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Education & Training

Present	Postdoc Neuroscience University of North Carolina at Chapel Hill, Chapel Hill, NC Mentor: Grégory Scherrer, PharmD, PhD
2025	PhD Biomedical Engineering Northwestern University, Evanston, IL Advisor: Vania Apkarian, PhD Committee: Marwan Baliki, PhD; Molly Bright, DPhil; and Matthew Tresch, PhD Dissertation: <i>On the Dopaminergic Basis of Offset Analgesia</i>
2025	MS Statistics Northwestern University, Evanston, IL Culminating Project: <i>A Circuit Motif-inspired Model of Offset Analgesia</i>
2020	MS Biomedical Engineering Northwestern University, Evanston, IL Advisors: Sabrina Lee, PhD and Elliott Rouse, PhD Thesis: <i>Mapping the relationships between joint stiffness, modeled muscle stiffness, and shear-wave velocity</i>
2015	BS Kinesiology Arizona State University, Phoenix, AZ <i>Summa cum laude</i>

Honors, Awards, and Grants

2025	Outstanding Dissertation Award, Department of Biomedical Engineering, Northwestern University
2023	Slovenian Neuroscience Association (SiNAPSA) Conference Travel Grant
2022	Finalist, Presidential Fellowship, Northwestern University
2022	Dr. James C. Houk Graduate Fellowship, Department of Neuroscience, Northwestern University
2021	NIH Ruth L. Kirschstein Predoctoral Individual National Research Service Award (F31)
2019	International Society of Biomechanics Student Congress Travel Grant
2018	Finalist, American Society of Biomechanics Doctoral Student Presentation Competition
2018	American Society of Biomechanics Student Travel Award
2017	National Science Foundation (NSF) Graduate Research Fellowship
2017	American Society of Biomechanics Grant-In-Aid Award
2015	American Kinesiology Association Undergraduate Scholar Award

Research Experience

Feb 2025–Present	Postdoc, Scherrer Lab University of North Carolina at Chapel Hill, Chapel Hill, NC PI: Grégory Scherrer, PharmD, PhD
Feb 2019–Jan 2025	Graduate Student (PhD), Apkarian Pain and Passions Lab Northwestern University, Chicago, IL PI: Vania Apkarian, PhD
Sep 2016–Feb 2019	Graduate Student (MS), Neuromuscular Biomechanics Laboratory Northwestern University, Chicago, IL PI: Sabrina Lee, PhD

Sep 2016–Aug 2017	Graduate Student (MS), Neurobionics Lab Shirley Ryan AbilityLab, Chicago, IL PI: Elliott Rouse, PhD
Sep 2015–Jun 2016	Post-bacc Research Assistant, Human Performance Laboratory CUNY Lehman, Bronx, NY PI: Brad Schoenfeld, PhD
Sep 2015–May 2016	Post-bacc Research Assistant, Leon Root, MD Motion Analysis Laboratory Hospital for Special Surgery, New York, NY PI: Howard Hillstrom, PhD
Sep 2013–May 2015	Research Assistant, BC Athletics, LLC Phoenix, AZ PI: Bret Contreras, PhD
Aug 2013–May 2015	Undergraduate Research Assistant, Movement Analysis Laboratory Arizona State University, Phoenix, AZ PI: Erin Feser, PhD

Book Chapters

1. **Vigotsky AD**, Huang L, Jabakhanji R, Iannetti GD, Apkarian AV. (2025). fMRI and Pain. In: Filippi, M. (eds) fMRI Techniques and Protocols. Neuromethods, vol 220. Humana, New York, NY. doi:10.1007/9781-0716-4438-6_17
2. Cook CE, Bejarano G, Reneker JC, **Vigotsky AD**. (2024). Responder analyses in musculoskeletal research. In: Falla D, Lewis J, McCarthy C, Cook CE, Sterling M. *Grievous Modern Musculoskeletal Physiotherapy*, vol 5. Elsevier Health Sciences.

Journal Publications

† denotes equal contribution

In Preparation, Under Review, and Forthcoming

1. Baliki M, **Vigotsky AD**, Rached G, Jabakhanji R, Huang L, Branco P, Barroso J, Cong O, Centeno MV, Cermak S, Griffith J, Schnitzer T, Wasan A, Apkarian AV. (2024). Multi-receptor whole-cortex adaptations with long-term opioid use in chronic pain. Submitted to *Nature Medicine*. Preprint doi:rs.3.rs-5061297/v1
2. Barroso J, **Vigotsky AD**, Salas S, Simonan N, Apkarian AV, Schnitzer TJ. D-Cycloserine for treatment of chronic low back pain: Results from a Randomized, Double-Blind, Placebo-Controlled Clinical Trial. Submitted to *Journal of Pain*.
3. **Vigotsky AD**, Jabakhanji R, Branco P, Huang L, Engle A, Baliki MN, Apkarian AV. Mesolimbic dopamine contributions to acute pain dynamics: A modeling, imaging, and pharmacological study. Submitted to *Neuron*.
4. Moreno Ramos O[†], Raj DDA[†], **Vigotsky AD**, Phelan E, Singh A, Schneeweis A, Jenkins JC, Nissan MS, Bolduc C, Luppi MP, Onay T, Markoulakis S, Lerner T, Surmeier DJ, Apkarian AV, Pulin JF, Dombeck D, Awatramani R. Coordinated spatial organization of basal ganglia structures revealed by Dopamine subtype projectome mapping. Under revision, *Nature Neuroscience*.

