

# Samuel A. Acuña, Ph.D.

(he/him, [pronounce](#))

Research Assistant Professor, Department of Bioengineering  
 Assistant Director of Design, Center for Advancing Systems Science and Bioengineering Innovation  
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## Education

<b>Ph.D., Mechanical Engineering</b> University of Wisconsin–Madison	2015 – 2019
<b>M.S., Mechanical Engineering</b> University of Wisconsin–Madison	2013 – 2015
<b>B.S., Mechanical Engineering</b> Brigham Young University	2005 – 2012

## Positions

<b>Assistant Director of Design</b> George Mason University, Center for Advancing Systems Science and Bioengineering Innovation Formerly known as the <i>Center for Adaptive Systems of Brain-Body Interactions</i>	2023 – Present
<b>Research Assistant Professor</b> George Mason University, Dept. of Bioengineering	2023 – Present
<b>Adjunct Teaching Faculty</b> George Mason University, Dept. of Bioengineering	2022 – 2022
<b>Postdoctoral Research Fellow</b> George Mason University, Dept. of Bioengineering	2021 – 2023
<b>Patent Technical Advisor</b> Cooley LLP, Patent Prosecution & Counseling	2020 – 2021
<b>Technical Manager</b> University of Texas at Dallas, UTDesign Senior Engineering Capstone Program	2019 – 2020
<b>Postdoctoral Researcher</b> University of Texas Southwestern Medical Center, Dept. of Physical Medicine & Rehabilitation	2019 – 2020
<b>Graduate Research Assistant</b> University of Wisconsin–Madison, Dept. of Mechanical Engineering	2013 – 2019
<b>Research Assistant</b> Brigham Young University, Dept. of Mechanical Engineering	2010 – 2012
<b>Systems Engineer</b> The Boeing Company, Airborne Early Warning & Control	2010 – 2010

## Publications

Manuscripts in Review:

1. Jirsaraei MJ, Ji W, **Acuña SA** (2024). Kinematic Indicators of Physical Fatigue During Walking: A Systematic Review of Assessment Parameters and Protocols. *Applied Ergonomics*.

## Journal Articles:

1. Bashatah A, Mukherjee B, Rima A, Patwardhan S, Otto P, Sutherland R, King E, Lancastzer B, Aher A, De Marzi L, Gibson G, Taghizadeh Z, **Acuña SA**, Chitnis P, Sikdar S (2024). Wearable ultrasound system using low-voltage time delay spectrometry for dynamic tissue imaging. *IEEE Transactions in Biomedical Engineering*, 71(11):3232-3243. [[Link](#)]
2. **Acuña SA** (2024). A practical research methods course that teaches how to be a successful biomedical engineering graduate student. *Biomedical Engineering Education*, 4: 295–304. [[Link](#)]
3. Engdahl SM, **Acuña SA**, Kaliki RR, Sikdar S (2024). Sonomyography for control of upper limb prostheses: current state and future directions. *Prosthetics and Orthotics*, 36(3): 174-178. [[Link](#)]
4. Majdi JA, **Acuña SA**, Chitnis PV, Sikdar S (2022). Towards a wearable monitor of local muscle fatigue during electrical stimulation using tissue Doppler imaging. *Wearable Technologies*, 3: E16. [[Link](#)]
5. Engdahl SM, **Acuña SA**, King EL, Bashatah A, S Sikdar (2022). First-in-human demonstration of functional task performance using a sonomyographic prosthesis. *Frontiers in Bioengineering & Biotechnology*, 10: 876836. [[Link](#)]
6. **Acuña SA**, Tyler ME, Thelen DG (2022). Individuals with chronic mild to moderate traumatic brain injury exhibit decreased neuromuscular complexity during gait. *Neurorehabilitation and Neural Repair*, 36(4-5): 317-327. [[Link](#)]
7. Schroeder MJ, **Acuña SA\***, Krishnan C, Dhaher YY (2022). Can increased locomotor task complexity differentiate knee muscle forces after ACL-Reconstruction? *Applied Biomechanics*, 38(2): 84-94. [[Link](#)] (\*Acuña is considered a co-first author.)
8. **Acuña SA**, Ebrahimi A, Pomeroy RL, Martin JA, Thelen DG (2019). Achilles tendon shear wave speed tracks the dynamic modulation of standing balance. *Physiological Reports*, 7: e14298. [[Link](#)]
9. **Acuña SA**, Zunker JD, Thelen DG (2019). The effects of sub-threshold vibratory noise on visuomotor entrainment during human walking and standing in a virtual reality environment. *Human Movement Science*, 66: 587-599. [[Link](#)]
10. **Acuña SA**, Francis CA, Franz JR, Thelen DG (2019). The effects of cognitive load and optical flow on antagonist leg muscle coactivation during walking for young and older adults. *Electromyography and Kinesiology*, 44: 8-14. [[Link](#)]
11. **Acuña SA**, Tyler ME, Danilov YP, Thelen DG (2018). Abnormal muscle activation patterns are associated with chronic gait deficits following traumatic brain injury. *Gait & Posture*, 62: 510-517. [[Link](#)] (Finalist for best paper award, GCMAS 2017)
12. **Acuña SA**, Smith DM, Robinson JM, Hawks JC, Starbuck P, King DL, Ridge ST, Charles SK (2014). Instrumented figure skating blade for measuring on-ice skating forces. *Measurement Science and Technology*, 25(12): 125901. [[Link](#)]

