

# Kenneth A. Weber II, DC, PhD

Senior Research Scientist  
Systems Neuroscience and Pain Lab  
Department of Anesthesiology, Perioperative and Pain Medicine  
Stanford University School of Medicine  
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Palo Alto, CA 94304  
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## CURRENT APPOINTMENTS

### **Senior Research Scientist**

Stanford University School of Medicine  
Department of Anesthesiology, Perioperative and Pain Medicine  
Division of Pain Medicine  
Palo Alto, CA

April 2023 – Present

### **Staff Chiropractor**

Palo Alto Veterans Affairs Health Care System  
Integrated Primary Care  
Palo Alto, CA

Jan 2024 – Present

## PAST APPOINTMENTS

### **Instructor**

Stanford University School of Medicine  
Department of Anesthesiology, Perioperative and Pain Medicine  
Division of Pain Medicine  
Palo Alto, CA

Dec 2018 – Mar 2023

### **Postdoctoral Scholar**

Stanford University School of Medicine  
Department of Anesthesiology, Perioperative and Pain Medicine  
Division of Pain Medicine  
Palo Alto, CA

Jan 2016 – Dec 2018

## EDUCATION

### **Postdoctoral Research Fellowship**

Advisor: Sean Mackey, MD, PhD  
Stanford University  
Palo Alto, CA

Jan 2016 – Dec 2018

### **Doctor of Philosophy in Neuroscience**

Specialization in Movement and Rehabilitation Science  
Advisor: Todd B. Parrish, PhD  
Northwestern University  
Chicago, IL

Mar 2016

### **Doctor of Chiropractic**

Palmer College of Chiropractic Florida  
Port Orange, FL

Dec 2009

**Bachelor of Science in Biology**  
Saginaw Valley State University  
University Center, MI  
Minor: Chemistry

May 2006

## PROFESSIONAL LICENSURE

### **Chiropractor**

State of California  
State of Illinois

Jul 2017 – Present  
Dec 2009 – Jul 2017

## RESEARCH FUNDING

Dermatomal Mapping with Spinal Cord Functional Magnetic Resonance Imaging, R01 NS133305, National Institute of Neurological Disorders and Stroke, Role: Principal Investigator. Sep 1<sup>st</sup> 2023 – May 31<sup>st</sup> 2028, \$2,848,570 USD.

Structural and Functional Imaging Markers in Degenerative Cervical Myelopathy, R01 NS129852, National Institute of Neurological Disorders and Stroke, PI: Dr. Zachary Smith at Oklahoma University Health Science Center, Role: Co-Investigator. Sep 1<sup>st</sup> 2023 – May 31<sup>st</sup> 2028.

MRI-Derived Neuromuscular Signatures to Predict Surgical Response in Degenerative Cervical Myelopathy, R01 NS128478, National Institute of Neurological Disorders and Stroke, Role: Principal Investigator. May 15<sup>th</sup> 2023 – Jan 31<sup>st</sup> 2028, \$2,870,148 USD.

MRI-Based Neuromuscular Markers of Lumbar Spinal Stenosis, L30 NS108301, NIH Clinical Research Extramural Loan Repayment Program Award, National Institute of Neurological Disorders and Stroke, Role: Principal Investigator. Jul 1<sup>st</sup> 2022 – June 30<sup>th</sup> 2024.

Neuroimaging-Based Brain and Spinal Cord Biomarkers for Cervical Radiculopathy, K23 NS104211, Mentored Patient-Oriented Research Career Development Award, National Institute of Neurological Disorders and Stroke, Role: Principal Investigator. Sep 1<sup>st</sup> 2018 – Aug 31<sup>st</sup> 2024.

Brain-Based Multi-Modal MRI Models of Pain Severity and Upper Limb Motor Function, L30 NS108301, NIH Clinical Research Extramural Loan Repayment Program Award, National Institute of Neurological Disorders and Stroke, Role: Principal Investigator. Jul 1<sup>st</sup> 2020 – Jun 30<sup>th</sup> 2022.

Using fMRI to Determine if Differences Exist Between Hemodynamic Responses in Trigger Point Dry Needling Versus Sham Needling, Bradley University Center for Collaborative Brain Research Grant, Peoria, IL. Feb 2019 – Jan 2020.

MRI and Machine Learning to Improve Early Prognosis and Clinical Management after Spinal Cord Injury, R03 HD094577, National Institute of Child Health and Human Development, PI: Dr. Andrew Smith at University of Colorado Denver, Role: Co-Investigator. Feb 2019 – Jan 2021.

Neuroimaging-Based Brain and Spinal Cord Biomarkers for Cervical Radiculopathy, L30 NS108301, NIH Clinical Research Extramural Loan Repayment Program Award, National Institute of Neurological Disorders and Stroke, Role: Principal Investigator. Jul 1<sup>st</sup> 2018 – Jun 30<sup>th</sup> 2020.

American Pain Society Young Investigator Travel Award, American Pain Society's Annual Meeting 2018, Anaheim, CA.

Interdisciplinary Research Training in Pain and Substance Use Disorders, Stanford University, T32 DA035165, NRSA Institutional Postdoctoral Training Grant, National Institute on Drug Abuse, Role: Trainee. Jan 2016 – Aug 2018.

Investigating Pain Processing in the Brain, Brainstem, and Spinal Cord with fMRI, NIH F32 AT007800, NRSA Individual Postdoctoral Training Grant, National Center for Complementary and Integrative Health, Role: Principal Investigator. Dec 1<sup>st</sup> 2012 – Nov 30<sup>th</sup> 2015.

Trainee stipend to attend the International Society for Magnetic Resonance in Medicine 21<sup>st</sup> Annual Meeting & Exhibition 2013, Salt Lake City, UT.

Training Program in the Neurobiology of Movement and Rehabilitation Sciences, Northwestern University, NIH T32 HD057845, NRSA Institutional Predoctoral Training Grant, National Institute of Child Health and Human Development, Role: Trainee. Mar 2012 – Nov 2012.

Weber II KA, Stinear JW. NCMIC Foundation, Inc. Investigating the biomechanical and neurophysiological effects of spinal manipulation. Oct 2010 – Sep 2014.

#### HONORS / AWARDS / ACTIVITIES / POSITIONS HELD

<b>Honors</b> , Graduated salutatorian from PCCF	Dec 2009
<b>Honors</b> , Graduated with honors from PCCF, magna cum laude	Dec 2009
<b>Honors</b> , Graduated with research honors from PCCF	Dec 2009
<b>Honors</b> , Graduated with honors from SVSU, summa cum laude	May 2006
<b>Chair</b> , PCCF Clinic Research Forum	Jan 2009 – Oct 2009
<b>Member</b> , Chi Rho Theta Chiropractic Research Honor Society	Dec 2009 – Present
<b>Member</b> , Foundation for Chiropractic Education and Research	Jun 2008 – Oct 2009
<b>Certification</b> , Electrodiagnosis, Palmer College of Chiropractic	May 2008 – Feb 2009
<b>Member</b> , American Chiropractic Association	Jun 2008 – Present
<b>Member</b> , Alpha Chi National College Honor Society	May 2006 – Present
<b>Member</b> , Organization for Human Brain Mapping	Dec 2011 – Present
<b>Member</b> , International Society for Magnetic Resonance in Medicine	Dec 2012 – Present
<b>Member</b> , Society for Neuroscience	May 2013 – Present
<b>Member</b> , Horizons for Youth, Young Professionals Board	Aug 2013 – Aug 2015
<b>Member</b> , American Pain Society	May 2016 – 2019
<b>Big Sibling</b> , Horizons for Youth	Mar 2013 – Dec 2015
<b>Finisher</b> , Bank of America Chicago Marathon	2012 and 2013
<b>Finisher</b> , Transamerica Chicago Triathlon	2014
<b>Finisher</b> , The San Francisco Marathon	2017
<b>Mentor</b> , National Institute on Drug Abuse Summer Research Internship Program	2017
<b>Reviewer</b> , Association of Chiropractic Colleges Research Agenda Conference	Sep 2010 – Present
<b>Reviewer</b> , Journal of Back and Musculoskeletal Rehabilitation	Sep 2010 – Present
<b>Reviewer</b> , Chiropractic & Manual Therapies	May 2011 – Present
<b>Reviewer</b> , Magnetic Resonance Insights	July 2015 – Present
<b>Reviewer</b> , The Organization for Human Brain Mapping Annual Meeting	Nov 2016 – Present
<b>Reviewer</b> , Experimental Brain Research	Apr 2017 – Present
<b>Reviewer</b> , Pain	Sep 2017 – Present
<b>Reviewer</b> , Scientific Reports	Feb 2018 – Present
<b>Reviewer</b> , Journal of Pain	Feb 2018 – Present
<b>Reviewer</b> , NeuroImage	May 2018 – Present
<b>Reviewer</b> , PLOS ONE	Feb 2019 – Present
<b>Reviewer</b> , Spinal Cord	Mar 2019 – Present
<b>Reviewer</b> , Pain Medicine	Jan 2020 – Present