Published

1. Okhamafe D, Silverman Y, **Vigotsky AD**, Halperin I. (2026). Modifying the Meaning of the Upper Anchor Predictably Shapes Ratings of Perceived Effort: A Randomized Crossover Trial. *Sports Medicine Open*. 12(63). doi:10.1186/s40798-026-01040-x
2. Huang L, Jabakhanji R, **Vigotsky AD**, Branco P, Baliki MN, Apkarian AV. (2026). Revisiting Amplitude of Low-Frequency Fluctuations (ALFF) in Resting-State fMRI: Clarifications and Improvements. *Human Brain Mapping*. 47, 5:e70506, doi:10.1002/hbm.70506
3. Hemmerling KJ, **Vigotsky AD**, Glanville C, Barry RL, Bright MG. (2026). Data-driven denoising in spinal cord fMRI with principal component analysis. *Imaging Neuroscience*. 4: IMAG.a.1143. doi:10.1162/IMAG.a.1143
4. Caldwell AR, Allison DB, Brown AW, Gadbury GL, Mokalla TR, Sayer D, **Vigotsky AD**. (2025). Concerns Regarding the Standard Deviation of Individual Responses for Assessing Treatment Response Heterogeneity. *Journal of Applied Physiology*. 139(5):1220-1227. doi:10.1152/jappphysiol.00485.2025
 - Letter to the editor: Atkinson G, Lolli L, Batterham AM. (2025). Misconceptions about variance comparisons for exploring the presence of treatment response heterogeneity in randomized controlled trials. *Journal of Applied Physiology*. 140(1). doi:10.1152/jappphysiol.01002.2025

- Response: Caldwell AR, Allison DB, Brown AW, Gadbury GL, Mokalla TR, Sayer D, **Vigotsky AD**. (2026). Reply to Atkinson et al. *Journal of Applied Physiology*. 140(6). doi:10.1152/jappphysiol.00059.2026
- 5. Morison S, Doster L, **Vigotsky AD**, Centeno MV, Gonzalez NL, Apkarian AV, Awatramani R. (2025). Recruitment of specific dopamine neuron sub-circuits by opioids. *Addiction Neuroscience*. 17(100233). doi:10.1016/j.addicn.2025.100233
- 6. Warmenhoven J, Impellizzeri FM, Shrier I, **Vigotsky AD**, Lolli L, Menaspà P, Coutts AJ, Fanchini M, Hooker G. (2025). Synthetic data for sharing and exploration in high-performance sport: Considerations for application. *Sports Medicine*. doi:10.1007/s40279-025-02221-6
- 7. **Vigotsky AD**, Tassou A, Scherrer GS. (2025). Pontospinal control of nociception via a negative feedback loop. *Neuron*. 113(11):1658-1660. doi:10.1016/j.neuron.2025.05.007
- 8. Tenan MS, Rezai AR, **Vigotsky AD**. (2025). A Causal and Replication Analysis of Claims that Jet Lag Affects Team Sport Performance. *American Journal of Epidemiology*. 194(9):2499-2506. doi:10.1093/aje/kwaf120
- 9. Branco P, Bosak N, **Vigotsky AD**, Granovsky Y, Yarnitsky D, Apkarian AV. (2024). Hippocampal functional connectivity after whiplash injury is linked to the development of chronic pain. *Nature Mental Health*. 2:1362-1370. doi:10.1038/s44220-024-00329-8
- 10. **Vigotsky AD**, Iannetti GD, Apkarian AV. Mental State Decoders: Game-changers or Wishful Thinking? *Trends in Cognitive Sciences*. 28(10):884-895. doi: 10.1016/j.tics.2024.06.004
 - Letter to the editor: Lee S, Kayser AS, Hsu M. (2025). Neural decoders: saving the baby from the bathwater. *Trends in Cognitive Sciences*. S1364-6613(25)00077-4. doi:10.1016/j.tics.2025.03.004
 - Response: **Vigotsky AD**, Iannetti GD, Apkarian AV. (2025). fMRI decoders: unlike the baby, wishful thinking is alive and well. *Trends in Cognitive Sciences*. S1364-6613(25)00117-2. doi:10.1016/j.tics.2025.05.005
- 11. **Vigotsky AD**, Jabakhanji R, Branco P, Iannetti GD, Baliki MN, Apkarian AV. (2024). Widespread, perception-related information in the human brain scales with levels of consciousness. *Imaging Neuroscience*. 2:1-17. doi:10.1162/imag_a.00240
- 12. Halperin I, **Vigotsky AD**. An integrated perspective of effort and perception of effort. *Sports Medicine*. 54(8):2019-2032. doi: 10.1007/s40279-024-02055-8
- 13. Huang Q, Jiang X, Jin Y, Wu B, **Vigotsky AD**, Fan L, Gu P, Tu W, Huang L, Jiang S. Immersive virtual reality-based rehabilitation for subacute stroke: a randomized controlled trial. *Journal of Neurology*. 271(3):1256-1266. doi:10.1007/s00415-023-12060-y
- 14. **Vigotsky AD**, Cong O, Pinto CB, Barroso J, Perez J, Petersen KK, Arendt-Nielsen L, Hardt K, Manning D, Apkarian AV, Branco P. (2024). Prognostic Value of Preoperative Mechanical Hyperalgesia and Neuropathic Pain Qualities for Postoperative Pain after Total Knee Replacement. *European Journal of Pain*. 28(8):1387-1401. doi:10.1002/ejp.2295
- 15. Huang S, **Vigotsky AD**, Apkarian AV, Huang L. (2024). Body mass index associated with respiration predicts motion in resting-state functional magnetic resonance imaging scans. *Human Brain Mapping*. 45(13):e70015. doi:10.1002/hbm.70015
- 16. Vieira TM, Cerone GL, Botter A, Watanabe K, **Vigotsky AD**. (2023). The Sensitivity of Bipolar Electromyograms to Muscle Excitation Scales With the Inter-Electrode Distance. *IEEE Trans Neural Syst Rehabil Eng*. 31:4245-4255. doi:10.1109/TNSRE.2023.3325132
- 17. Murphy J, Hodson-Tole E, **Vigotsky AD**, Potvin JR, Fisher JP, Steele J. (2023). Surface electromyographic frequency characteristics of the quadriceps differ between continuous high- and low-torque isometric knee extension to momentary failure. *Journal of Electromyography and Kinesiology*, 72, 102810. doi:10.1016/j.jelekin.2023.102810.
- 18. Plotkin DL, Rodas MA, **Vigotsky AD**, McIntosh MC, Breeze E, Ubrik R, Robitzsch C, Agyin-Birikorang A, Mattingly ML, Michel JM, Kontos NJ, Lennon S, Frug AD, Wilburn CM, Weimar WH, Bashir A, Beyers RJ, Henselmans M, Contreras BM, Roberts MD. Hip thrust and back squat training elicit similar gluteus muscle hypertrophy and transfer similarly to the deadlift. *Front Physiol*. 14:1279170. doi: 10.3389/fphys.2023.1279170
- 19. Cook CE, Bejarano G, Reneker J, **Vigotsky AD**, Riddle DL. (2023). Responder Analyses: A Methodological Mess. *Journal of Orthopaedic & Sports Physical Therapy*. 53(11):652-727. doi:10.2519/jospt.2023.11853.
- 20. Barroso J, Branco P, Pinto-Ramos J, **Vigotsky AD**, Reis AM, Schnitzer TJ, Galhardo V, Apkarian AV. (2022). Subcortical brain anatomy as a potential biomarker of persistent pain after total knee replacement in osteoarthritis. *Pain*, 164(10):2306-2315. doi:10.1097/j.pain.0000000000002932.
- 21. Coleman M, Burke R, Benavente C, Piñero A, Augustin F, Maldonado J, Fisher JP, Oberlin D, **Vigotsky AD**, Schoenfeld BJ. (2023). Supervision during resistance training positively influences muscular adaptations in resistance-trained individuals. *Journal of Sports Sciences*. 41(12), 1207-1217. doi:10.1080/02640414.2023.2261090
- 22. Malleron T, Har-Nir I, **Vigotsky AD**, Halperin I. (2023). Rating of perceived effort but relative to what? A comparison between imposed and self-selected anchors. *Psychology of Sport and Exercise*, 66, 102396. doi:10.1016/j.psychsport.2023.
- 23. Van Every DW, Coleman M, Plotkin DL, Zambrano H, Van Hooren B, Larsen S, Nuckols G, **Vigotsky AD**, Schoenfeld BJ. (2022). Biomechanical, anthropometric and psychological determinants of barbell bench press strength. *Sports*, 10(12):199. doi:10.3390/sports10120199
- 24. Hoggarth MA, Wang MC, Hemmerling KJ, **Vigotsky AD**, Smith ZA, Parrish TB, Weber KA II, Bright MG. (2022). Effects of variability in manually contoured spinal cord masks on fMRI co-registration and interpretation. *Frontiers in Neurology*, 13:907581. doi:10.3389/fneur.2022.907581
- 25. Yang L, **Vigotsky AD**, Wu B, Shen B, Yan Z, Apkarian AV, Huang L. (2023). Morphometric similarity networks discriminate patients with lumbar disc herniation from healthy controls and predict pain intensity. *Frontiers in Network*