## Refereed Conference Papers:

1. **Acuña SA**, Peixoto N, Matto HC, Seshaiyer P, Sikdar S (2024). Addressing societal challenges through graduate-level community-engaged design projects. *Proc. of the American Society for Engineering Education Conference & Exposition*. Portland, OR. [[Link](#)]
2. **Acuña SA**, Michaelis JE, Roth JD, Towles JD (2018). Intervention designed to increase interest in engineering for low-interest, K-12 girls did so for boys and girls. *Proc. of the American Society for Engineering Educations Annual Conference & Exposition*. Salt Lake City, UT. 10.18260/1-2–30713. [[Link](#)]
3. Francis CA, Michaelis JE, **Acuña SA**, Towles JD (2017). Impact of Biomechanics-based activities on situational and individual interest among K-12 students. *Proc. of the American Society for Engineering Educations Annual Conference & Exposition*. Columbus, OH. 10.18260/1-2–28459. [[Link](#)]

# Conference Abstracts & Presentations:

1. Abdulrazzaq R, Lybarger KJ, **Acuña SA**. Capturing lived experiences of chronic pain through a listening experience model. Poster presentation at the National Conference on Undergraduate Research. Pittsburgh, PA. April 2025. (*Accepted.*)
2. Wahdan LS, Santos CC, Abdelmalak W, Nguyen VT, **Acuña SA**. Developing a wearable electrical stimulation device for enhanced wound healing of obstetric lacerations postpartum. Poster presentation at the Biomedical Engineering Society annual conference. Baltimore, MD. October 2024.
3. Baasan B, Sikdar S, **Acuña SA**. Reliability of a head-mounted laser pointer position to access target-tracking tasks. Poster presentation at the Biomedical Engineering Society annual conference. Baltimore, MD. October 2024.
4. Abdulrazzaq R, Al Shawi H, King P, Manns S, Amouzou IPE, Popal M, Lee S, Lybarger KJ, **Acuña SA**. Capturing lived experiences of chronic pain through a listening experience model. Poster presentation at the Biomedical Engineering Society annual conference. Baltimore, MD. October 2024.
5. Al Shawi H, Gerber NL, Sikdar S, **Acuña SA**. Association between trapezius muscle thickness and the pressure pain threshold of patients with chronic neck pain. Poster presentation at the Biomedical Engineering Society annual conference. Baltimore, MD. October 2024.
6. Lamarre MA, Blanton EA, Boit XA, Chamberlin ME, Montemurro OA, **Acuña SA**. A 3D-printed carbon fiber weightlifting prosthesis for people with partial finger amputation. Poster presentation at the Biomedical Engineering Society annual conference. Baltimore, MD. October 2024.
7. Tadesse KB, Smiga GP, Schuetz RR, Alamri RM, Hashem L, **Acuña SA**. Feasibility of at-home gait rehabilitation using a virtual reality headset. Poster presentation at the Biomedical Engineering Society annual conference. Baltimore, MD. October 2024.
8. **Acuña SA**. Should your department offer a course on how to be a successful graduate student? Interactive session presentation at the 16th Annual Innovations in Teaching and Learning Conference. Fairfax, VA. September 2024.
9. Tadesse KB, Sikdar S, **Acuña SA**. Fascial gliding assessment for myofascial pain syndrome yields consistent upper trapezius activation. Poster presentation at the American Society of Biomechanics annual meeting. Madison, WI. August 2024.
10. Lamarre MA, King EL, Gibson G, **Acuña SA**, Sikdar S, Chitnis PV. Markerless motion capture can assess symmetry of knee range of motion during rehabilitation for ACL reconstruction. Poster presentation at the American Society of Biomechanics annual meeting. Madison, WI. August 2024.
11. Gibson G, King EL, Lamarre MA, **Acuña SA**, Sikdar S, Chitnis PV. Monitoring limb symmetry after ACL injury using insole force sensors. Poster presentation at the American Society of Biomechanics annual meeting. Madison, WI. August 2024.
12. **Acuña SA**. Should you offer a course on how to be a scientist and a successful graduate student? Poster presentation at the American Society of Biomechanics annual meeting. Madison, WI. August 2024.
13. Abdulrazzaq R, Al Shawi H, King P, Popal M, Manns S, Amouzou IPE, Lee S, Lybarger KJ, **Acuña SA**. Capturing Lived Experiences of Chronic Pain through a Listening Experience Model. Poster presentation at the OSCAR (Office of Student Scholarship, Creative Activities, and Research) Celebration of Student Scholarship and Impact. Fairfax, VA. August 2024.
14. Taghizadeh Z, Bashatah A, Rima AH, Aher AS, **Acuña SA**, Sikdar S. Evaluation of proportional position control using a wearable ultrasound system. Podium presentation at the 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society. Orlando, FL. July 2024.
15. **Acuña SA**, Peixoto N, Matto HC, Seshaiyer P, Sikdar S. Addressing societal challenges through graduate-level community-engaged design projects. Podium presentation at the Access to Research and Inclusive Excellence (ARIE) National Conference. Fairfax, VA. March 2024.