<b>Reviewer</b> , BMC Medical Imaging	Nov 2020 – Present
<b>Reviewer</b> , Journal of Pain Research	Nov 2020 – Present
<b>Reviewer</b> , Neurobiology of Pain	Jun 2021 – Present
<b>Reviewer</b> , Neuroscientist	Apr 2022 – Present
<b>Reviewer</b> , Human Brain Mapping	Nov 2022 – Present
<b>Reviewer</b> , Movement Disorders	Dec 2022 – Present
<b>Reviewer</b> , Journal of Neuroscience	Dec 2022 – Present
<b>Reviewer</b> , Imaging Neuroscience	Aug 2023 – Present
<b>Reviewer</b> , Department of Veterans Affairs, SCI/D and Pain Panel	Feb 2021
<b>Associate Editor</b> , Pain Medicine	Feb 2020 – Nov 2022
<b>Co-Section Editor</b> , Psychology, Psychiatry & Brain Neuroscience, Pain Medicine	Nov 2022 – Present
<b>Topic Editor</b> , Frontiers in Integrative Neuroscience	Jun 2021 – Aug 2022
<b>Recipient</b> , SVSU Biology Department Outstanding Senior	May 2006
<b>Recipient</b> , SVSU Award for Excellence Full Tuition Academic Scholarship	Aug 2003 – May 2006
<b>Recipient</b> , NIH F32 Individual National Research Service Award Fellowship	Dec 2012 – Nov 2015
<b>Recipient</b> , American Pain Society, Young Investigator Travel Award	Mar 2018
<b>Recipient</b> , NIH K23 Patient-Oriented Research Career Development Award	Sep 2018 – Aug 2023
<b>Recipient</b> , NIH Clinical Research Extramural Loan Repayment Program Award	Jul 2018 – Jun 2022
<b>Recipient</b> , American Chiropractic Association, Researcher of the Year Award	2021
<b>Ambassador</b> , NIH Loan Repayment Program	Feb 2019 – Present
<b>Reviewer</b> , The Norwegian Chiropractors' Research Foundation	Oct 2022
<b>Fellow</b> , Chiropractic Academy for Research Leadership	2020 – 2023
<b>Reviewer</b> , NIH Center for Scientific Review Special Emphasis Panel	April 2023
<b>Award</b> , ANPT Golden Synapse Award: Most Outstanding JNPT Publication in 2023	2023

#### PEER REVIEWED PUBLICATIONS

Law CSW, Pfyffer D, Kaptan M, Indriolo T, Weber II KA1, Gary H. Glover GH, Mackey S. Studying Central Pain Mechanisms in Fibromyalgia using Simultaneous Spinal Cord-Brain Functional Imaging: a Cross-Sectional Observational Study. (In Preparation).

Rohan Banerjee R, Kaptan M, Weber II KA, De Leener B, Cohen-Adad J. Automatic spinal cord segmentation on fMRI EPI data. (In Preparation).

Mauck MC, Barth KS, Bell KM, ... Weber II KA, ... Anstrom KJ, Clauw DJ, Sowa GA. The Design and Rationale of the Biomarkers for Evaluating Spine Treatments (BEST) Trial. (In Preparation).

You DS, Lannon E, Kim S, Weber II KA, Emma Raney E, Mackey S. Pain self-efficacy accounts for worse health status of patients with high-impact chronic pain: longitudinal observational study. (In Preparation).

Carmichael J, Weber II KA, Rubinstein S, Svoboda E, Bade M. Scapular Pain in Cervical Radiculopathy: A Scoping Review. (In Preparation).

Franettovich Smith MM, Vicenzino B, Wilkes M, Elliott JM, Weber II KA, Hurn S, Collins NJ. Smaller intrinsic foot muscle volumes in individuals with plantar heel pain compared to those without pain: An exploratory study showing muscle specific differences using ultra-high-field (7-Tesla) magnetic resonance imaging. (In Preparation).

Kong JT, Tian L, Weber II KA, Law C, Darnall B, Stafford RS, Gross JJ, Mackey S. Predicting symptom improvement in chronic low back pain treated with acupuncture vs. placebo: model development and external validation. (In Preparation).

Anderson SR, Gilam G, Law CS, Weber KA, Goldin PR, Wager T, Kong JT, Darnall B, Gross JJ, Mackey S. Resting-state functional connectivity in task-evoked networks is associated with success of pain regulation in patients with chronic low back pain. (In Preparation).

Weber II KA, Wager TD, Rosen A, Ashar YK, Law CSW, Gilam G, Upadhyayula PA, Zhu S, Banerjee S, Glover GH, Hastie TJ, Mackey S. Predicting Cognitive Function with Multimodal Brain MRI. (In Preparation).

Smith AC, Morey C, Thornton WA, Connor JR, Pfyffer D, Weber II KA, Will K, Tefertiller C. Responsiveness to Transcutaneous Spinal Stimulation for Upper Extremity Recovery following Spinal Cord Injury: A Case Series Exploration of Midsagittal Tissue bridges. (In Preparation).

Grondin F, Freppel S, Colman D, Weber II KA, Elliott J, Caderby T, Peyrot N. The Effects of High and Low Intensity Neck Reconditioning on Disability, Neck Muscle Volume and Fatty Infiltration: A Randomized Trial. (In Review).

Mackey S, Aghaeepour N, Gaudilliere B, Merve K, Lannon E, Pfyffer D, Weber K. Innovations in Acute and Chronic Pain Biomarkers: Enhancing Diagnosis and Personalized Therapy. (In Review).

Smith AC, Muñoz-Laguna J, Wesselink EO, Scott ZE, Jenkins H, Thornton W, Connor J, Delp S, Chaudhari A, Parrish TB, Mackey S, Elliott JM, Weber II KA. Leg Muscle Health and Functional Capacity: Insights from a Computer Vision Model and Fat-Water MRI. (In Review).

Baker AK, Rosser MA, Park SH, Weber II KA, Martucci KT. Cross-Sectional Relationships Between Spinal Cord Gray Matter Volume and Pain in Individuals with Fibromyalgia and Opioid Use. (In Review).

Kim B, Gandomkar Z, Wesselink EO, Seitz AL, McKay MJ, Cass B, Young AA, Linklater JM, Szajer J, Subbiah K, Elliott JM, Weber II KA. Developing a three-dimensional convolutional neural network for automated full volume multi-tissue segmentation of the shoulder with comparisons to Goutallier classification and partial volume muscle quality analysis. (In Review).

Muhammad F, Weber II KA, Haynes G, Smith L, Parrish T, Dhaher Y, Smith ZA. Quantifying Spinal Cord White Matter Damage Beyond Compression Region in Degenerative Cervical Myelopathy: A Magnetization Transfer Ratio Prospective Study. (In Review).

Labounek R, Bondy M, Amy Paulson A, Bédard S, ..., Weber II KA, ..., Xu J, Cohen-Adad J, Lenglet C, Nestrašil I. Body size interacts with the structure of the central nervous system: A multi-center in vivo human neuroimaging study. (In Review).

de Zoete RM, Ryan MJ, Humphries M, Stanwell P, Weber II KA, Snodgrass SJ. The Relationship between Brain Morphology and Pain Intensity and Pain-Related Disability in Individuals with Chronic Idiopathic Neck Pain: A Secondary Analysis of Longitudinal Cohort Data. (In Review).