- Physiology*. 2:992662. doi:10.3389/fnetp.2022.992662
26. Plotkin D, Coleman M, Van Every D, Maldonado J, Oberlin D, Israel M, Feather J, Alto A, **Vigotsky AD**, Schoenfeld BJ. 2022. Progressive overload without progressing load? The effects of load or repetition progression on muscular adaptations. *PeerJ*, 10:e14142. doi:10.7717/peerj.14142
 27. Van Every DW, Coleman M, Rosa A, Zambrano H, Plotkin D, Torres X, Mercado M, De Souza EO, Alto A, Oberlin DJ, **Vigotsky AD**, Schoenfeld DJ. (2022). Loaded inter-set stretch may selectively enhance muscular adaptations of the plantar flexors. *PLoS One*, 17(9): e0273451. doi:10.1371/journal.pone.0273451
 28. Tiwari SR, **Vigotsky AD**, Apkarian AV. On the relationship between pain variability and relief in randomized clinical trials. *Frontiers in Pain Research*, 3:844309. doi:10.3389/fpain.2022.844309
 29. Jabakhanji R[†], **Vigotsky AD**[†], Bielefeld J, Huang L, Baliki MN, Iannetti GD, Apkarian AV. Limits of Decoding Mental States with fMRI. *CORTECH*, 149:101122. doi:10.1016/j.cortex.2021.12.015
 30. **Vigotsky AD**, Halperin I, Trajano GS, Vieira TM. (2022). Longing for a longitudinal proxy: Acutely measured surface EMG amplitude is not a validated predictor of muscle hypertrophy. *Sports Medicine*. doi:10.1007/s40279-021-01619-2
 31. Csapo R, Heinrich D, **Vigotsky AD**, Marx C, Sinha S, Fink C. (2021). Developing a Technique for the Imaging-Based Measurement of ACL Elongation: A Proof of Principle. *Diagnostics*, 11, 2126. doi:10.3390/diagnostics11112126
 32. **Vigotsky AD**, Tiwari SR, Griffith JW, Apkarian AV. (2021). What Is the Numerical Nature of Pain Relief? *Frontiers in Pain Research*. 2:756680. doi:10.3389/fpain.2021.756680
 33. Schoenfeld B, Fisher J, Grgic J, Haun C, Helms E, Phillips S, Steele J, **Vigotsky A**. (2021). Resistance Training Recommendations to Maximize Muscle Hypertrophy in an Athletic Population: Position Stand of the IUSCA. *International Journal of Strength and Conditioning*, 1(1). doi:10.47206/ijsc.v1i1.81
 34. Wakaizumi K, **Vigotsky AD**, Jabakhanji R, Abdallah M, Barroso J, Schnitzer TJ, Apkarian AV, Baliki MN. Psychosocial, Functional, and Emotional Correlates of Long-Term Opioid Use in Patients with Chronic Back Pain: A Cross-Sectional Case-Control Study. *Pain and Therapy*. doi:10.1007/s40122-021-00257-w
 35. Balachandran AT, **Vigotsky AD**, Quiles N, Mokkink LB, Belio MA, Glenn JM. (2021). Validity, reliability, and measurement error of a sit-to-stand power test in older adults: A pre-registered study. *Experimental Gerontology*, 145, 111202. doi:10.1016/j.exger.2020.111202
 36. Impellizzeri FM, Woodcock S, Coutts AJ, Fanchini M, McCall A, **Vigotsky AD**. (2020). What Role Do Chronic Workloads Play in the Acute to Chronic Workload Ratio? Time to Dismiss ACWR and Its Underlying Theory. *Sports Medicine*. doi:10.1007/s40279-020-01378-6
 37. Caldwell AR[†], **Vigotsky AD**[†]. (2020). A case against default effect sizes in sport and exercise science. *PeerJ*, 8, e10314. doi:10.7717/peerj.10314
 38. Yang L, Wu B, Fan L, Huang S, **Vigotsky AD**, Baliki MN, Yan Z, Apkarian AV, Huang L. (2020). Dissimilarity of functional connectivity uncovers the influence of participant's motion in fMRI studies. *Human Brain Mapping*. doi:10.1002/hbm.25255
 39. Sainani KL, Borg DN, Caldwell AR, Butson ML, Tenan MS, Vickers AJ, **Vigotsky AD**, Warmenhoven J, Nguyen R, Lohse KR, Knight EJ, Bargary N. (2020). A Call to Increase Statistical Collaboration in Sports Science, Sport and Exercise Medicine, and Sports Physiotherapy. *British Journal of Sports Medicine*. doi:10.1136/bjsports-2020-102607
 40. **Vigotsky AD**, Rouse EJ, Lee SSM. (2020). Mapping the relationships between joint stiffness, modeled muscle stiffness, and shear wave velocity. *Journal of Applied Physiology*. 129(3):483–491. doi:10.1152/japplphysiol.00133.2020
 41. Barroso J, **Vigotsky AD**, Branco P, Reis AM, Schnitzer TJ, Galhardo V, Apkarian AV. (2020). Brain grey matter abnormalities in osteoarthritis pain: a cross-sectional evaluation. *PAIN*. 161(9):2167–2178. doi:10.1097/j.pain.0000000000001904
 42. Schoenfeld BJ, **Vigotsky AD**, Grgic J, Haun C, Contreras B, Delcastillo K, Francis A, Cote G, Alto A. (2020). Do the anatomical and physiological properties of a muscle determine its adaptive response to different loading protocols? *Physiological Reports*. 8(9), e14427. doi:10.14814/phy2.14427
 43. Caldwell AR, **Vigotsky AD**, Tenan MS, Radel R, Mellor DT, Kreutzer A, Lahart IM, Mills JP, Boisgontier MP, Consortium for Transparency in Exercise Science (COTES) Collaborators. (2020). Moving Sport and Exercise Science Forward: A Call for the Adoption of More Transparent Research Practices. *Sports Medicine*. doi:10.1007/s40279-019-01227-1
 - Article in its preprint form was featured on FiveThirtyEight.
 44. Smith BC, **Vigotsky AD**, Apkarian AV, Schnitzer TJ. (2020). Temporal Opioid Utilization in an Urban, Academic Emergency Department by Condition, Provider and Patient Subgroups. *JAMA Network Open*, 3(3), e200802. doi:10.1001/jamanetworkopen.2020.0802
 45. Schoenfeld BJ, Grgic J, Contreras B, Delcastillo K, Alto A, Haun C, De Souza EO, **Vigotsky AD**. (2020). To Flex or Rest: Does Adding No-Load Isometric Actions to the Inter-Set Rest Period in Resistance Training Enhance Muscular Adaptations? A Randomized-Controlled Trial. *Frontiers in Physiology*. 10:1571. doi:10.3389/fphys.2019.01571
 46. Tenan MS, **Vigotsky AD**, Caldwell AR. (2019). Comment on: “A Method to Stop Analyzing Random Error and Start Analyzing Differential Responders to Exercise”. *Sports Medicine*. doi:10.1007/s40279-019-01249-9
 - Publication featured in a three-part series on Retraction Watch (part 1, part 2, and part 3).
 47. **Vigotsky AD**, Zelik KE, Lake J, Hinrichs RN. (2019). Mechanical misconceptions: Have we lost the “mechanics” in “sports biomechanics”? *Journal of Biomechanics*. doi:10.1016/j.jbiomech.2019.07.005
 48. Taber CB, **Vigotsky A**, Nuckols G, Haun CT. (2019). Exercise-induced myofibrillar hypertrophy is a contributory