16. **Acuña SA**, Taghizadeh Z, Jirsaraei MJ, Bashatah A, Sikdar S. A wearable M-mode ultrasound system that can reliably control a prosthetic hand. Poster presentation at the annual meeting of the Society for Neuroscience. Washington, DC. November 2023.
17. **Acuña SA**, Peixoto N, Matto HC, Seshaiyer P, Sikdar S. Addressing societal challenges through graduate-level community-engaged design projects. Podium presentation at the Biomedical Engineering Society annual conference. Seattle, WA. October 2023.
18. **Acuña SA**, Bashatah A, Sikdar S. How to implement wearable ultrasound for prosthetic hand control. Poster presentation at the Biomedical Engineering Society annual conference. Seattle, WA. October 2023.
19. Taghizadeh Z, Bashatah A, **Acuña SA**, Sikdar S. Wearable ultrasound system for controlling upper limb prosthetics. Podium presentation at the National Assembly of the American Orthotic & Prosthetic Association. Indianapolis, IN. September 2023.
20. **Acuña SA**, Bashatah A, Sikdar S. How to implement wearable ultrasound for prosthetic hand control. Poster presentation at the American Society of Biomechanics annual meeting. Knoxville, TN. August 2023.
21. **Acuña SA**, Krotine M, Gibson G, Boser Q, Hebert J, Sikdar S. Reproducibility of gaze and movement assessment of upper limb function. Poster presentation at the American Society of Biomechanics annual meeting. Knoxville, TN. August 2023.
22. **Acuña SA**, Bashatah A, Sikdar S. How to implement wearable ultrasound for prosthetic hand control. Podium presentation at the east coast regional conference for the American Society of Biomechanics. Reading, PA. April 2023.
23. **Acuña SA**, Krotine M, Gibson G, Boser Q, Hebert J, Sikdar S. Reproducibility of gaze and movement assessment of upper limb function. Poster presentation at the east coast regional conference for the American Society of Biomechanics. Reading, PA. April 2023.
24. **Acuña SA**, Bashatah A, Sutherland RF, Kaliki RR, Sikdar S. A wearable ultrasound system for controlling an upper-limb prosthesis. Podium presentation at the 49th Academy Annual Meeting & Scientific Symposium of the American Academy of Orthotists & Prosthetists. Nashville, TN. March 2023. [[Link](#)]
25. Patwardhan S, **Acuña SA\***, Engdahl SM, Mukherjee B, Gladhill KA, Bashatah A, Dhawan AS, Abreu R, Schofield JS, Joiner WM, Sikdar S. Comparison of virtual end-point trajectories using sonomyography with trajectories derived from coordinated multi-joint movements. Poster presentation at the Military Health System Research Symposium. Kissimmee, FL. September 2022. (\*Acuña was added after submission as the presenting author.)
26. **Acuña, SA\***, Labbé DR, Dingwell JB, Jenkins E. Using Virtual Reality for Physical Rehabilitation. Symposium presentation at the North American Congress on Biomechanics. Ottawa, ON. August 2022. (\*Acuña organized and chaired the symposium.)
27. **Acuña SA**, Engdahl SM, King EL, Bashatah A, Sikdar S. Reliability of sonomyography for controlling prosthetic hand grasps. Poster presentation at the North American Congress on Biomechanics. Ottawa, ON. August 2022.
28. King EL, Engdahl SM, **Acuña SA**, Bashatah A, Sikdar S. Continuous testing of sonomyography as a control paradigm for upper limb prostheses. Poster presentation at the North American Congress on Biomechanics. Ottawa, ON. August 2022.
29. **Acuña SA**, Engdahl SM, Bashatah A, Otto P, Kaliki RR, Sikdar S. A wearable sonomyography system for prosthesis control. Poster presentation at the Myoelectric Controls Symposium. Hosted by the Institute of Biomedical Engineering at the University of New Brunswick. Fredericton, NB. August 2022.
30. Engdahl SM, **Acuña SA**, Bashatah A, Dhawan AS, King EL, Mukherjee B, Holley RJ, Monroe BJ, Lévy G, Kaliki RR, Sikdar S. Assessing the feasibility of using sonomyography for upper limb prosthesis control. Podium presentation at the Myoelectric Controls Symposium. Hosted by the Institute of Biomedical Engineering at the University of New Brunswick. Fredericton, NB. August 2022.