Wesselink EO A, Coppieters MW, Elliott JM, Weber II KA, Verheijen EJA, Djuric N, Moojen W, Vleggeert-Lankamp C, Pool-Goudzwaard A. Intramuscular Fat in Lumbar Multifidus is Associated with 5-year Clinical Recovery after Decompressive Surgery for Lumbar Spinal Stenosis. (In Review).

Falasinnu T, Hossain MB, Weber II KA, Karim ME, Mackey S. The Problem of Pain in the United States: Evaluating the Generalizability of High-Impact Chronic Pain Models Comparing the Pre- and Post-COVID eras using NHIS Data. (In Review).

Weber II KA, Wesselink EO, Gutierrez J, Law CSW, Mackey S, Ratliff J, Hu S, Chaudhari AS, Pool-Goudzwaard A, Coppieters MW, Elliott JM, Hancock M, De Leener B. Three-Dimensional Spatial Distribution of Lumbar Paraspinal Intramuscular Fat Revealed by Spatial Parametric Mapping. (In Revision).

Wesselink EO, Hides J, Elliott JM, Hoggarth M, Weber II KA, Salomoni SE, Tran V, Lindsay K, Hughes L, Weber T, Scott J, Caplan N, De Martino E. New insights into the impact of bed rest on lumbopelvic muscles: A computer-vision model approach to intramuscular lipid concentration changes. (In Revision).

McKay MJ, Weber II KA, Wesselink E, Smith ZA, Abbott R, ..., Walton DM, Wishart LR, Elliott JM. The MuscleMap Consortium. (In Revision).

Bédard S, Enamundram NK, Tsagkas C, Pravatà E, Granziera C, Smith A, Weber II KA, Cohen-Adad J. Towards Contrast-Agnostic Segmentation of the Spinal Cord. (In Revision).

Haynes G, Muhammad F, Weber 2<sup>nd</sup> KA, Khan AF, Hameed S, Shakir H, Rohan M, Dhaher Y, Ding L, Smith ZA. Tract-Specific Magnetization Transfer Ratio Provides Insights into the Severity of Degenerative Cervical Myelopathy, Spinal Cord, *In Press*.

Enamundram NK, Valosek J, Smith AC, Pfyffer D, Schading-Sassenhausen S, Farner L, Weber II KA, Freund P, Cohen-Adad J. SCIsseg: Automatic Segmentation of T2-weighted Hyperintense Lesions in Spinal Cord Injury, Radiology AI, *In Press*.

Stewart C, Wesselink EO, Perraton Z, Weber II KA, King MG, Kemp JL, Mentiplay BF, Crossley KM, Elliott JM, Heerey JJ, Scholes MJ, Lawrenson PR, Calabrese C, Semciw AI. Muscle fat and volume differences in people with hip-related pain compared to controls: A machine learning approach, Journal of Cachexia, Sarcopenia and Muscle, *In Press*.

Enamundram NK, Valošek J, Farner L, Pfyffer D, Schading-Sassenhausen S, Leuret A, David D, Smith AC, Weber II KA, Seif M, RHSCIR Network Imaging Group, Freund P, Cohen-Adad J. SCIssegV2: A Universal Tool for Segmentation of Intramedullary Lesions in Spinal Cord Injury, International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), *In Press*.

Anderson DB, Beach AJ, Chen L, Feng HJ, McKay MJ, Smith ZA, Weber II KA, Evert Onno Wesselink EEO, Elliott JM. What is Normal Age-Related Thigh Muscle Composition Among 45- to 84-year-Old Adults from the UK Biobank Study, GeroScience, *In Press*.

Muhammad F, Weber KA, Bédard S, Haynes G, Smith L, Khan AF, Hameed S, Gray K, McGovern K, Rohan M, Ding L, Van Hal M, Douglas D, Al Tamimi M, Parrish TB, Dhaher Y, Smith ZA. Cervical Spinal Cord Morphometrics in Degenerative Cervical Myelopathy: Quantification using Normalized Compression Technique and Correlation with Neurological Dysfunctions, The Spine Journal, *In Press*.

Muhammad F, Weber II KA, Rohan M, Smith ZA. Patterns of Cortical Thickness Alterations in Degenerative Cervical Myelopathy: Associations with Dexterity and Gait Dysfunctions, Brain Communications, *In Press*.

Thornton WA, Smulligan K, Weber II KA, Tefertiller C, Mañago M, Sevigny M, Wiley L, Stevens-Lapsley J, Smith AC. Lesion characteristics are associated with bowel, bladder, and overall independence following cervical spinal cord injury, The Journal of Spinal Cord Medicine, *In Press*.

Snodgrass SJ, Weber II KA, Wesselink EO, Stanwell, Elliott JM. Reduced Cervical Muscle Fat Infiltrate is Associated with Self-Reported Recovery from Chronic Idiopathic Neck Pain over Six Months: A Magnetic Resonance Imaging Longitudinal Cohort Study, *Journal of Clinical Medicine*, 2024;13:4485.

Pfyffer D, Hothorn T, Smith AC, Weber II KA, Grillhoesl A, Mach O, Draganich C, Berliner JC, Tefertiller C, Leister I, Maier DD, Schwab JM, Thompson A, Curt A, Freund P. Prognostic value of injury-spared tissue bridges for neurologic recovery 3 months after cervical spinal cord injury: a longitudinal multicenter study, *Lancet Neurology*, 2024;23:816-825.

Smith AC, Ahmed RU, Weber II KA, Negahdar MJ, Gibson D, Rejc E, Boakye M. Spinal cord lesion MRI and behavioral outcomes in a miniature pig model of spinal cord injury: exploring preclinical potential through an ad hoc comparison with human SCI, *Spinal Cord Series & Cases*, 2024;1-:44.

Smith AC, Draganich C, Thornton WA, Berliner JC, Sevigny M, Charlifue S, Tefertiller C, Weber II KA. Response to Letter to the Editor on A single dermatome clinical prediction rule for independent walking one year after spinal cord injury, *Archives of Physical Medicine and Rehabilitation*, *Archives of Physical Medicine and Rehabilitation*, 2024;105:1411-1412.

Wesselink EO, Pool-Goudzwaard A, Law CSW, De Leener B, Fenyó MB, Ello GM, Coppieters MW, Elliott JM, Mackey S, Weber II KA. Investigating the Associations between Lumbar Paraspinal Muscle Health and Age, BMI, Sex, physical activity, and back pain using an automated computer-vision model: A UK Biobank study. *Spine J*, 2024;24:1253-1266.

Zhong YF, Dai YX, Li SP, Zhu KJ, Ran Y, Chen L, Ruan Y, Yu P, Li L, Li W, Xu CL, Sun X, Weber K, Kong DW, Yang F, Lin W, Chen J, Chen BL, Jiang H, Zhou YJ, Sheng B, Tian YZ, and Sun YL. Sagittal Balance Parameters Measurement on Cervical Spine MR Images Based on Superpixel Segmentation, *Frontiers in Bioengineering and Biotechnology*, 2024;12:1337808.

Alazzam AM, Balance WB, Smith AC, Rejc E, Weber II KA, Trainer R, Gorgey AS. Peak Slope Ratio of the Recruitment Curves Compared to Muscle Evoked Potentials to Optimize Standing Configurations with Percutaneous Epidural Stimulation after Spinal Cord Injury, *Journal of Clinical Medicine*, 2024;13:1344.

Wesselink EO Quantifying Lumbar Paraspinal Intramuscular Fat: Accuracy and Reliability of Automated Thresholding Models. Wesselink EO, Elliott JM, Pool-Goudzwaard A, Coppieters MW, Pevenage PP, Di Leva A, Weber II KA, *North American Spine Society Journal*, 2024;17:100313.

Kaptan M, Pfyffer P, Konstantopoulos CG, Law CSW, Weber II KA, Glover G, Mackey S. Recent developments and future avenues for human corticospinal neuroimaging, *Frontiers in Human Neuroscience*, 2024;18:1339881.

Khan AF, Mohammadi E, Haynes G, Hameed S, Rohan M, Anderson DB, Weber KA 2nd, Muhammad F, Smith ZA. Evaluating tissue injury in cervical spondylotic myelopathy with spinal cord MRI: A Systematic Review, *Eur Spine J*, 2024;33:133-154.