- cause of gains in muscle strength. *Sports Medicine*, 1-5. doi:10.1007/s40279-019-01107-8
49. Haun CT, Vann CG, Roberts BM, **Vigotsky AD**, Schoenfeld BJ, Roberts MD. (2019) A Critical Evaluation of the Biological Construct Skeletal Muscle Hypertrophy: Size Matters but So Does the Measurement. *Frontiers in Physiology*. 10:247. doi:10.3389/fphys.2019.00247
 50. Dello Iacono A, **Vigotsky AD**, Laver L, Halperin I. (2019) Beneficial Effects of Small-Sided Games as a Conclusive Part of Warm-up Routines in Young Elite Handball Players. *J Strength Cond Res*. doi:10.1519/JSC.0000000000002983
 51. Lahti J, Hegyi A, **Vigotsky AD**, Ahtiainen JP. (2018). Effects of barbell back squat stance width on sagittal and frontal hip and knee kinetics. *Scand J Med Sci Sports*. doi:10.1111/sms.13305
 52. **Vigotsky AD**, Rouse EJ, Lee SSM. (2018). In vivo relationship between joint stiffness, joint-based estimates of muscle stiffness, and shear-wave velocity. *Conference Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society*. doi:10.1109/EMBC.2018.8512484
 53. **Vigotsky AD**, Schoenfeld BJ, Than C, Brown JM. (2018) Methods matter: the relationship between strength and hypertrophy depends on methods of measurement and analysis. *PeerJ*, 6, e5071. doi:10.7717/peerj.5071
 54. Schoenfeld BJ, **Vigotsky A**, Contreras B, Golden S, Alto A, Larson R, Winkelman N, Paoli A. (2018). Differential effects of attentional focus strategies during long-term resistance training. *European Journal of Sport Science*. doi:10.1080/17461391.2018.1447020
 55. **Vigotsky AD**, Bryanton MA, Nuckols G, Beardsley C, Contreras B, Evans J, Schoenfeld BJ. (2018). Biomechanical, anthropometric, and psychological determinants of barbell back squat strength. *Journal of Strength and Conditioning Research*. doi:10.1519/JSC.0000000000002535
 56. Halperin I, Wulf G, **Vigotsky AD**, Schoenfeld BJ, Behm D. (2018). Autonomy: a missing ingredient of a successful program? *Strength and Conditioning Journal*. doi:10.1519/SSC.0000000000000383
 57. **Vigotsky AD**, Halperin I, Lehman GJ, Trajano GS, Vieira TM. (2018). Interpreting Signal Amplitudes in Surface Electromyography Studies in Sport and Rehabilitation Sciences. *Frontiers in Physiology*, 8, 985. doi:10.3389/fphys.2017.00985
 58. Monteiro ER, **Vigotsky AD**, Novaes JDS, Škarabot J. (2018). Acute effects of different anterior thigh self-massage on hip range-of-motion in trained men. *The International Journal of Sports Physical Therapy*, 13(1), 104–113. doi:10.26603/ijsp.20180104
 59. Schoenfeld BJ, Ogborn D, **Vigotsky AD**, Franchi M, Krieger J. (2017). Hypertrophic effects of concentric versus eccentric muscle actions: A systematic review and meta-analysis. *Journal of Strength and Conditioning Research*. Epub ahead of print.
 60. Monteiro ER, **Vigotsky AD**, Škarabot J, Brown AF, Gomes TM, Novaes JDS. (2017). Acute effects of different foam rolling volumes in the inter-set rest period on maximum repetition performance. *Hong Kong Physiotherapy Journal*, 36, 57–62. doi:10.1016/j.hkpj.2017.03.001
 61. Zweifel MB, **Vigotsky AD**, Contreras B, Simiyu WWN. (2017). Effects of 6-week squat, deadlift, or hip thrust training program on speed, power, agility, and strength in experienced lifters: A pilot study. *Journal of Trainology*, 6(1).
 62. Steele J, Fisher J, Skivington M, Dunn C, Arnold J, Tew G, Batterham AM, Nunan D, O'Driscoll JM, Mann S, Beedie C, Jobson S, Smith D, **Vigotsky A**, Phillips S, Estabrooks P, Winett R. (2017). A higher effort-based paradigm in physical activity and exercise for public health: making the case for a greater emphasis on resistance training. *BMC Public Health*, 17, 300. doi:10.1186/s12889-017-4209-8
 63. Monteiro ER, Škarabot J, **Vigotsky AD**, Brown AF, Gomes TM, Novaes JDS. (2017). Acute effects of different self-massage volumes on FMS overhead deep squat performance. *The International Journal of Sports Physical Therapy*.
 64. Monteiro ER, Škarabot J, **Vigotsky AD**, Brown AF, Gomes TM, Novaes JDS. (2017). Maximum repetition performance after different antagonist foam rolling volumes in the inter-set rest period. *The International Journal of Sports Physical Therapy*, 12(1), 1-9.
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 66. Schoenfeld BJ, Contreras B, **Vigotsky AD**, Peterson M. (2016). Differential Effects of Heavy Versus Moderate Loads on Measures of Strength and Hypertrophy in Resistance-Trained Men. *Journal of Sports Science and Medicine*, 15, 715–722.
 67. Rossi FE, Schoenfeld BJ, Ocetnik S, Young J, **Vigotsky AD**, Contreras B, Krieger JW, Miller MG, Cholewa J. (2016). Strength, body composition, and functional outcomes in the squat versus leg press exercises. *J Sport Med Phys Fit*.
 68. Halperin I, **Vigotsky AD**. (2016). The mind-muscle connection in resistance training: friend or foe?. *European Journal of Applied Physiology*, 116(4), 863-4. doi:10.1007/s00421-016-3341-y
 69. **Vigotsky AD**, Lehman GJ, Beardsley C, Contreras B, Chung B, Feser EH. (2016). The modified Thomas test is not a valid measure of hip extension unless pelvic tilt is controlled. *PeerJ*, 4, e2325. doi:10.7717/peerj.2325
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 71. Schoenfeld BJ, Contreras B, **Vigotsky AD**, Ogborn D, Tiryaki-Sonmez G. (2016). Upper body muscle activation during low- versus high-load resistance exercise in the bench press. *Isokinetics and Exercise Science*. doi:10.3233/IES-160620
 72. Schoenfeld BJ, Ogborn D, Contreras B, Cappaert T, Ribeiro AS, Alvar, BA, **Vigotsky AD**. (2016). A comparison of