31. Bashatah A, Rima AH, King EL, Kaur A, **Acuña SA**, Chitnis PV, Sikdar S. Wearable ultrasound for rehabilitation applications. Presentation at the 46th International Symposium on Ultrasonic Imaging and Tissue Characterization. Virtual Meeting. June 2022.
32. Engdahl SM, Mukherjee B, Dhawan AS, Bashatah A, Patwardhan S, **Acuña SA**, King EL, Lancaster BC, Akhlaghi N, Holley RJ, Monroe BJ, Kaliki RR, Sikdar S. Development of a novel ultrasound-based modality for control of upper limb prostheses. Presentation at the Trent International Prosthetics Symposium. Hosted online by the International Society for Prosthetics and Orthotics member societies of the United Kingdom and Netherlands. March 2022. (Winner of the Best Paper Award.)
33. **Acuña SA**, Bashatah A, Chitnis PV, Sikdar S. Measuring signal quality in low power wearable ultrasound imaging. Presentation at the Acoustical Society of America. Seattle, WA. November 2021. [[Link](#)]
34. **Acuña SA**. Quantitative electromyographic analysis can inform treatment planning for gait disorders. Presentation at the Frontiers of Computing in Health and Society, Institute for Digital Innovation, George Mason University. Fairfax, VA. September 2021.
35. **Acuña SA**, Schroeder MJ, Krishnan C, Dhaheer YY. Increased task demand differentiates knee muscle forces after ACL-reconstruction. Presentation at the American Society of Biomechanics Annual Meeting. Atlanta, GA. August 2020.
36. **Acuña SA**, Kunnappally JR, Soedirdjo SDH, Phan P, Kim H, Rodriguez LA, Hutcherson CW, Chung YC, Dhaheer YY. The role of estrogen on reciprocal inhibition of the Soleus. Oral presentation at the XXIII Congress of the International Society of Electrophysiology and Kinesiology. Nagoya, Japan. July 2020.
37. Soedirdjo SDH, **Acuña SA**, Kunnappally JR, Phan P, Kim H, Rodriguez LA, Hutcherson CW, Chung YC, Dhaheer YY. Isolated mixed effect of estradiol and progesterone on motor neuron excitability. Oral presentation at the XXIII Congress of the International Society of Electrophysiology and Kinesiology. Nagoya, Japan. July 2020.
38. **Acuña SA**, Ebrahimi A, Thelen DG. Achilles tendon shear wave speed tracks the dynamic modulation of standing balance. Oral presentation at the XXIII Congress of the International Society of Electrophysiology and Kinesiology. Nagoya, Japan. July 2020.
39. **Acuña SA**, Dhaheer YY. Individuals with chronic traumatic brain injury exhibit decreased neuromuscular complexity when walking: an overview of neuromechanics research. Podium presentation at the UT Southwestern Postdoctoral Association Annual Research Symposium. Dallas, TX. September 2019.
40. **Acuña SA**, Ebrahimi A, Thelen DG. Achilles tendon shear wave speed as a measure of the active modulation of standing balance. Podium and poster presentation at the joint conference of the International Society of Biomechanics and American Society of Biomechanics. Calgary, AB. August 2019. (Finalist for ASB Doctoral Student Presentation Competition.)
41. **Acuña SA**, Zunker JD, Thelen DG. Sub-threshold vibratory noise does not alter visuomotor entrainment during human walking. Poster presentation at the Gait and Clinical Motion Analysis Society Annual Meeting. Frisco, TX. March 2019.
42. **Acuña SA**, Tyler ME, Danilov YP, Thelen DG. Changes in dynamic motor control following neurorehabilitation for traumatic brain injury: treadmill vs overground walking. Podium and poster presentation at the American Society of Biomechanics Annual Meeting. Rochester, MN. August 2018. (Finalist for ASB Doctoral Student Presentation Competition.)
43. **Acuña SA**, Tyler ME, Danilov YP, Thelen DG. Improvements in dynamic motor control following neurorehabilitation of chronic balance deficits due to prior traumatic brain injury. Podium presentation at the 8th World Congress of Biomechanics. Dublin, Ireland. July 2018. (Runner up for the ASME-BED PhD Level Student Paper Competition.)
44. **Acuña SA**, Francis CA, Franz JR, Thelen DG. Walking with visual perturbations but not an attention-dividing task modulates muscle coactivation patterns in old adults. Podium presentation at the XXII Congress of the International Society of Electrophysiology and Kinesiology. Dublin, Ireland. June 2018.