Smith AC, Draganich C, Thornton WA, Berliner JC, Sevigny M, Charlifue S, Tefertiller C, Weber II KA. A single dermatome clinical prediction rule to predict independent walking one year after traumatic spinal cord injury, *Archives of Physical Medicine and Rehabilitation*, 2024;105:10-19.

Perraton Z, Lawrenson P, Mosler A, Weber 2nd KA, Elliott J, Wesselink EO, Crossley K, Kemp J, Stewart C, Girdwood M, King M, Scholes M, Mentiplay B, Semciw A. The Relationship Between

Lateral Hip Muscle Size/Intramuscular Fat Infiltration and Quality of Life in Football Players with Hip/Groin Pain, *Physical Therapy in Sport*, 2023;65:95-101.

Falasinu T, Hossain MD, Weber II KA, Helmick CG, Karim ME, Mackey S. The Problem of Pain in the United States: A Population-Based Characterization of Biopsychosocial Correlates of High Impact Chronic Pain Using the National Health Interview Survey, *The Journal of Pain*, 2023;24:1094-1103.

Elliott JM, Walton DM, Albin SR, Courtney DM, Siegmund GP, Carroll LJ, Parrish TB, Weber II KA, Smith AC. Biopsychosocial Sequelae and Recovery Trajectories From Whiplash Injury Following a Motor Vehicle Collision, *The Spine Journal*, 2023;23:1028-1036.

Draganich C, Weber II KA, Thornton WA, Berliner JC, Sevigny M, Charlifue S, Tefertiller C, Smith AC. Predicting Outdoor Walking 1 Year After Spinal Cord Injury: A Retrospective, Multisite External Validation Study, *J Neurol Phys Ther*, 2023;47:155-161. Academy of Neurologic Physical Therapy's Golden Synapse Award: Most outstanding JNPT article published in 2023.

Muhammad F, Baha A, Haynes G, Shakir H, Omini M, Martin M, Weber II K, Paliwal M, Van Hal M, Dickson D, Dhaher Y, Smith ZA. Isolating Neurological Deficits in Cervical Spondylotic Myelopathy (CSM): A Case-Controlled Study Using the NIH Toolbox Motor Battery, *Neurology: Clinical Practice*, 2023;13:e200126.

Berliner JC, O'Dell DR, Albin SR, Dungan D, Sevigny M, Elliott JM, Weber II KA, Abdie DR, Anderson JS, Rich AA, Seib CA, Sagan HGS, Smith AC. The influence of conventional T<sub>2</sub> MRI indices in predicting who will walk outside one year after spinal cord injury, *Journal of Spinal Cord Medicine*, 2023;46:501-507.

Wesselink EO, Pool JJM, Mollema J, Weber KA, Elliott JM, Coppieters M, Pool-Goudzwaard A. Is Paraspinal Fatty Infiltration Reversible by Means of Exercise Therapy in People with Low Back Pain?: A Systematic Review, *Eur Spine J*, 2023;32(3):787-796.

Weber II KA, Teplin ZM, Wager TD, Law CSW, Prabhakar N, Ashar YK, Gilam G, Banerjee S, Delp SL, Glover GH, Hastie TJ, Mackey S. Confounds in Neuroimaging: A Clear Case of Sex being a Confound in Brain Prediction. *Frontiers in Neurology*, 2022;13:960760.

Snodgrass SJ, Stanwell P, Weber KA, Shepherd S, Kennedy O, Thompson HJ, Elliott JM. Greater Muscle Fat Infiltrate in the Cervical Spine Extensor Muscles (Multifidus and Semispinalis Cervicis) in Individuals with Chronic Idiopathic Neck Pain Compared to Matched Age and Sex-matched Asymptomatic Controls: A Cross-Sectional Study, *BMC Musculoskeletal Disorders*, 2022;23:973.

Hoggarth MA, Wang MC, Hemmerling KJ, Vigotsky AD, Smith ZA, Parrish TB, Weber II KA, Bright MG. Effects of variability in manually contoured spinal cord masks in fMRI analysis results, *Frontiers in Neurology*, 2022; 3:907581.

Reed WR, Weber II KA, and Martins DF. Editorial: Mechanisms and models of musculoskeletal pain and nonpharmacological treatment. *Front Integr Neurosci*, 2022;16:998413.

Wesselink EO, Elliott JM, Coppieters B, Cronin M, Hancock M, Pool-Goudzwaard A, Weber KA. Convolutional neural networks for the automatic segmentation of lumbar paraspinal muscles in people with low back pain, *Scientific Reports*, 2022;12:13485.

Perraton Z, Lawrenson P, Mosler AB, Elliott JM, Weber II KA, Flack N, Cornwall J, Crawford RJ, Crossley K, Stewart C, Semciw AI. Towards defining muscular regions of interest from axial magnetic



resonance imaging with anatomical cross-reference: A scoping review of lateral hip musculature. *BMC Musculoskelet Disord*, 2022;23:533.

Franettovich Smith MM, MD Mendis, Ho R, Wilkes MJ, Elliott JM, Weber II KA, Collins NJ. Improving the measurement of intrinsic foot muscle volumes from high-field (7T) magnetic resonance imaging. *Journal of Biomechanics*, 2022;140:111164.

Galassia T, Fernandes PF, Salgado ASI, Cidral-Filho FJ, Piovezan AP, Lüdtkke DD, Mack JM, Babinskis B, Weber KA, Reed WR, Bobinski, Martins DF. Preventive Supplementation of Omega-3 Reduces Pain and Pro-Inflammatory Cytokines in a Mouse Model of Complex Regional Pain Syndrome Type I, *Front Integr Neurosci*, 2022;16:840249.

Smith AC, O'Dell DR, Thornton WA, Dungan D, Robinson E, Ashesh T, Gisbert R, Weber II KA, Berliner JC, Albin SR. Spinal cord tissue bridges validation study: predictive relationships with sensory scores following cervical spinal cord injury, *Top Spinal Cord Inj Rehabil*, 2022;28(2):111-115.

Bodkin SG, Smith AC, Bergman B, Hou D, Weber KA, Harris-Love M. Utilization of Mid-Thigh Magnetic Resonance Imaging to Predict Lean Body Mass and Knee Extensor Strength in Obese Adults, *Frontiers in Rehabilitation Sciences*, 2022;3:808538.

de Zoete RM, Stanwell P, Weber II KA, Snodgrass S. Differences in Structural Brain Characteristics between Individuals with Chronic Nonspecific Neck Pain and Asymptomatic Controls: A Case-Control Study, *Journal of Pain Research*, 2022;15:521-531.

Smith AC, Angeli CA, Ugiliweneza B, Weber II KA, Negahdar M, Mesbah S, Boakye M, Harkema SJ, Rejc E. Spinal Cord Imaging Markers and Recovery of Standing with Epidural Stimulation in Individuals with Clinically Motor Complete Spinal Cord Injury, *Experimental Brain Research*, 2022;24(1):279-288.

Smith AC, O'Dell DR, Albin SR, Berliner JC, Dungan D, Robinson E, Elliott JM, Carballido-Gamio J, Stevens-Lapsley J, Weber II KA. Lateral corticospinal tract and dorsal column damage: predictive relationships with motor and sensory scores at discharge from acute rehabilitation after spinal cord injury, *Archives of Physical Medicine and Rehabilitation*, 2022;103(1):62-68.

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Cohen-Adad J, Alonso-Ortiz E, Abramovic M, Arneitz C, ... Weber II KA, Weiskopf N, Wise RG, Wyss PO, Xu J. Open-access MRI data of the spinal cord and reproducibility across participants, sites, and manufacturers. *Scientific Data*, 2021;8:219.

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Weber II KA, He X. Chiropractic Students and Research: Assessing the Research Culture at a North American Chiropractic College. *J Chiropr Educ* 2010;24:35-45.

## CONFERENCE PRESENTATIONS

Berhe N, You DS, Mackey S, Weber II KA, Investigating the Relationship between Sleep Quality, Pain, and Physical Function in People with Chronic Neck and Upper Limb Pain, poster presentation at the US Association for the Study of Pain 2024 Meeting, Seattle, WA, USA.

Raney E, Weber K, Mackey S, You DS, Low Pain Self-Efficacy as a Psychological Factor Associated with Chronic Pain, poster presentation at the US Association for the Study of Pain 2024 Meeting, Seattle, WA, USA.