- increases in volume load over 8 weeks of low- versus high-load resistance training. *Asian Journal of Sports Medicine*, 7(2), e29247. doi:10.5812/asjsm.29247
73. **Vigotsky AD**, Ogborn D, Phillips SM. (2016). Motor unit recruitment cannot be inferred from surface EMG amplitude and basic reporting standards must be adhered to. *European Journal of Applied Physiology*, 116(3), 657-8. doi:10.1007/s00421-015-3314-6
 74. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2016). A comparison of gluteus maximus, biceps femoris, and vastus lateralis EMG amplitude in the parallel, full, and front squat variations in resistance trained females. *Journal of applied biomechanics*, 32(1), 16-22. doi:10.1123/jab.2015-0113
 75. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2015). A comparison of gluteus maximus, biceps femoris, and vastus lateralis EMG amplitude in the barbell, banded, and American hip thrust variations. *Journal of Applied Biomechanics*, 32(3), 254-260. doi:10.1123/jab.2015-0091
 76. **Vigotsky AD**, Bruhns RP. (2015). The Role of Descending Modulation In Manual Therapy and Its Analgesic Implications: A Narrative Review. *Pain Research and Treatment*, 2015, 327307. doi:10.1155/2015/292805
 77. **Vigotsky AD**, Contreras B, Beardsley C. (2015). Biomechanical implications of skeletal muscle hypertrophy and atrophy: a musculoskeletal model. *PeerJ*, 3, e1462. doi:10.7717/peerj.1462
 78. Patterson JM[†], **Vigotsky AD[†]**, Oppenheimer NE, Feser EH. (2015). Differences in unilateral chest press muscle activation and kinematics on a stable versus unstable surface while holding one versus two dumbbells. *PeerJ*, 3, e1365. doi: 10.7717/peerj.1365
 79. **Vigotsky AD**, Lehman GJ, Contreras B, Beardsley C, Chung B, Feser EH. (2015). Acute effects of anterior thigh foam rolling on hip extension, knee flexion, and rectus femoris length in the modified Thomas test. *PeerJ*, 3, e1281. doi:10.7717/peerj.1281
 80. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2015). A comparison of two gluteus maximus EMG maximum voluntary isometric contraction positions. *PeerJ*, 3, e1261. doi:10.7717/peerj.1261
 81. Contreras B, **Vigotsky AD**, Schoenfeld BJ, Beardsley C, Cronin J. (2015). A comparison of gluteus maximus, biceps femoris, and vastus lateralis EMG activity in the back squat and barbell hip thrust exercises. *Journal of applied biomechanics*, 31(6), 452-8. doi:10.1123/jab.2014-0301
 82. **Vigotsky AD**. (2015). A comment on the statistical analyses and purported effects in Mohr et al. *Journal of sport rehabilitation*, 24(2), 89. doi:10.1123/JSR.2015-0019
 83. **Vigotsky AD**, Harper EN, Ryan DR, Contreras B. (2015). Effects of load on good morning kinematics and EMG activity. *PeerJ*, 3, e708. doi:10.7717/peerj.708

