pain Reduction Percentage Reported by Patients with Musculoskeletal Pain After Corticosteroid Injection?** *Pain Medicine*. 2015 (16:5): 870-876.

Kennedy DJ, Schneider B, Smuck M, Plastaras CT. **The Use of Moderate Sedation for the Secondary Prevention of Adverse Vasovagal Reactions.** *Pain Medicine.* April 2015 (16:4): 673 -679.

McCormick Z, Margolis S, Temme K, Rivers E, Cameron SA, Smith MC, Rohr A, Zander E, Garvan C, Kennedy DJ, Plastaras C. **Concordant Pain Provocation During Transforaminal Epidural Steroid Injection for Lumbosacral Radiculopathy: Effect on Pain Outcome and Predictive Factors.** *Pain Physician.* January/February 2015 (18:1): E19-E26.

Carr CM, Plastaras CT, Pingree MJ, Smuck M, Maus TP, Geske JR, El-Yahouchi CA, McCormick ZL, Kennedy DJ. **Immediate Adverse Events in Interventional Pain Procedures: A Multi-Institutional Study.** *Pain Medicine.* 2016 Apr 15;pnw051. PMID: 27084412.

McCormick ZL, Slipman C, Kotcharian A, Chhatre A, Bender FJ, Salam A, Menkin S, Kennedy DJ, Plastaras C. **Percutaneous Lumbar Disc Decompression Using the Dekompressor: A Prospective Long-Term Outcome Study.** *Pain Medicine.* 2016 Feb 24;pnv122. PMID 26917626.

McCormick ZL, Cushman D, Marshall B, Caldwell M, Patel J, Ghannad L, Eng C, Makovitch S, Babu A, Chu SK, Marciniak C, Walega DR, Press J, Plastaras C, Kennedy DJ. **Pain Reduction and Repeat Injections After Transforaminal Epidural Injection With Particulate Versus Nonparticulate Steroid for the Treatment of Chronic Painful Lumbosacral Radiculopathy.** *PM&R Journal.* 2016 Apr 6. PMID 27060648.

Safaian P, Mattie R, Hahn M, Plastaras CT, McCormick ZL, 2016. **Novel Treatment of Radicular Pain With a Multi-Mechanistic Combination Topical Agent: A Case Report and Literature Review.** *Anesthesiology and Pain Medicine.* March 2016.

Timothy Dillingham, MD, MS

PUBLICATIONS

Dillingham TR, Andary M, Dumitru D: **Electrodiagnostic Medicine, Chapter 8.** *Braddom's Physical Medicine and Rehabilitation.* 5th edition, 2015.

PRESENTATIONS

Electrodiagnostic Reference Values for Upper and Lower Limb Nerve Conduction Studies in Adults. American Osteopathic College of Physical Medicine and Rehabilitation. Marriott Hotel, Philadelphia PA. 2016.

Evaluating the Patient with Suspected Radiculopathy and Techniques and Reference Values for Nerve Conduction Testing: Strengthening Our Foundations. *Grand Rounds,* Walter Reed National Military Medical Center, Bethesda, MD. 2016.

Techniques and Reference Values for Nerve Conduction Testing: Strengthening our Foundations. Plenary Speaker, *The Value of Quality.* AANEM Annual Assembly, Honolulu, Hawaii. 2015.

Ask the Expert: Radiculopathy. *AANEM Annual Assembly,* Honolulu, Hawaii. 2015.

Evaluation of Persons With Suspected Radiculopathies. *Grand Rounds,* Rutgers University, Department of Neurology. 2015.

Techniques and Reference Values for Nerve Conduction Testing: Strengthening our Foundations. *The Value of Quality.* Published Handout. AANEM Annual Assembly, Honolulu, Hawaii. 2015. With CME questions.

Michelle Johnson, PhD

PUBLICATIONS

Adewole, DO, Johnson MJ: **A computer model of the human arm: Predictive biomechanics for the TheraDrive rehabilitation system,** in Proc of 2015 IEEE International Conference on Rehabilitation Robotics (ICORR), Page: 798-803, Aug. 11-14 2015. Notes: doi: 10.1109/ICORR.2015.7281300URL: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7281300&isnumber=7281164>.

Chrungoo A, Shirsat P, Johnson MJ: **Towards perception driven robot-assisted task-oriented therapy,** in Proc of the 2015 IEEE International Conference on Rehabilitation Robotics (ICORR),(660-665), Aug. 11-14 2015. Notes: Singapore, Singapore, doi: 10.1109/ICORR.2015.7281276.

Dimwamwa E.; Johnson MJ: **Kinematic analysis of unilateral and bilateral drinking task after brain and periphery injuries,** in Proc of the 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Page: 4558-4561, Aug 26-30 2015 Notes: Milan, Italy, doi: 10.1109/EMBC.2015.7319408.

Johnson MJ, Christopher SM, Mohan M, Mendonca R: **Assessing human-human therapy kinematics for retargeting to human-robot therapy,** in Proc of the 2015 IEEE International Conference on Rehabilitation Robotics (ICORR), Page: 870-875, Aug. 11-14 2015 Notes: Singapore, Singapore, doi: 10.1109/ICORR.2015.7281312.

Singh A, Rai R, Johnson MJ: **Towards a bio-inspired control strategy for bilateral stroke rehabilitation based on motor control principles,** in Proc of the 2015 IEEE International Conference on Rehabilitation Robotics (ICORR), Page: 858-863, Aug 11-14 2015 Notes: Singapore, Singapore, doi: 10.1109/ICORR.2015.7281310.

PRESENTATIONS:

Workshop #6: Affordable Rehabilitation and Assistive Robotics for low resource settings and developing countries. Workshop Organizer and Lecturer, International Conference on Rehabilitation Robotics. Singapore, Singapore August 2015.

Issues in Global Rehabilitation in Low-to-Middle Income Countries. Workshop Organizer and Lecturer, American Congress of Rehabilitation (ACRM 2015 - Annual Conference). CME Credit Given October 2015. .

Four quotes to live by. Key Note, Fontaine Society, University of Pennsylvania, Philadelphia, PA. Dallas, Texas 2015.

Toward Perceptive Task-oriented Robot- Assisted Therapy for Stroke Rehabilitation. Presented to IGERT 2015.



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