Pfyffer D, Kaptan M, Law CSW, Weber II KA, Oliva V, Bédard S, Maronesy T, Glover GH, Mackey S. Corticospinal pain processing and modulation in fibromyalgia: a combined brain-cord fMRI study,

poster presentation at 29<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping 2023, Seoul, South Korea.

Valosek J, Enamundram NK, Bouthillier M, Schading-Sassenhausen S, Farner L, Pfyffer D, Smith AC, Weber II KA, Freund P, and Cohen-Adad J. Automatic segmentation of T2-weighted hyperintense lesions in spinal cord injury, oral presentation at the International Society for Magnetic Resonance in Medicine 28th Annual Meeting & Exhibition 2024, Singapore.

Pfyffer D, Law CSW, Weber KA, Kaptan M, Maronesy T, Glover GH, and Mackey S. Imaging noxious thermal intensity encoding along the neuraxis using simultaneous spinal cord-brain functional magnetic resonance imaging, poster presentation at the US Association for the Study of Pain 2023 Meeting, Durham, NC, USA.

Baker A, Park SH, Weber KA, Martucci KT. Altered Dorsal and Ventral Horn Gray Matter Volumes in Long-term Opioid-using Fibromyalgia Patients, poster presentation at the US Association for the Study of Pain 2023 Meeting, Durham, NC, USA.

Pfyffer D, Law CSW, Weber KA, Kaptan M, Maronesy T, Glover GH, Mackey S. Imaging thermal intensity encoding along the neuraxis using simultaneous spinal cord-brain fMRI, submitted to 28<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping 2023, Montreal, Canada.

Kaptan M, Law C, Weber K, Pfyffer D, Maronesy T, Glover GH, Mackey S. Resting-state functional connectivity between the brain and spinal cord, submitted to 28<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping 2023, Montreal, Canada.

Smith AC, Thornton WA, Draganich C, Berliner JC, Tefertiller C, Weber II KA. A simple clinical prediction rule using S1 dermatome to predict independent walking one-year following traumatic spinal cord injury, platform presentation at the American Physical Therapy Association Combined Sessions Meeting, San Diego, CA, USA 2023.

Draganich C, Weber KA, Thornton WA, Berliner JC, Sevigny M, Charlifue S, Tefertiller C, Smith AC. Predicting outdoor walking one year after spinal cord injury: clinical prediction rule validation, platform presentation and Jayanthi Lectureship recipient at the Academy of Spinal Cord Injury Professionals 2022, Kansas City, MO.

Smith AC, Angeli CA, Ugiliweneza B, Weber KA, Negahdar M, Mesbah S, Boakye M, Harkema SJ, Rejc E. Epidural stimulation-promoted standing ability and spinal cord lesion characteristics in motor complete SCI, poster presentation and Translational Research or Human Neuroscience Studies in Spinal Cord Injury (TRoHNS) award recipient at the American Spinal Injury Association (ASIA) Annual Scientific Meeting, New Orleans LA, USA 2022.

Muhammad F, Weber KA, Haynes G, Omini M, Baha A, Paliwal M, Shakir H, Martin M, Dhaher Y, Smith ZA. Gray Matter Horn BOLD Signal: A Novel MRI Biomarker of Spinal Cord Gray Matter Injury in Degenerative Cervical Myelopathy. Society for Brain Mapping and Therapeutics. CA, March 10th-13th, 2022.

Weber II KA, Teplin ZM, Wager TD, Shah N, Law CS, Prabhakard N, Ashar YK, Gilam G, Banerjee S, Delp SL, Glover GH, Hastie TJ, and Mackey S. Confounds in Neuroimaging: A Clear Case of Sex as a Confound in Brain-Based Prediction. 27th Annual Meeting of the Organization for Human Brain Mapping 2022, Glasgow, Scotland.

Wesselink EO, Elliott JM, Coppieters MW, Hancock MJ, Cronin B, Pool-Goudzwaard A, Weber II KA. Automating the Segmentation of the Lumbar Paraspinal Muscles from T<sub>2</sub>-Weighted MRI. CARLoquium, Virtual, 2022.

Muhammad F, Weber KA, Haynes G, Baha A, Omini M, Paliwal M, Martin M, Shakir H, Dhaher Y, and Smith ZA. Functional MRI highlights distinct cord injury due to chronic spinal cord compression in cervical myelopathy. Oklahoma's Biotech and OKC Innovation District BioTalk, USA 2022.

Pfyffer D, Smith AC, Weber II KA, Draganich C, Berliner JC, Tefertiller C, Hothorn T, Schwab JM, Curt A, and Freund P. Width of tissue bridges predicts neurologic recovery 3 months after spinal cord injury: a multi-center study. American Academy of Neurology Annual Meeting, Seattle, WA, USA, 2022.

Smith AC, O'Dell DR, Dungan D, Thaker A, Gisbert R, Weber KA, Berliner JC, and Albin SR. Spinal cord tissue bridges validation study: predictive relationships with sensory scores following spinal cord injury. Academy of Neurologic Physical Therapy Annual Conference, Virtual, USA 2021.

Franettovich Smith MM, Collins NJ, Mellor R, Grimaldi A, Elliott J, Hoggarth M, Weber II KA, Setchell J, Binte Mohamed Amran NN, and Vicenzino B. Feasibility, credibility and acceptability of foot exercise plus education versus wait-and-see for a randomised clinical trial for plantar heel pain. Australian Physiotherapy Association Conference 2021.

Hoggarth MA, Wang MC, Hemmerling KJ, Smith ZA, Weber II KA, and Bright MG. Impact of manual segmentation on the non-linear registration of a spinal cord atlas to functional space. International Society for Magnetic Resonance in Medicine 28<sup>th</sup> Annual Meeting & Exhibition 2021.

Paliwal M, Weber K, Smith A, Elliott J, Muhammad F, Dahdaleh N, Bodurka J, and Smith Z. Fatty infiltration in cervical flexors and extensors in degenerative cervical myelopathy: using multi-muscle segmentation machine learning algorithm, podium presentation at the Congress of Neurological Surgeons Spine Summit 2021, San Diego, CA.

Paliwal M, Weber K, Muhammad F, Haynes G, Hopkins B, Dahdaleh N, Parrish T, Bodurka J, Dhaher Y, and Smith Z. Magnetization Transfer Imaging and Atlas Based Mapping of the Spinal Cord in Degenerative Cervical Myelopathy, podium presentation at the Congress of Neurological Surgeons Spine Summit 2021, San Diego, CA.

Hoggarth MA, Elliott JM, Kwasny MJ, Wasielewski M, Weber II KA, Parrish TB. Magnetization Transfer Imaging of the Spinal Cord Identifies Those with Poor Outcome after Whiplash Injury, platform presentation at the American Physical Therapy Association Combined Sessions Meeting 2021.

Smith AC, Albin SR, O'Dell DR, Berliner JC, Dungan D, Elliott JM, Weber II KA. The Axial Damage Ratio May be a Useful MRI Biomarker for Prognosis of Future Walking, American Physical Therapy Association Combined Sessions Meeting 2021.

Weber II KA, Abbott R, Bojilov V, Smith AC, Wasielewski M, Hastie TJ, Parrish TB, Mackey S, Elliott JM. Multi-Muscle Deep Learning Segmentation to Automate the Quantification of Muscle Fat Infiltration in Cervical Spine Conditions, poster presentation at the US Association for the Study of Pain 2020 Virtual Meeting.

Weber II KA, Wager TD, Upadhyayulaa PA, Law CS, Prabhakar N, Zhu S, Ashar YK, Gilam G, Banerjee S, Delp SL, Glover GH, Hastie TJ, Mackey S. Brain Strength: Multi-Modal Brain MRI Predicts

Grip Strength, poster presentation at the American Neurological Association 2020 Virtual Annual Meeting.

Franettovich Smith MM, Elliott JM, Al-Najjar A, Weber KA, Hoggarth MA, Vicenzino B, Hodges PW, Collins NJ. Ultra-high-field (7 Tesla) magnetic resonance imaging of the foot: advanced neuromuscular imaging to quantify intrinsic foot muscle volume and composition, poster presentation at the International Society of Electrophysiology and Kinesiology 2020 Virtual Congress, Accepted.

