

Gabriel Riegner

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EDUCATION				
2015 - 2019 3.83 GPA	University of Southern California , Dornsife College of Letters, Arts, and Sciences Bachelor of Arts in Neuroscience (with departmental honors) and Cognitive Science Advisors: Assal Habibi PhD, Sarah Bottjer PhD, Irving Biederman PhD Thesis: Recognition Memory for Melody			
	Selected coursework: Neuroscience Seminar, Cognitive Neuroscience, Systems Neuroscience, Neurobiology, Research Methods and Statistics, Python Programming.			
2017	University of Otago , Dunedin, New Zealand: international study			
RESEARCH				
2019 - present	(ordered by descending level of involvement) Senior research technician: University of California San Diego, Brain Mechanisms of Pain and Health Lab Advisor: Fadel Zeidan PhD			
>	Clinical trial on the brain mechanisms supporting chronic pain relief by meditation NIH-funded (R01 AT009693) randomized clinical trial investigating the neural correlates of a radiculopathy-inducing straight leg raise procedure, and its modulation by mindfulness vs active controls. Experimental design, straight leg raise procedure, qualitative pain testing, MRI scanner operation, neuroimaging quality control and analysis, and training of lab personnel.			
>	The role of thalamus in acute pain modulation by meditation NIH-funded (R00 AT008238) study on the effects of state-mindfulness vs control on thalamic activity and connectivity during evoked pain. Neuroimaging data processing, quality control, linear modeling (psychophysiologic interaction), multivariate prediction, parametric/non-parametric inference, and manuscript writing.			
>	Clinical trial on the role of endogenous opioids in meditation-based pain relief NIH-funded (R21 AT010352) randomized double-blind clinical trial on the role of endogenous opioids for chronic pain relief during mindfulness vs placebo-mindfulness. Experimental design, straight leg raise procedure, qualitative pain testing, monitoring patients during naloxone/saline infusion, supervising therapeutic interventions, and data analysis.			
>	Brain mechanisms of cannabis-induced analgesia Pilot study on the brain correlates of vaporized cannabis-induced acute and chronic pain relief. Experimental design, qualitative pain testing, MRI scanner operation, and neuroimaging analysis.			
>	The effects of meditation during awake craniotomy procedures Pilot study on the efficacy of meditation on anxiety and pain during awake craniotomy surgeries. IRB writing and collecting of physiological/behavioral data alongside a team of anesthesiologists and neurosurgeons.			
2020 - present	Senior research technician: University of California San Diego, Sanford Institute of Empathy and Compassion Advisors: Fadel Zeidan PhD, William Mobley MD PhD			
>	Brain mechanisms supporting empathy and compassion for observed pain Randomized trial on the behavioral and neural effects of compassion-based interventions. Experimental design, qualitative pain testing, MRI scanner operation, neuroimaging quality control and analysis, and training of lab personnel.			
2021 - present	Senior research technician: University of California San Diego, Psychedelic and Health Research Initiative Advisors: Fadel Zeidan PhD			
>	Psilocybin-assisted therapy for phantom limb pain Study on the behavioral and neural effects of psilocybin therapy for amputees experiencing phantom pain. Collection and analysis of psychological, qualitative pain rating, and neuroimaging data.			

2015 - 2019

Research Assistant: University of Southern California, Brain and Creativity Institute, Brain and Music Lab
Advisor: Assal Habibi PhD

- › **Undergraduate honors thesis on recognition memory for musical melodies.**
Independent research project on modeling recollection memory for melodies using signal detection theory.
Experimental design, recruitment, data collection, data analysis, thesis writing, and committee defense.
- › **Effects of music training on brain, cognitive, and socioemotional development.**
Seven-year longitudinal study tracking 80 children enrolled in music training and active control programs, using behavioral, fMRI, and EEG measures.
Behavioral and EEG data collection, and structural MRI analysis.