45. **Acuña SA**, Tyler ME, Danilov YP, Thelen DG. Effect of non-invasive neuromodulation on rehabilitation of gait in chronic traumatic brain injury. Podium presentation at the Gait and Clinical Motion Analysis Society Annual Meeting. Indianapolis, IN. May 2018.
46. **Acuña SA**, Tyler M, Danilov Y, Thelen DG. Individuals with a prior traumatic brain injury exhibit decreased neuromuscular complexity during gait. Thematic poster presentation at the American Society of Biomechanics Annual Meeting. Boulder, CO. August 2017.
47. Zunker JD, **Acuña SA**, Thelen DG. Piezoelectric device for peripheral stochastic sub sensory vibration. Poster presentation at the American Society of Biomechanics Annual Meeting. Boulder, CO. August 2017.
48. **Acuña SA**, Tyler M, Danilov Y, Thelen DG. Muscle activation patterns during walking are correlated to clinical gait assessments after traumatic brain injury. Podium presentation at the Gait and Clinical Movement Analysis Society Annual Meeting. Salt Lake City, UT. May 2017. (Nominated for best paper.)
49. **Acuña SA**, Thelen DG. Cranial nerve non-invasive neuromodulation for symptomatic treatment of traumatic brain injury. Poster presentation at the Opportunities in Engineering Annual Conference. Madison, WI. November 2016.
50. Francis CA, Franz JR, **Acuña SA**, Thelen DG. Gait and balance training improves gait variability in older adults. Thematic poster presentation at the American Society of Biomechanics Annual Meeting. Raleigh, NC. August 2016.
51. **Acuña SA**, Tyler M, Danilov Y, Thelen DG. Cranial nerve non-invasive neuromodulation for symptomatic treatment of mild and moderate traumatic brain injury: effects on muscle coordination patterns during walking. Podium presentation at the XXI Congress of the International Society of Electrophysiology and Kinesiology. Chicago, IL. July 2016.
52. **Acuña SA**, Tyler M, Danilov Y, Thelen DG. Cranial nerve non-invasive neuromodulation for symptomatic treatment of mild and moderate traumatic brain injury: effects on muscle coordination patterns during walking. Poster presentation at the Dynamic Walking Conference: Principles of Dynamic Locomotion. Holly, MI. June 2016.
53. **Acuña SA**, Thelen DG. Efforts for preventing falls in the elderly via stochastic resonance. Poster presentation at the Opportunities in Engineering Annual Conference. Madison, WI. October 2015.
54. **Acuña SA**, Towles JD, Thelen DG. Modeling based analysis of the trapezial-metacarpal joint to reduce osteoarthritis. Poster presentation at the Opportunities in Engineering Annual Conference. Madison, WI. November 2014.
55. Smith DM, **Acuña SA**, Hawks JC, Packard JG, Robinson JM, King DL, Ridge ST, Charles SK. System for measuring figure skate forces on ice. Poster presentation at the 7th World Congress of Biomechanics. Boston, MA. July 2014.

#### Theses:

1. **Acuña SA** (2019). Altered neuromuscular control of gait following traumatic brain injury and targeted neuromodulation to improve motor function. *The University of Wisconsin – Madison. ProQuest Dissertations Publishing*, 13882699. [[Link](#)]

#### Invited Presentations

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1. Training future leaders in interdisciplinary convergence. NSF Research Traineeship Annual Meeting. Arizona State University. Tempe, AZ. October 2023.
2. Wearable ultrasound for controlling prosthetic hands. Department of Mechanical Engineering, Brigham Young University. Provo, UT. May 2022.



3. Research and teaching in biomedical engineering education, University of the District of Columbia. Washington, DC. May 2022.
4. Improving physical rehabilitation with virtual reality and wearable ultrasound. Department of Mechanical Engineering, Gonzaga University. Spokane, WA. April 2022.
5. Towards wearable ultrasound imaging with the Achilles tendon. Medical Engineering Conference, hosted by the Biomedical Engineering Society at George Mason University. Fairfax, VA. March 2022.
6. Using ultrasound to measure Achilles tendon kinematics, kinetics, and material properties when walking. Acoustical Society of America Annual Conference. Seattle, WA. November 2021. [[Link](#)]
7. Improvements in dynamic motor control following neurorehabilitation of traumatic brain injury. Biomedical Engineering Guest Lecture Series. University of the District of Columbia. Washington, DC. January 2021.
8. Becoming successful product design engineers. Future Faculty Career Exploration Program. Rochester Institute of Technology. Rochester, NY. September 2018.
9. Non-invasive neuromodulation to improve upright balance when walking. Neuromechanics seminar. Brigham Young University. Provo, UT. May 2017.
10. Maintenance of balance with aging: choose your steps carefully. 28th Annual Colloquium on Aging. UW–Madison Institute on Aging. Madison, WI. September 2016. (*Voted most popular speaker by colloquium attendees.*)
11. Maintaining balance while aging: choose your steps carefully. The Wisconsin Institutes for Discovery: Noon @ the Niche lecture series. University of Wisconsin–Madison. Madison, WI. March 2016.
12. Maintenance of balance with aging: choose your steps carefully. UW–Madison Institute on Aging Materials Science Program. Madison, WI. October 2015.

## Grant Support

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### Current:

R25EB029381	2020 – 2026
National Institute of Biomedical Imaging and Bioengineering	
Team-Based Design in Biomedical Engineering Education	
"Clinical Immersion with Health Professionals and Industry Advising in Undergraduate Biomedical Engineering Capstone Design"	
Role: Principal Investigator	
Amount: \$198,000	
Summer Team Impact Project (STIP) Grant	2025
George Mason University Office of Undergraduate Education	
"Using Natural Language Processing to identify the biopsychosocial factors underlying chronic pain"	
Role: Principal Investigator	
Amount: \$55,380	

### Completed:

Summer Team Impact Project (STIP) Grant	2024
George Mason University Office of Undergraduate Education	
"Recording the lived experiences of patients with chronic pain from minoritized and underserved communities"	
Role: Principal Investigator	
Amount: \$52,321	

R01HD092697-01S1 (PI: Thelen DG) NIH Eunice Kennedy Shriver National Institute of Child Health & Human Development Research Supplement to Promote Diversity in Health-Related Research “Noninvasive assessment of in vivo tissue loads to enhance the treatment of gait disorders” Role: Co-Investigator Amount: \$35,915	2018 – 2019
R25GM083252 (PI: Carnes, ML) NIH General Medical Sciences Initiative for Maximizing Student Development ”Training and education to advance minority scholars in science (TEAM-Science)” Role: Trainee	2015 – 2017
Graduate Research Scholar Fellowship State of Wisconsin Advanced Opportunity Program & Wisconsin Alumni Research Foundation Community: Graduate Engineering Research Scholars, University of Wisconsin–Madison	2014 – 2018