Preprints and Non-refereed Publications

1. **Vigotsky AD**, Nuckols G, Heathers J, Krieger J, Schoenfeld BJ, Steele J. (2020). Improbable data patterns in the work of Barbalho *et al.*, *SportRxiv*, doi:10.31236/osf.io/sg3wm
 - Work featured on Retraction Watch [1,2], and an explainer or lay version was featured on Stronger By Science.
 - Our inquiry has led to four retractions.
 - An institutional investigation corroborated our findings, stating “there are indications of the fabrications/falsification of data in scientific articles.”

Refereed Abstracts

1. **Vigotsky AD**, Jabakhanji R, Engle A, Baliki MN, Apkarian AV. (2024). The Effect of Dopamine Reuptake Inhibition on Offset Analgesia. Society for Neuroscience, Chicago, IL, USA. Poster.
2. **Vigotsky AD**, Jabakhanji R, Huang L, Branco P, Baliki MN, Apkarian AV. (2023). Nucleus Accumbens Valence Processing During Offset Analgesia. Slovenian Neuroscience Association (SiNAPSA) Conference, University of Ljubljana, Ljubljana, Slovenia. Poster.
3. Branco P, Bosak N, **Vigotsky AD**, Granovitsky Y, Yarnitsky D, Apkarian AV. (2022). Increased connectivity within the hippocampal network after mTBI is associated with pain chronification. Society for Neuroscience. Poster.
4. Jabakhanji R, **Vigotsky AD**, Rached G, Wu B, Huang L, Griffith JW, Schnitzer TJ, Apkarian AV. (2022). SmORE: Smart Opioid Reduction, An Algorithm For Personalized Dynamic Opioid Reduction [Poster presented]. Society for Neuroscience. Poster.
5. Rached G, Jabakhanji R, **Vigotsky AD**, Branco P, Huang L, Schnitzer TJ, Apkarian AV, Baliki MN. (2022). Behavioral and Brain Consequences of Opioid Exposure for More Than Three Months In Chronic Back Pain Patients. Society for Neuroscience. Poster.
6. **Vigotsky AD**, Jabakhanji R, Baliki MN, Apkarian AV. (2022). A Mesolimbic Valence Competition Model Explains Acute Pain Dynamics. Society for Neuroscience. Oral Presentation.
7. Branco P, Bosak N, **Vigotsky AD**, Granovitsky Y, Yarnitsky D, Apkarian AV. (2022). Hippocampal maladaptive plasticity after mTBI influences the transition from acute to chronic pain. IASP 2022 World Congress on Pain. Poster.
8. **Vigotsky AD**, Jabakhanji R, Baliki MN, Apkarian AV. (2022). A Mesolimbic Valence Competition Model Explains Acute Pain Dynamics. Fechner Day, International Society of Psychophysics. Poster.