Law CSW, Weber KA, Mackey S, Glover G. Simultaneous Brain/Spinal Cord fMRI reveals Subject-Level Activation Differences under Noxious Thermal Stimulus, International Society for Magnetic Resonance in Medicine 28th Annual Meeting & Exhibition 2020, Sydney, Australia.

Eva Alonso-Ortiz E, ... , Weber K, ... , Cohen-Adad J. Quantitative MRI of the spinal cord: reproducibility and normative values across 40 sites, International Society for Magnetic Resonance in Medicine 28<sup>th</sup> Annual Meeting & Exhibition 2020, Sydney, Australia.

Hoggarth MA, Elliott J, Kwasny M, Wasielewski M, Weber K, and Parrish B. Is recovery from whiplash influenced by macromolecular changes in spinal cord white matter?, International Society for Magnetic Resonance in Medicine 28<sup>th</sup> Annual Meeting & Exhibition 2020, Sydney, Australia.

Weber KA II, Wager TD, Elliott JM, Mackey S, Liu WC, Sparks CL. Decreased Neurologic Pain Signature Activation Following Thoracic Spinal Manipulation in Healthy Volunteers and Participants with Neck Pain, platform presentation at the 2020 Association of Chiropractic Colleges Research Agenda Conference, San Diego, CA.

O' Dell DR, Albin SR, Weber KA, Berliner JC, Sevigny M, Dungan D, Abdie DR, Anderson JS, Rich AA, Seib CA, Skadow HG, Elliott JM, Smith AC. Can Early MRI Measures Predict Who Will Walk Outside One Year after Spinal Cord Injury?, platform presentation at the American Physical Therapy Association Combined Sessions Meeting 2020, Denver, CO, USA.

Smith AC, Weber II KA, Elliott JM. Machine Learning to Automatically Measure Multifidus Muscle Fat Infiltration Following Whiplash Injury, poster presentation at the American Physical Therapy Association Combined Sessions Meeting 2020, Denver, CO, USA.

Weber II KA, Law CS, Martucci KT, Gilam G, Lewis B, Narayan S, Hastie T, Wager TD, Mackey S. Resting State Functional Connectivity Machine Learning Classification Of Chronic Back Pain, poster presentation at the National Institute of Neurological Disorders and Stroke/American Neurological Association Career Development Symposium 2019, St. Louis, MO, USA.

Hopkins B, Weber K, Kesavabhotla K, Paliwal M, Cantrell D, Smith Z. Machine Learning for the Prediction of Cervical Spondylotic Myelopathy: A Post Hoc Pilot Study of 28 Participants, Congress of Neurological Surgeons 2019, San Francisco, CA, USA.

Weber II KA, Law CS, Martucci KT, Gilam G, Lewis B, Narayan S, Hastie T, Wager TD, Mackey S. Evaluation of Resting State Functional Connectivity Classification Pipelines for Chronic Back Pain, poster presentation at the 24th Annual Meeting of the Organization for Human Brain Mapping 2019, Rome, Italy.

Law C, Weber K, Barry R, Mackey S, Glover G. Physiological Noise Correction in Simultaneous Brain and Spinal Cord fMRI, International Society for Magnetic Resonance in Medicine 27<sup>th</sup> Annual Meeting & Exhibition 2019, Montreal, Canada.

Weber II KA, Smith AC, Wasielewski M, Egtesad K, Upadhyayula, PA, Wintermark M, Hastie TJ, Parrish TB, Mackey S, Elliott JM. Deep Learning Segmentation and Automatic Muscle Fat Infiltration Calculation of the Deep Cervical Spine Extensors: Implications for Whiplash...and Beyond, 2019 Spine Society of Australia 30th Annual Scientific Meeting, Broadbeach, Queensland, Australia.

Weber KA II, Wager TD, Elliott JM, Mackey S, Liu WC, Sparks CL. Decreased Neurologic Pain Signature Activation Following Thoracic Spine Manipulation in Healthy Volunteers, poster presentation at the American Pain Society's Annual Meeting 2019, Milwaukee, WI.

Weber II KA, Smith AC, Wasielewski M, Egtesad K, Upadhyayula, PA, Wintermark M, Hastie TJ, Parrish TB, Mackey S, Elliott JM. Deep Learning Segmentation and Automatic Muscle Fat Infiltration Calculation of the Deep Cervical Spine Extensors: Implications for Whiplash...and Beyond, Data Blitz presentation at the American Pain Society's Annual Meeting 2019, Milwaukee, WI.

O' Dell DR, Weber KA, Berliner JC, Elliott JM, Connor JR, Cummins DP, Heller KA, Hubert JS, Kates MJ, Mendoza KR, Smith AC. Spared neural tissue is associated with ambulatory function following spinal cord injury: a magnetic resonance imaging study of midsagittal tissue bridges, American Physical Therapy Association Combined Sessions Meeting 2019, Washington, DC.

Hoggarth MA, Parrish TB, Weber II KA, Dewald JPA, Elliott JM. Motor Vehicle Crash Reconstruction and Advanced Imaging: Do Findings Relate to Whiplash Recovery?, American Physical Therapy Association Combined Sessions Meeting 2019, Washington, DC.

Hopkins, B, Weber K, Cloney M, Paliwal M, Smith ZA. Clinically Predictive Value of Gray Matter Volume Loss in Cervical Spondylotic Myelopathy (CSM): A Prospective Case-Control Study Utilizing 3T MRI and Volumetric Mapping, Cervical Spine Research Society 46th Annual Meeting 2018, Scottsdale, AZ.

Hopkins, B, Weber K, Cloney M, Paliwal M, Smith ZA. Machine Learning for the Prediction of Cervical Spondylotic Myelopathy: A Post Hoc Pilot Study of 28 Participants, Cervical Spine Research Society 46th Annual Meeting 2018, Scottsdale, AZ.

Weber II KA, Smith AC, Upadhyayula PA, Wintermark M, Hastie TJ, Elliott J, Mackey S. Segmentation of Cervical Spinal Cord Damage in Incomplete Spinal Cord Injury using Three-Dimensional T2-Weighted Magnetic Resonance Imaging and Convolutional Neural Networks: An Application of V-Net on the NiftyNet Platform, poster presentation at the Brain and Mind Centre Symposium 2018, Brisbane Australia.

Alley S, Gilbert G, Wheeler-Kingshott CG, Samson RS, Grussu F, Martin A, Bannier E, Callot V, Smith SA, Xu J, Dewey B, Weber II KA, Parrish T, McLaren D, Barker GJ, Papinutto N, Seif M, Freund P, Barry RL, By S, Narayanan S, Cohen-Adad J. Consensus acquisition protocol for quantitative MRI of the cervical spinal cord at 3T, platform presentation at the Joint Annual Meeting International Society for Magnetic Resonance in Medicine - European Society for Magnetic Resonance in Medicine and Biology 2018, Paris, France.

Law CS, Weber K, Islam H, Mackey S, Glover G. Simultaneous Acquisition reveals Functional Connectivity in Brain and Spinal Cord, platform presentation at the Joint Annual Meeting International Society for Magnetic Resonance in Medicine - European Society for Magnetic Resonance in Medicine and Biology 2018, Paris, France.



Weber II KA, Upadhyayula PA, Smith AC, Hastie TJ, Mackey S. Segmentation of Spinal Cord Damage in SCI Using 3D T2-Weighted MRI and Convolutional Neural Networks, poster presentation at the 24th Annual Meeting of the Organization for Human Brain Mapping 2018, Singapore.

Hopkins, B, Weber K, Cloney M, Paliwal M, Parrish T, Smith ZA. Tract-specific volume loss on high-resolution MRI imaging predictive of cervical spondylotic myelopathy symptoms, oral podium at the The Annual Meeting of the American Association of Neurological Surgeons/Congress of Neurological Surgeons Spine Summit 2018, Orlando, FL.

Weber II KA, Sentis AI, Bernadel-Huey ON, Chen Y, Wang X, Parrish TB, Mackey S. Thermal Stimulation Alters Human Cervical Spinal Cord Functional Connectivity Compared to Rest: A Functional Magnetic Resonance Imaging Study, poster presentation at the American Pain Society's Annual Meeting 2018, Anaheim, CA.