## Honors & Awards

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- Faculty Appreciation Recognition, Faculty and Staff Engagement & University Career Services, George Mason University. April 2024.
- Finalist, International ”Rethink EMG” Competition. Delsys Inc. March 2022.
- Best paper award (with Engdahl SM). Trent International Prosthetics Symposium. March 2022.
- Finalist, Graduate Student Rapid Poster Award Competition, International Society of Biomechanics. August 2019.
- Travel Award, Education Council of the Gait and Clinical Movement Analysis Society. March 2019.
- 3rd place, Engineering Expo Graduate Exhibits, University of Wisconsin–Madison. April 2019.
- Finalist, Doctoral Student Presentation Competition, American Society of Biomechanics. August 2018.
- Runner Up, ASME-BED PhD Level Student Paper Competition, 8th World Congress of Biomechanics. July 2018.
- Student Travel Grant, De Luca Foundation, 8th World Congress of Biomechanics. May 2018.
- 1st place, Engineering Expo Graduate Exhibits, University of Wisconsin–Madison. April 2018.
- Kevin Granata Young Investigator Award, Gait and Clinical Movement Analysis Society. June 2017.
- Finalist, Best Paper Award, Gait and Clinical Movement Analysis Society. June 2017.
- Student Travel Grant, De Luca Foundation, American Society of Biomechanics. August 2017.
- Greatest Impact Award, National Biomechanics Day Student Competition. May 2017.
- 1st place, Engineering Expo Graduate Exhibits, University of Wisconsin–Madison. April 2017.
- Travel Award, Education Council of the Gait and Clinical Movement Analysis Society. June 2017.
- Mechanical Engineering—Graduate School Physical Sciences Division Fellowship, University of Wisconsin–Madison. May 2016.
- 1st place, Engineering Expo Graduate Exhibits, University of Wisconsin–Madison. April 2016.
- Diversity Travel Award, American Society of Biomechanics. August 2015.
- NCEES Fundamentals of Engineering Exam. December 2012.
- Eagle Scout Award. Boy Scouts of America. December 2001.

## Professional Organizations

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- Core Investigator, Center for Advancing Systems Science and Bioengineering Innovation  
Formerly known as the *Center for Adaptive Systems of Brain-Body Interactions*.
- Fellow, NINDS BRAINS (Broadening the Representation of Academic Investigators in NeuroScience).
- Member, Career Influencers Network, George Mason University
- Member, American Society of Biomechanics
- Member, Biomedical Engineering Society



- Member, American Society for Engineering Education
  - Biomedical Engineering Division
  - Community Engagement Division
- Member, Society for Neuroscience
- Member, International Society of Electrophysiology and Kinesiology
- Member, Gait and Clinical Movement Analysis Society
- Affiliate Member, UW–Madison Teaching Academy (2015 – 2019)
- Affiliate Member, National Postdoctoral Association (2019 – 2023)

## Professional Service

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### Key Roles:

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| • Faculty Advisor, GMU Student Chapter – American Society of Biomechanics.     | 2023 – Present |
| • Student Advisory Committee, American Society of Biomechanics.                | 2016 – 2019    |
| • Chair, National Biomechanics Day Committee. University of Wisconsin–Madison. | 2015 – 2018    |

### Journal Peer-Review:

- Applied Sciences
- Biomechanics
- Biomedical Engineering Education
- Frontiers in Bioengineering & Biotechnology
- Gait & Posture
- Sensors
- Ultrasonic Imaging

### Conference Paper Peer-Review:

- American Society of Biomechanics
- American Society of Mechanical Engineers, International Design Engineering Technical Conferences & Computers and Information in Engineering Conference
- IEEE Robotics & Automation Society, International Conference on Intelligent Robots and Systems

### Grant Review:

- National Science Foundation reviewer (2023, 2024, 2025)
- Special Projects in Rehabilitation Excellence( SPiRE), Veterans Health Administration Office of Research and Development
- American Orthotic & Prosthetic Association (AOPA), Center for Orthotic & Prosthetic Learning and Outcomes/Evidence-Based Practice (COPL)

### Conference Planning:

1. Committee member, East coast regional conference, American Society of Biomechanics. 2023.

### Organized Conference Symposia: (*i.e., as conference chair*)

1. Assistive technology. East coast regional conference, American Society of Biomechanics. Reading, PA. April 2023.
2. Using Virtual Reality for Physical Rehabilitation. North American Congress on Biomechanics. Ottawa, ON. August 2022.
3. Integrating patients' lived experiences into your biomechanics research. American Society of Biomechanics. Pittsburgh, PA. August 2025. (*Submitted.*)

#### Organized Conference Workshops:

1. Getting started in biomechanics. East coast regional conference, American Society of Biomechanics. Reading, PA. April 2023.