9. **Vigotsky AD**, Jabakhanji R, Baliki MN, Apkarian AV. (2021). Signal or noise? Task-independent voxels can jointly decode painful tasks. Society for Neuroscience. Poster.
10. Reddy N, Zvolanek K, **Vigotsky A**, Bright M. (2021). Optimization of isometric hand-grip tasks for use in fMRI studies of motor control. Organization for Human Brain Mapping.
11. Reddy NA, **Vigotsky AD**, Stickland RC, Bright MG. (2021). Adding an absolute chest position regressor to RETROICOR for spinal cord fMRI during atypical. breathing patterns. International Society for Magnetic Resonance in Medicine Annual Meeting.
12. Wakaizumi K, **Vigotsky AD**, Jabakhanji R, Abdallah M, Baliki MN, Apkarian AV. (2020). Behavioral, functional and emotional effects of long-term opioid use in chronic back pain patients. International Conference on Opioids. Poster.
13. **Vigotsky AD**, Jabakhanji R, Baliki MN, Iannetti GD, Apkarian AV. (2020). Limits of decoding mental states. neuromatch. Oral presentation.
14. R Jabakhanji, **Vigotsky AD**, Baliki MN, Apkarian AV. (2019). The limit of mind reading: Challenging the added value of population multi-voxel pattern analysis (p-MVPA) to identify perceptual states. Society for Neuroscience. Poster.
15. Barroso J, Wakaizumi K, **Vigotsky AD**, Huang S, Schnitzer T, Galhardo VM, Apkarian AV. Pain in osteoarthritis - Characterizing and predicting pain persistence after joint replacement. Society for Neuroscience. Poster.
16. **Vigotsky AD**, Barroso J, Apkarian AV. (2019). Uni- versus multivariable identification of grey matter biomarkers in osteoarthritis. Society for Neuroscience. Poster.
17. **Vigotsky AD**, Apkarian AV, Baliki MN. (2019). Acute Pain Temporal Dynamics Are Explained by Markovian Brain States. Bernstein Conference. Poster.
18. **Vigotsky AD**, Vieira TM, Botter A, Lee SSM. (2019). Modeling the spatial distribution of surface electromyogram amplitudes. American Society of Biomechanics 43rd Annual Meeting. Poster.
19. **Vigotsky AD**, Rouse EJ, Lee SSM. (2018). In vivo relationship between joint stiffness, joint-based estimates of muscle stiffness, and shear-wave velocity. American Society of Biomechanics 42nd Annual Meeting. Podium.
20. **Vigotsky AD**, Kraszewski AP. (2017). A Three-Dimensional Mesh Wrapping Model of the Gluteus Maximus. American Society of Biomechanics 41st Annual Meeting. Poster.
21. Michalopoulos N, Mamalakis M, Chrysikos T, Katsini C, Raptis G, **Vigotsky A**. (2016). A Personalised Monitoring and Recommendation Framework for Kinetic Dysfunctions: The Trendelenburg Gait. 20th Pan-Hellenic Conference on Informatics. Podium.
22. **Vigotsky AD**, Bryanton MA. (2016). Relative Muscle Contributions to Net Joint Moments in The Barbell Back Squat. American Society of Biomechanics 40th Annual Meeting. Poster.
23. **Vigotsky AD**, Contreras B. (2015). Biceps brachii and brachialis cross-sectional areas are major determinants of muscle moment arms. American Society of Biomechanics 39th Annual Meeting. Poster.

Invited Talks and Symposia

1. September 2025 – Pitfalls and fallacies of decoding for causal inference in fMRI. Rigor, Pitfalls and Challenges in Neuroimaging: A Causal Thinking Perspective and Applications. Organization for Human Brain Mapping, Online Satellite Meeting.
2. November 2023 – Error Detection in Sports Science: A Case Study. Association for Interdisciplinary Meta-research and Open Science (AIMOS) Conference, Brisbane, Australia.
3. October 2023 – Deconstructing Pain Decoders: Mechanistic Inferences and Clinical Applications. Midwest Pain Society 47th Annual Meeting, Chicago, IL.
4. March 2023 – Widespread, perception-related information in the human brain scales with levels of consciousness. Mesulam Center Roundtable Series, Feinberg School of Medicine, Northwestern University.
5. February 2023 – The Origins and Implications of Bias in Surface EMG. The 3rd International Society of Biomechanics in Sports Online Symposium.
6. September 2022 – The Origins and Implications of Bias in Surface Electromyograms. The Accurate Assessment of the Neuromuscular System in Sports Science, 27th Annual Congress of the European College of Sport Science, Seville, Spain.

Other Abstracts and Talks

1. **Vigotsky AD**, Jabakhanji R, Branco P, Baliki MN, Iannetti GD, Apkarian AV. (2023). Widespread, perception-related information in the human brain scales with levels of consciousness. Cognitive Brain Mapping Group's Datablitz. Oral presentation.
2. **Vigotsky AD**, Jabakhanji R, Baliki MN, Iannetti GD, Apkarian AV. (2020). Limits of Decoding Pain in the Brain. Human Pain Journal Club Trainee DataBlitz. Oral presentation.
3. **Vigotsky AD**, Jabakhanji R, Baliki MN, Iannetti GD, Apkarian AV. (2020). Limits of decoding mental states. Cognitive Brain Mapping Group's Datablitz. Oral presentation.
4. Jabakhanji R, **Vigotsky AD**, Baliki MN, Apkarian AV. (2019). The limit of mind reading: Challenging the added value of population multi-voxel pattern analysis (p-MVPA) to identify perceptual states. 16th Annual Lewis Landsberg

Research Day. Poster.

5. **Vigotsky AD**, Barroso J, Apkarian AV. (2019). Uni- versus multivariable identification of grey matter biomarkers in osteoarthritis. 16th Annual Lewis Landsberg Research Day. Poster.
6. **Vigotsky AD**, Rouse EJ, Lee SSM. (2018). Relationship between plantar flexor mechanical properties and ankle joint stiffness. Eighth Annual Movement and Rehabilitation Science (MRS) Training Day. Poster.
7. **Vigotsky AD**, Rouse EJ, Lee SSM. (2018). Relationship between plantar flexor mechanical properties and ankle joint stiffness. 14th Annual Lewis Landsberg Research Day. Poster.