Smith AC, Weber II KA, O'Dell DR, Parrish TB, Wasielewski M, Elliott JM. Lateral corticospinal tract damage analysis in motor incomplete spinal cord injury - its relationship to specific motor deficits, platform presentation at the American Physical Therapy Association Combined Sessions Meeting 2018, New Orleans, LA.

Abbott R, Elliott JM, Hoggarth M, O'Dell D, Smith A, Smith Z, Tappan R, Weber KA. Imaging of Spinal Trauma: Can Protons Inform Prognosis and Improve Outcomes? Education session at the American Physical Therapy Association Combined Sessions Meeting 2018, New Orleans, LA.

Cloney MB, Smith AC, Weber KA, Wu M, Coffey T, Barry A, Liu BP, Dhaher Y, Parrish TB, Lesniak MS, Smith ZA. Quantitative Magnetization Transfer MRI Measurements of the Anterior Spinal Cord Region are Associated with Clinical Outcomes in Cervical Spondylotic Myelopathy, podium presentation at the Congress of Neurological Surgeons 2017, Boston, MA.

Weber II KA, Sentis AI, Chen Y, Wang X, Parrish TB, Mackey S. Laterality of Spinal Cord Segmental Functional Connectivity: A Resting State Spinal Cord fMRI Study, poster presentation at the 23rd Annual Meeting of the Organization for Human Brain Mapping 2017, Vancouver, Canada.

Weber II KA, Bernadel-Huey ON, Chen Y, Wang X, Parrish TB, Mackey S. Advanced Spatial Smoothing Improves Detection of Cervical Spinal Cord Activity: A Functional Magnetic Resonance Imaging Study, poster presentation at the 23rd Annual Meeting of the Organization for Human Brain Mapping 2017, Vancouver, Canada.

Weber II KA, Sentis AI, Johnson KA, Martucci KT, Mackey S. Neural correlates of response inhibition in chronic low back pain: a functional magnetic resonance imaging study, poster presentation at the American Pain Society's Annual Meeting 2017, Pittsburgh, PA.

Weber II KA, Neuroimaging-Based Brain and Spinal Cord Biomarkers for Cervical Radiculopathy, Clinical Research Sounding Board, Early Career Forum, oral presentation at the American Pain Society's Annual Meeting 2017, Pittsburgh, PA.

Sentis AI, Weber II KA, Johnson KA, Martucci KT, Mackey S. Pain processing during recalled pain differs in chronic low back pain sufferers and healthy individuals, poster presentation at the American Pain Society's Annual Meeting 2017, Pittsburgh, PA.

Suleiman L, Weber II K, Rosenthal B, Savage J, Hsu W, Parrish T, Patel A. High-Resolution Magnetization Transfer (MT) in Patients with Cervical Spondylotic Myelopathy, platform presentation

at the International Society for the Advancement of Spine Surgery Annual Conference 2017, Boca Roton, FL.

Weber II KA, Chen Y, Wang X, Kahnt T, Parrish TB, Mackey S. High-Resolution Functional Magnetic Resonance Imaging Localizes Activity to the Spinal Cord Gray Matter. Stanford Medicine, Department of Anesthesia, Perioperative and Pain Medicine, Annual Research Awards Dinner 2016, Palo Alto, CA.

Suleiman L, Weber II K, Parrish T, Savage J, Hsu W, Patel A. High-Resolution Magnetization Transfer Correlates with Cervical Stenosis in Patients with Cervical Myelopathy, American Academy of Orthopaedic Surgeons Annual Meeting 2016, Orlando, FL.

Weber II KA, Chen Y, Wang X, Kahnt T, Parrish TB. Functional Magnetic Resonance Imaging of the Spinal Cord During Thermal Stimulation, Neuroscience 2015, Chicago, IL.

Weber II KA, Chen Y, Wang X, Kahnt T, Parrish TB. Lateralization of Cervical Spinal Cord Activity During a Simple Isometric Upper Extremity Motor Task, poster presentation at the 21st Annual Meeting of the Organization for Human Brain Mapping 2015, Honolulu, HI.

Weber II KA, Chen Y, Wang X, Parrish TB. Spinal Cord and Brainstem Activity During Tactile Stimulation Across Multiple Dermatomes, poster presentation at the 21st Annual Meeting of the Organization for Human Brain Mapping 2015, Honolulu, HI.

Weber II KA, Chen Y, Parrish TB. Characterization of the Magnetization Transfer Ratio in the Healthy Cervical Spinal Cord, poster presentation at the 21st Annual Meeting of the Organization for Human Brain Mapping 2015, Honolulu, HI.

Weber II KA, Chen Y, Wang X, Kahnt T, Parrish TB. Functional Magnetic Resonance Imaging of the Spinal Cord During Thermal Stimulation Across Multiple Sessions, 10th Annual NIH Pain Consortium Symposium, Bethesda, MD.

Bitra J, Phung J, Weber II KA, Inoue N, Espinoza Orías AA, Parrish TB. Use of a Novel MRI Compatible Head-Positioning Device for the Three Dimensional Kinematic Analysis of the Cervical Spine in Axial Rotation, American Society of Neuroradiology 53rd Annual Meeting 2015, Chicago, IL.

Weber II KA, Chen Y, Wang X, Parrish TB. Choice of motion correction method affects spinal cord fMRI results, poster presentation at the 20th Annual Meeting of the Organization for Human Brain Mapping 2014, Hamburg, Germany.

Weber II KA, Chen Y, Wang X, Parrish TB. A search for an optimal neuronal marker for spinal cord fMRI, poster presentation at the International Society for Magnetic Resonance in Medicine 21<sup>st</sup> Annual Meeting & Exhibition 2013, Salt Lake City, UT.

Zhang N, Weber K. Effects of test stress on chiropractic student physical examination laboratory testing - a pilot study, platform presentation at the 2012 Association of Chiropractic Colleges Research Agenda Conference, Las Vegas, NV.

Wang X, Casadio M, Weber K, Parrish T, Mussa-Ivaldi F. White matter microstructure changes induced by motor skill learning, poster presentation at Neuroscience 2011, Society for Neuroscience Annual Meeting, Washington, DC.

Weber II KA, Wang X, Casadio M, Mussa-Ivaldi FA, Parrish TB. Does White Matter Change Following Motor Training?: A Pilot Study, poster presentation at the 17th Annual Meeting of the Organization for Human Brain Mapping 2011, Quebec City, Canada.

Weber II KA, Parrish TB, Inoue N, Espinoza Orías AA, Rogers LM, Stinear JW. Using Three-Dimensional MRI to Study the Effects of Spinal Manipulation on Cervical Kinematics *In Vivo*: Discussion and Study Protocol, poster presentation at the 2011 World Federation of Chiropractic Biennial Congress, Rio de Janeiro, Brazil.

Butler JE, Weber II KA. Research Output in Spinal Manipulative Therapy: A Profession-Based Analysis of Studies Published in 2009, platform presentation at the 2011 World Federation of Chiropractic Biennial Congress, Rio de Janeiro, Brazil.

Dishman JD, Weber II KA, Corbin RL, Burke JR. Inhibitory Mechanisms of Lumbar Spinal Manipulation: an H-reflex and F-response Study, platform presentation at the 2009 World Federation of Chiropractic Biennial Congress, Montreal, Canada.

Weber II KA, He X. Chiropractic Students and Research: Forecasting Scientific Progress, platform presentation at the 2009 Association of Chiropractic Colleges Research Agenda Conference, Las Vegas, NV.

#### INVITED SPEAKER/PRESENTER

Mapping Sensory and Motor Function in Humans with Simultaneous Brain-Spinal Cord Functional MRI, General Electric Healthcare Distinguished Lecture at the 29<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping 2023, Seoul, South Korea.

From Images to Biomarkers: Automating the assessment of Muscle health with Magnetic resonance Imaging, Evidence-Based Practices and Chiropractic Care, Department of Veterans Affairs, Aug 2023.

Podcast Interview for Discussions in Spinal Cord Injury Science (DiSCIS), Spinal Cord Injury Special Interest Group of the Academy of Neurologic Physical Therapy of the American Physical Therapy Association, July 2023.