PUBLICATIONS

- 2021 Prefrontal cortico-thalamic regulation of pain by mindfulness meditation (abstract)
G Riegner, J Baumgartner, G Posey, A Jinich, Y Jung, F Zeidan, N Gonzalez, J Birenbaum.
The Journal of Pain
- 2021 The effects of mindfulness-based stress reduction on trauma in victims of gun violence: a pilot study
L Khatib, G Riegner, J Dean, V Oliva, G Cruanes, F Zeidan.
Under Review
- 2020 **Neurophysiological mechanisms supporting mindfulness meditation-based pain relief: an updated review**
A Jinich, E Garland, J Baumgartner, N Gonzalez, G Riegner, J Birenbaum, L Case, F Zeidan.
Current Pain and Headache Reports
- In Preparation
- › Mindfulness meditation induced pain relief is driven by thalamic-precuneal decoupling
G Riegner, G Posey, V Oliva, L Khatib, J Baumgartner, R Kraft, Y Jung, F Zeidan.
 - › The role of endogenous opioids in mindfulness-induced chronic low back pain relief as compared to sham-mindfulness meditation
L Khatib, J Dean, G Riegner, V Oliva, N Gonzalez, J Birenbaum, F Zeidan.
 - › Resting-state connectivity associated with meditation-induced depressive mood reductions
L Khatib, G Riegner, V Oliva, J Dean, J Baumgartner, R Kraft, Y Jung, F Zeidan.

POSTERS

- 2021 Neurofunctional connections supporting mindfulness-based pain relief
G Riegner, G Posey, V Oliva, L Khatib, J Baumgartner, R Kraft, Y Jung, F Zeidan.
Society for Neuroscience
- 2021 Higher brain entropy predicts mindfulness meditation-based pain relief
A Jinich, G Posey, J Baumgartner, G Riegner, N Gonzalez, J Birenbaum, J Vaughan, Y Jung, R Kraft, F Zeidan.
Society for Neuroscience
- 2020 Meditation-induced depressive mode reductions is associated with decreased connectivity between ventromedial prefrontal cortex and amygdala
L Khatib, V Oliva, G Riegner, G Posey, J Dean, J Baumgartner, R Kraft, J Birenbaum, F Zeidan.
Society for Neuroscience
- 2020 Prefrontal cortico-thalamic regulation of pain by mindfulness meditation
G Riegner, J Baumgartner, G Posey, A Jinich, Y Jung, F Zeidan, N Gonzalez, J Birenbaum.
US Association for the Study of Pain
- 2020 Mindfulness meditation engages a novel neural pathway for pain relief
F Zeidan, G Posey, J Baumgartner, G Riegner, N Gonzales, J Birenbaum, B Vaughan, Y Jung, R Kraft
International Association for the Study of Pain

SKILLS

- › **Programming:** Python (numpy, pandas, scipy, scikit-learn, psychopy) | **Shell** (unix, scripting) | **Git-Github**
- › **Neuroimaging:** scanner operation (GE and Siemens) | **FSL** (preprocessing, linear modeling, ICA, parametric and non-parametric inference) | **Nilearn** (connectivity, linear modeling, multivariate prediction) | **ANTs** (brain extraction, segmentation) | **MATLAB** (mediation analysis) | **BIDS**, **fMRIprep**, **ASLPrep**

- > **High performance computing:** PBS (queuing system) | Docker, Singularity (neuroimaging software)
- > **Data Collection:** Biopac (physiology) | BrainVision (EEG) | RedCap, NIH Toolbox (behavioral)
- > **Design:** Adobe, Affinity (journal cover) | Web Design (chakravarthylab.com, douleurtx.com, [griegner.github.io](https://github.com/griegner))
- > **Clinical:** quantitative sensory testing, straight leg raise test of nerve pain

SCHOLARSHIPS

- 2015 - 2019 **USC Tuition Exchange Scholarship:** 80% tuition covered
2017 - 2018 **USC Student Opportunities for Research Scholarship:** summer research stipend

TRAINING

- 2021 Linear Algebra ([3Blue1Brown](#)) | Math Tools for Neuroscience ([self-study](#))
2020 Neurohackademy ([online](#)) | FSL course ([self-study](#)) | Pain Neuro journal club
2019 fMRI AFNI course (UCSD)

MEMBERSHIPS

- 2020 - present Society for Neuroscience | Cognitive Science Society | US Association for the Study of Pain

SERVICE

- 2018 - 2019 **USC Outfitters Student Organization:** Outdoor Guide
Organized and led surfing, climbing, and hiking trips for groups of ~10 students.