Consulting

Feb 2026–Present Statistical Reviewer
 Medical Evidence Project
 The Center for Scientific Integrity, 501(c)(3)

Grant Preparation

Below are funded grants that I helped prepare, but I was not listed as a recipient.

2020 NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
 Project: *Cloud software tools for enhancing open source pain neuroscience, with emphasis on osteoarthritis pain*
 PI: Vania Apkarian, PhD
 Amount: \$150,000
 Supplement for R01 AR074274 in response to NOT-OD-20-073.

Professional Memberships

2019–present Society for Neuroscience
 2022 International Society of Psychophysics
 2019–2020 International Society of Biomechanics
 2018–2019 IEEE Engineering in Medicine and Biology Society
 2018–2019 Institute of Electrical and Electronics Engineers
 2016–2019 International Society for Electrophysiology and Kinesiology
 2016–2019 American Physiology Society
 2015–2018 American Society of Biomechanics
 2013–2015 National Strength and Conditioning Association

Professional Service & Leadership

2026 Maixner Pain Research Symposium Organizing Committee
 2025 Maixner Pain Research Symposium Organizing Committee
 2018–2020 Student Representative, Executive Board, American Society of Biomechanics (ASB)
 2020 Conference Event Organizer, 44th Meeting of the American Society of Biomechanics, Virtual
 2018–2020 Review Editor, SportRxiv
 2019 Mentorship event organizer, Congress of the International Society of Biomechanics, Calgary, Canada
 2017–2018 Social Subcommittee, Student Committee, American Society of Biomechanics
 2016–2017 Biomechanics Advocacy Subcommittee, Student Committee, American Society of Biomechanics

Outreach & Community Service

2018–2024 Volunteer, GoBabyGo!
 2017–2019 Organizer, National Biomechanics Day, Northwestern University / Shirley Ryan AbilityLab
 2017 Volunteer, The Perry Initiative
 2007–2012 Chief Technical Officer, Blue Redefined, Inc., 501(c)(3)

Peer Reviewer

Grants & Study Sections

2021–2022 Center for Translational Pain Research,
National Institute on Drug Abuse (NIDA),
National Institutes of Health (NIH)

Journals

Applied Bionics and Biomechanics; Applied Physiology, Nutrition, and Metabolism; Applied Psychophysiology and Biofeedback; Biocybernetics and Biomedical Engineering; BMC Sports Science, Medicine and Rehabilitation; BMJ Open Sport & Exercise Medicine; BRAIN; Communications in Kinesiology; European Journal of Sports Science; Exercise and Sport Sciences Reviews; Frontiers in Bioengineering; Frontiers in Neuropharmacology; Frontiers in Pain Research; Frontiers in Physiology; International Journal of Sports Medicine; International Journal of Sports Physiology and Performance; Journal of Biomechanics; Journal of Electromyography and Kinesiology; Journal of Orthopedic & Sports Physical Therapy; Journal of Prosthetics & Orthotics; Journal of Sports Science and Medicine; Journal of Sports Sciences; Journal of Strength and Conditioning Research; Journal of Trainology; Medicine & Science in Sports & Exercise; PAIN; PeerJ; PLOS ONE; Science and Medicine in Football; Sports Biomechanics; Sports Medicine–Open; Sports Medicine; Strength & Conditioning Journal

Teaching Experience

Courses

Spring 2023	Grader, Bayesian Methods & Computation with Application to Marketing & Economics (MKTG 551) Instructor of record: Blakeley McShane, PhD Northwestern University, Evanston, IL
Fall 2021	Lecturer, Statistics Lecture Series, Center for Translational Pain Research (CTPR) Feinberg School of Medicine, Northwestern University, Chicago, IL
Spring 2021	Grader, Bayesian Methods & Computation with Application to Marketing & Economics (MKTG 551) Instructor of record: Blakeley McShane, PhD Northwestern University, Evanston, IL
Winter 2019	Teaching Assistant (TA), Biomechanics of Human Movement (BME 366) Instructor of record: Wendy Murray, PhD Northwestern University, Evanston, IL

Guest Lectures

Nov 2021	Advanced Research Methods in Exercise Science (EXS 503) CUNY Lehman, Bronx, NY
Nov 2020	Advanced Research Methods in Exercise Science (EXS 503) CUNY Lehman, Bronx, NY
Nov 2019	Advanced Research Methods in Exercise Science (EXS 503) CUNY Lehman, Bronx, NY
Oct 2018	Applied Musculoskeletal Anatomy (KN 261) University of Illinois–Chicago, Chicago, IL
April 2015	Introduction to Kinesiology (KIN 101) Arizona State University, Phoenix, AZ

Research Mentorship

Summer 2019	Ben Smith (medical student, Feinberg School of Medicine, Northwestern University)
Summer 2020	Anna Wcislak (undergraduate, Neurobiology, Northwestern University) – Awarded a Northwestern University Undergraduate Research Grant
2021–2022	Siddharth Tiwari (high school student, Illinois Mathematics and Science Academy) – Named Regeneron Science Talent Search Top 300 Scholar under my mentorship
2023	Nick Henton (fellowship student, Orthopaedic Physical Therapy, Northwestern University)
2023	Benjamin Davis (fellowship student, Orthopaedic Physical Therapy, Northwestern University)
2023	Freesia Tokunaga (undergraduate, Neuroscience, Northwestern University) – Awarded a Neuroscience Summer Research Grant under my mentorship
2024	Diego Davila (undergraduate, Neuroscience, Northwestern University)

Master's Thesis Committees

2022	Derrick Van Every, Exercise Science, CUNY Lehman
2024	Adam Mohan, Exercise Science, CUNY Lehman

Statistical Packages

<code>concurve</code>	Computes and Plots Confidence (Consonance) Intervals, P-Values, and S-Values to Form Consonance Curves (Functions) https://cran.r-project.org/web/packages/concurve/
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