Extracting More from MRI: Brain, Spinal Cord, and Muscular Markers of Health and Disease, Spaulding Rehabilitation Hospital, Department of Physical Medicine and Rehabilitation, Harvard University School of Medicine, Aug 2022.

Brain Imaging in Traumatic Brain Injury, Stanford Synapse: Brain Injury Support Group Annual Conference, Apr 2022.

Extracting More from MRI: From Images to Biomarkers, Lecture to Department of Physical Therapy, Swami Rama Himalayan University, Baksar Wala, India, Dec 2021.

Spinal Cord Functional Imaging: Task-Based, Spinal Cord Workshop, MGH Martinos Center for Biomedical Imaging, Boston, MA, Nov 2021.

World of Chiropractic Web Series Interview, World Federation of Chiropractic, Sep 2021.

Extracting More from MRI: From Images to Biomarkers, Clinical Research Seminar Series, Palmer College of Chiropractic, Davenport, IA, Aug 2021.

Advanced MRI Techniques, Pain, and Manual Therapy, Chiropractic Science Podcast by Dr. Dean Smith, Jul 2020.

Moderator for International Association for the Study of Pain's Pain Research Forum Seminar, Human Spinal Cord Neuroimaging of Chronic Pain and Opioid Use, Dr. Kathryn Martucci, Duke University.

Mapping Sensory and Motor Function in the Spinal Cord & Brain: From Maps to Markers of Disease, MGH Martinos Center Brainmap Seminar, Boston, MA, USA, Oct 2019.

The Neurophysiology of Clinical Pain and Its Treatment, Science Week Series, Parker University, Dallas, TX, USA, Oct 2019.

Advancing Chiropractic with Advanced Magnetic Resonance Imaging, Palmer College of Chiropractic West, San Jose, CA, USA, Aug 2019.

Advancing Neuromuscular and Musculoskeletal Health with Advanced Magnetic Resonance Imaging, Author-in-the-Room Webinar Series, University of Sydney, Sydney, Australia, Aug 2019.

Advancing Chiropractic with Advanced Magnetic Resonance Imaging, Logan University College of Chiropractic Grand Rounds, St. Louis, MO, USA, Aug 2019.

Pain Medicine, Management, Mechanisms, and Research. Stanford Center for Clinical Research Science Series, Stanford School of Medicine, Stanford University, Palo Alto, CA Sep 2017.

Advancing Spinal Imaging: Novel Methods for Understanding Spinal Function and Structure. Center for Translational Imaging Seminar Series, Department of Radiology, Northwestern University, Chicago, IL, Nov 2014.

Advancements in MRI: Functional MRI and Diffusion Weighted Imaging with Clinical Applications. International Academy of Chiropractic Neurology, 2014 Neurology Symposium, Murfreesboro, TN.

Magnetic Resonance Imaging: MR Image Acquisition, Functional MRI, and Diffusion MRI. Biophysics Course Lecture, Department of Physical Therapy, College of Applied Health Sciences, University of Illinois Chicago, June 2014.

Functional Magnetic Resonance Imaging: Principles, Uses, and Limitations. International Academy of Chiropractic Neurology, 2011 Neurology Symposium, Chicago, IL.

Cortical Pain Processing: From Acute Pain to Chronic Pain. International Academy of Chiropractic Neurology, 2011 Neurology Symposium, Chicago, IL.

## MENTEES

Allison Lewis, DPT, PhD  
Postdoctoral Scholar  
Department of Health Sciences and Research  
College of Health Professions  
Medical University of South Carolina

Scott Ensel  
PhD Candidate  
Department of Bioengineering  
University of Pittsburgh

Kimberly J. Hemmerling  
PhD Candidate

Biomedical Engineering  
Northwestern University

Wesley Thornton, PT, DPT  
PhD Candidate  
Rehabilitation Sciences PhD Program  
CU Physical Therapy Program  
University of Colorado Anschutz School of Medicine

Teresa Indriolo  
Clinical Research Coordinator Associate  
Division of Pain Medicine  
Stanford University School of Medicine

Nazrawit Berhe  
Clinical Research Coordinator Associate  
Division of Pain Medicine  
Stanford University School of Medicine

Wren Burton, DC  
Chiropractic Research Fellow  
Osher Center for Integrative Medicine  
Harvard Medical School

Benjamin Lynn  
Chiropractic Intern  
VA Palo Alto Health Care System

Zachary Scott, DC  
Chiropractic Resident  
VA Puget Sound Health Care System

Javier Munoz Laguna, DC  
PhD Student  
University of Zurich

Valeria Oliva, PhD  
Principal Investigator  
Istituto Superiore di Sanità

Sandrine Bédard  
Visiting Master's Student  
Stanford University School of Medicine

Yueli Sun  
Visiting Scholar  
Stanford University School of Medicine

Brian Kim  
PhD Student  
University of Sydney

Merve Kaptan, PhD  
Postdoctoral Fellow  
Stanford University

Dario Pfyffer, PhD  
Postdoctoral Fellow  
Stanford University

Anne Baker, PhD, LCSW  
Postdoctoral Fellow  
Duke University

Fauziyya Muhammad, PhD  
Postdoctoral Fellow  
Oklahoma University Health Sciences Center

Monica Paliwal, PhD  
Postdoctoral Fellow  
Northwestern University, Chicago, IL  
Oklahoma University Health Sciences Center

Grace Haynes, PhD  
PhD Student  
Oklahoma University Health Sciences Center

Evert O. Wesselink, PT, MSc  
PhD Student  
Vrije Universiteit Amsterdam

Jordan Gliedt, DC  
PhD Student  
Medical College Wisconsin, Milwaukee, WI, USA

Casper Nim, MS, PhD  
What determines a positive outcome of spinal manipulation for persistent low back pain: stiffness or pain sensitivity?"  
University of Southern Denmark, Odense, Denmark  
2021

Mark Hoggarth, DPT, PhD  
Magnetization Transfer Imaging of Spinal Cord Trauma after Whiplash Injury  
PhD, Physical Therapy and Human Movement Sciences, Biomedical Engineering, Northwestern University, Chicago, IL  
2020

Apoorva Ayyagari, MS  
Understanding Noise in Spinal Cord BOLD fMRI Data with a Breath-hold Paradigm to Investigate Feasibility of Studying Vascular Reactivity  
MS, Physical Therapy and Human Movement Sciences, Biomedical Engineering, Northwestern University, Chicago, IL  
2020

## WORK EXPERIENCE

- Senior Research Scientist** April 2023 – Present  
Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University, Palo Alto, CA
- Instructor** Dec 2018 – Mar 2023  
Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University, Palo Alto, CA
- Postdoctoral Scholar** Jan 2016 – Dec 2018  
Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University, Palo Alto, CA
- PhD Candidate** Sep 2012 – Dec 2015  
Department of Radiology, Interdepartmental Neuroscience Program, Northwestern University, Chicago, IL
- PhD Graduate Student** Sep 2010 – Sep 2012  
Department of Radiology, Interdepartmental Neuroscience Program, Northwestern University, Chicago, IL
- Initial Clinical Reviewer** Apr 2011 – Nov 2015  
CID Management, Westlake Village, CA
- Research Assistant for Motor Behavior Laboratory** Jan 2011 – Dec 2015  
Occupational Therapy Department, Rush University Medical Center, Chicago, IL
- Teaching Assistant Gross Anatomy** Sep 2011 – Apr 2012  
Physical Therapy and Human Movement Sciences, Northwestern University, Chicago, IL
- Research Assistant for Neural Plasticity Laboratory** Oct 2009 – Sep 2010  
Sensory Motor Performance Program, Rehabilitation Institute of Chicago, Chicago, IL
- Research Assistant for J. Donald Dishman, DC, MSc** Aug 2008 – Oct 2009  
Palmer College of Chiropractic Florida, Port Orange, FL
- Laboratory Technologist** Feb 2004 – Aug 2006  
Emulsion Polymer Research, The Dow Chemical Company, Midland, MI
- Undergraduate Student** Aug 2003 – May 2006  
Saginaw Valley State University, University Center, MI
- Undergraduate Student** Jan 2005 – May 2005  
Mott Community College, Flint, MI
- Undergraduate Student** Aug 2004 – May 2005  
Delta Community College, University Center, MI