#### STEM Outreach Events:

1. Overview of applied biosensing methods, Intro to Bioengineering STEM Fusion class. College Readiness Early Identification Program, George Mason University. April 2024.
2. National Biomechanics Day, demos of biomechanics methods, Girl scout troop, Westlawn Elementary. Falls Church, VA. April 2024.
3. Classroom presentation on biomechanics methods. John F. Pattie Elementary. Dumfries, VA. April 2024.
4. National Biomechanics Day, demos of research methods, Intro to Bioengineering STEM Fusion class. College Readiness Early Identification Program, George Mason University. April 2023.
5. National Biomechanics Day, demos of research methods, Intro to Bioengineering STEM Fusion class. College Readiness Early Identification Program, George Mason University. March 2022.
6. Career Day Panelist. College Readiness Early Identification Program, George Mason University. September 2021.
7. National Biomechanics Day, Engineering Expo exhibit: "The Human Machine". University of Wisconsin–Madison. April 2019.
8. National Biomechanics Day, Engineering Expo exhibit: "The Human Machine". University of Wisconsin–Madison. April 2018.
9. After school activity. Nuestro Mundo Community School. Monona, WI. May 2018.
10. Presentation on electromyography. Teen Science Cafe. Wisconsin Institute for Discovery. Madison, WI. April 2017.
11. National Biomechanics Day, Engineering Expo exhibit: "The Human Machine". University of Wisconsin–Madison. April 2017.
12. After school activity. Nuestro Mundo Community School. Monona, WI. May 2017.
13. Classroom presentation on Engineering & Product Design. Federal Way High School. Federal Way, WA. September 2016.
14. National Biomechanics Day, Engineering Expo exhibit: "The Human Machine". University of Wisconsin–Madison. April 2016.
15. After school activity. Nuestro Mundo Community School. Monona, WI. May 2016.
16. National Biomechanics Day, Engineering Expo exhibit: "Engineering the Superhuman". University of Wisconsin–Madison. April 2015.
17. After school activity. Nuestro Mundo Community School. Monona, WI. May 2015.
18. Classroom presentation on electromyography. Akira Toki Middle School. Madison, WI. October 2014.

#### Other:

1. Senior Design Adjudicator. Senior Design Capstone Program, Jonsson School of Engineering & Computer Science, UT Dallas. December 2019.

## Teaching Experience

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#### Instructor:

- **BENG 375/575** (Intellectual Property, Regulatory Concepts, and Product Development), George Mason University. *Sp 2025, Sp 2024, F 2022*.
- **BENG 492** (Senior Advanced Engineering Design Projects I), George Mason University. *Sp 2024*.
- **BENG 501** (Research Methods), George Mason University. *F 2024, F 2023, F 2022*.
- **BENG 799** (Master's Thesis), George Mason University. *Sp 2025*.
- **PROV 801/802 [BENG 699]** (Community-Engaged Interdisciplinary Methods I & II), George Mason University. *Sp 2025, F 2024, Sp 2024, F 2023, Su 2023*.
- **ME 549** (Product Design), University of Wisconsin–Madison. *F 2018, F 2017, F 2016*.

- **Mechatronics & Engineering** (Pre-College Enrichment Opportunity Program for Learning Excellence), University of Wisconsin–Madison. *Su 2017*.

#### Faculty Advisor for Student Design Teams:

- **BENG 492/493** (Senior Adv Engr Design), George Mason University. *Sp 2025, F 2024, Sp 2024, F 2023, Sp 2023, F 2022, Sp 2022, F 2021*.
- **ME 443/444** (Mechanical Design), George Mason University. *Sp 2022, F 2021*.
- **MECH 4382** (Senior Design), University of Texas at Dallas. *Sp 2020*.
- **BME 201/301** (Biomedical Engineering Design), University of Wisconsin–Madison. *Sp 2017*.
- **BME 200/300** (Biomedical Engineering Design), University of Wisconsin–Madison. *F 2016*.

#### Guest Lectures:

- **BENG 370** (Bioinstrumentation & Devices I), George Mason University. *F 2024*.
- **BENG 391** (Professional Development), George Mason University. *F 2024, F 2022, F 2021*.
- **BENG 492/493** (Senior Advanced Engineering Design Projects I & II), George Mason University. *F 2024*.
- **PROV 801/802** (Community-Engaged Interdisciplinary Methods I & II), George Mason University. *Sp 2023, F 2022, Su 2022, Sp 2022*.
- **MENG 330** (Machine Design), Gonzaga University. *Sp 2022*.
- **KINES 910** (Advanced Seminar in Health Sciences), University of Wisconsin–Milwaukee. *Sp 2016*.

#### Teaching Assistant:

- **ME 549** (Product Design), University of Wisconsin–Madison. *F 2018, F 2017, F 2016, F 2015*.
- **ME 373** (Scientific Computing and Computer Aided Engineering), Brigham Young University. *F 2012*.

## Mentoring Experience

*Note: GMU = George Mason University; UVA = University of Virginia; UTD = University of Texas–Dallas; UTSW = University of Texas Southwestern Medical Center; UWM = University of Wisconsin–Madison.*

### Doctoral Students

Connor Delaney, (GMU) Bioengineering	2025 – Present
Bat Baasan, (GMU) Computational Social Science	2024 – Present
Hadeel Elyazori, (GMU) Information Sciences & Technology	2024 – Present
Zahra Taghizadeh, (GMU) Bioengineering <sup>b</sup>	2022 – Present
Matin Jahani Jirsaraei, (GMU) Civil Engineering	2022 – Present
Erica King, (GMU) Bioengineering	2021 – Present
Joseph Majdi, (GMU) Bioengineering	2021 – 2022
Tony Kim, (UTD/UTSW) Biomedical Engineering	2019 – 2020
Luis Rodriguez, (UTD/UTSW) Biomedical Engineering	2019 – 2020

<sup>b</sup> *Dissertation committee member*

### Master's Students

Lara Nasrat, (GMU) Bioengineering <sup>c</sup>	2025 – Present
Brady Stinson-Smith, (GMU) Bioengineering <sup>a</sup>	2024 – Present
Morgan Lamarre, (GMU) Bioengineering <sup>a</sup>	2024 – Present
Kirubel Tadesse, (GMU) Bioengineering & Data Analytics	2024 – Present
Abhishek Aher, (GMU) Bioengineering <sup>c</sup>	2022 – 2024
Sresta Koduri, (GMU) Bioengineering	2022 – 2024

<sup>a</sup> *Thesis committee chair*

<sup>b</sup> *Thesis committee member*

<sup>c</sup> Practicum committee member**Undergraduate Students (Research Mentorship)**

Thomas Rossi, (GMU) Bioengineering	2025 – Present
Layan Wahdan, (GMU) Bioengineering <sup>d</sup>	2024
Syleah Manns, (GMU) Bioengineering <sup>d</sup>	2024
Isaac Amouzou, (GMU) Statistics <sup>d</sup>	2024
Patrick King, (GMU) Kinesiology <sup>d</sup>	2024
Hana Al Shawi, (GMU) Forensic Science <sup>d</sup>	2024
Mahdia Popal, (GMU) Biology <sup>d</sup>	2024
Rusul Abdulrazzaq, (GMU) Biology <sup>d</sup>	2024 – Present
Morgan Lamarre, (GMU) Bioengineering <sup>d</sup>	2022 – 2024
Kirubel Tadesse, (GMU) Bioengineering <sup>d</sup>	2023 – 2024
Nicolas Callejas, (GMU) Bioengineering	2023
Diego Lobo, (GMU) Bioengineering	2022 – 2023
Reihana Akhwand, (GMU) Bioengineering	2022 – Present
Gabriel Gibson, (GMU) Bioengineering <sup>c,d</sup>	2022 – Present
Maddie Krotine, (UVA) Biomedical Engineering <sup>d</sup>	2022
Ryan Devlin, (UTD) Biomedical Engineering	2020
Bailey Ramesh, (UWM) Biomedical Engineering	2017 – 2018
Isaac Loegering, (UWM) Biomedical Engineering	2016
John Zunker, (UWM) Mechanical Engineering <sup>c,d</sup>	2015 – 2018

<sup>c</sup> Research resulted in authorship on peer-reviewed publication<sup>d</sup> Research resulted in authorship on peer-reviewed conference abstract**High School Students (Research Mentorship)**

Madina Said, John Champe High School	2024 – Present
Zaara Mulla, Freedom High School and the Academy of Engineering & Technology	2024
Charlie Holtman, The Potomac School	2024

**Mentored Student Honors and Awards**

- People's choice award. Presented to Rasil Alamri, Lana Hashem, Rebecca Schuetz, Gavin Smiga, Kirubel Tadesse for their senior design project "Virtual Reality Platform for Gait Rehabilitation". College of Engineering & Computing Undergraduate Research Symposium and Office of Student Creative Activities and Research (OSCAR) Expo, George Mason University. May 2024.
- Outstanding project award. Presented to Khalid Assamawy, Mohammed Bhuiyan, Akhil Srirama, Arvin Zapanta for their senior design project "Myoelectric Prosthetic Arm Simulator as a Research Platform and Outreach Tool". College of Engineering & Computing Undergraduate Research Symposium, George Mason University. May 2023.
- Faustin Prinz Undergraduate Research Fellowship, University of Wisconsin–Madison. Awarded to John Zunker. 2016.

**Professional Development**

*Note: This is not an exhaustive list of all professional development activities. This only describes major programs and courses I have participated in.*

1. NINDS BRAINS fellow (Broadening the Representation of Academic Investigators in NeuroScience). 1-year faculty cohort. 2024.
2. Career Influencers network training. 1-day course. George Mason University. 2024.
3. Proposal Writing (ME 699). 15-week course. George Mason University. 2022.
4. Preparing Future Faculty Workshop. 4-week course. Auburn University. 2021.

5. Responsible Conduct of Research. 9-week course. UT Southwestern. 2020.
6. Preparation for a Scientific Career. 9-week course. UT Southwestern. 2019.
7. Information Mastery for Postdoctoral Trainees. 9-week course. UT Southwestern. 2019.
8. Future Faculty Career Exploration Program. 1-week course. Rochester Institute of Technology. 2018.
9. Research Mentor Training. 14-week course. UW–Madison. 2018.
10. Teaching in Science and Engineering. 14-week course. UW–Madison. 2017.
11. Effective Teaching with Technology. 14-week course. UW–Madison. 2016.
12. Improv to improve Teaching & Science Communication. 14-week course. UW–Madison. 2016.