

KATHERINE M. STEELE

Curriculum Vitae

Department of Mechanical Engineering
University of Washington
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Seattle, WA 98195

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EDUCATIONAL HISTORY

Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab), Chicago, IL, USA
Post-Doctoral Fellow, Sensorimotor Performance Program
September 2012 – August 2013

Stanford University, Stanford, CA, USA
PhD, Mechanical Engineering, September 2012
The Dynamics of Crouch Gait in Cerebral Palsy

Stanford University, Stanford, CA, USA
MS, Mechanical Engineering, June 2009

Colorado School of Mines, Golden, CO, USA
BS, Engineering – Mechanical Specialty, May 2007

EMPLOYMENT HISTORY

Department of Mechanical Engineering, University of Washington, Seattle, WA, USA
Arvid S. & Marianne B. Peterson Endowed Professor, 2025 – present
Albert S. Kobayashi Endowed Professor, 2023 – 2025
Albert S. Kobayashi Endowed Associate Professor, 2018 – 2023
Assistant Professor, September 2013 – 2018

Sensorimotor Performance Program, Rehabilitation Institute of Chicago
Chicago, IL, USA
Post-Doctoral Fellow, September 2012 – September 2013

Motion Analysis Laboratory, Lucile Packard Children's Hospital
Palo Alto, CA, USA
Engineer, September 2010 – June 2012

Department of Mechanical Engineering, Stanford University
Stanford, CA, USA
Graduate Research Assistant, September 2007 – August 2012

Center for Gait & Movement Analysis, The Children's Hospital Denver
Denver, CO, USA
Engineer, August 2006 – August 2007

AWARDS AND HONORS

Fellow, American Society of Biomechanics, 2026
UW Faculty Career Education & Training (FACET) Award, 2020, 2022, 2024
DO-IT Disabilities, Opportunities, Internetworking & Technology Trailblazer Award, 2020
University of Washington College of Engineering Team Teaching Award, 2018
Colorado School of Mines Young Alumni Award, 2017
University of Washington Albert S. Kobayashi Professorship, 2016
American Society of Biomechanics Young Scientist Award, 2016
University of Washington College of Engineering Junior Faculty Award, 2016
National Science Foundation Faculty Early CAREER Development Award, 2015
Best Paper & Best Poster (*advisor*), Gait & Clinical Movement Analysis Society, 2015
David Winter Young Investigator Award Finalist, International Society of Biomechanics, 2015
Outstanding Presentation, Neural Engineering Track, Biomedical Engineering Society, 2014
BTS Young Investigator Congress Prize, Clinical Movement Analysis World Conference, 2014
University of Washington Rogel Faculty Support Award, 2014
OpenSim Fellow, National Center for Simulation in Rehabilitation Research, 2014
3M Company Faculty Award, 2014
National Institutes of Health, Rehabilitation Engineering K12 Career Development Award, 2013
Baskin Award for Excellence in Research, 3rd Place, Rehabilitation Institute of Chicago, 2013
Aspen Ideas Festival University-Nominated Presenter, Stanford University, 2012,
Kevin Granata Young Investigator Award, Gait & Clinical Movement Analysis Society, 2012
Outstanding Student Podium Presentation, Biocomputation at Stanford, 2011
Student Travel Fellowship, International Society of Biomechanics, 2011
Outstanding Student Poster Presentation, Biomechanics at Stanford, 2011
Student Travel Award, Gait & Clinical Movement Analysis Society, 2010, 2011, 2012
Graduate Research Fellowship, National Science Foundation, 2008
National Nagel Fellow, Tau Beta Pi, 2007
National Dodson Scholar, Tau Beta Pi, 2006

AFFILIATIONS & OTHER APPOINTMENTS

Co-Director, AMP Lab – Amplifying Human Movement & Performance, 2018-Present
Associate Director, Center for Research & Education on Accessible Technology, 2020-Present
Adjunct Faculty, Human Centered Design & Engineering, 2015-Present
Adjunct Faculty, Bioengineering, 2017-2020
University of Washington Institute for Neuroengineering, 2015-2020

PUBLICATIONS & PATENTS

¹graduate students, ²postdoctoral fellows, ³undergraduates, and ⁴lab staff mentored by **KM Steele**

*Authors contributed equally to this research

Google Scholar [<https://scholar.google.com/citations?hl=en&user=ItUXoHMAAAAJ>]

Publications have 3907 citations with h-index of 34 and i-10 index of 61.

+ Citation counts for top 10 cited papers provided below (updated May 2024)

Refereed Archival Journal Publications

- J1. ¹AK Clarke, AJ Ries, MH Schwartz, **KM Steele** (2026) “Influence of body weight support on motor control in typically developing children and children with cerebral palsy” *J Biomech* DOI: 10.1016/j.jbiomech.2025.113139

- J2. ²Y Fang, **KM Steele**, ZF Lerner (2026) “Ankle exoskeleton assistance reduces knee contact force during walking in individuals with cerebral palsy” *IEEE Trans Neural Syst Rehabil Eng* DOI: 10.1109/TNSRE.2026.3665134
- J3. PK Gill, JM Donelan, **KM Steele**, MH Schwartz, AJ Ries (2025) “Quantifying altered oxygen kinetics and reducing metabolic test times for children with cerebral palsy: a dual-exponential Bayesian modeling approach” *J Appl Physiol* DOI: 10.1152/jappphysiol.01013.2024
- J4. ²BM Sloane, ¹M Hoffman, SW Logan, LK Kenyon, **KM Steele**, HA Feldner (2025) “Comparison of three tracking methods to assess usage of two pediatric powered mobility devices for young children with cerebral palsy” *Assistive Technology* DOI: 10.1080/10400435.2025.2577390
- J5. L Gijbels, ²KA Ingraham, ¹NL Zaino, ¹ME Hoffman, JC Mizrahi, AN Sinclair, BY Woo, A Fragomeni, AN Meltzoff, **KM Steele**, HA Feldner, PK Kuhl (2025) “Promoting agency and communication through powered mobility: a single-group, repeated measures intervention using the explorer mini in toddlers with motor disabilities” *Frontiers Rehabilitation* DOI: 10.3389/fresc.2025.1726259
- J6. ¹MN Pitts, ¹MR Ebers, CE Agresta, **KM Steele** (2025) “Evaluating sparse inertial measurement unit configurations for inferring treadmill running motion” *Sensors* DOI: 10.3390/s25072105
- J7. ¹CR DeVol, SR Shrivastav, ³VM Landrum, KF Bjornson, D Roge, CT Moritz, **KM Steele** (2025) “Effects of spinal stimulation and short-burst treadmill training on gait biomechanics in children with cerebral palsy” *Gait & Posture* DOI: 10.1016/j.gaitpost.2025.01.016
- J8. ²KA Ingraham, ¹NL Zaino, ³C Feddema, ¹ME Hoffman, L Gijbels, A Sinclair, AN Meltzoff, PK Kuhl, HA Feldner, **KM Steele** (2025) “Quantifying joystick interactions and movement patterns of toddlers with disabilities using powered mobility with an instrumented Explorer Mini” *IEEE Transactions on Neural Systems and Rehabilitation Engineering* DOI: 10.1109/TNSRE.2025.3528454
- 2025 AACPDM Top5 Articles in Rehabilitation Technology**
- J9. ¹CR DeVol, SR Shrivastav, ¹AM Spomer, KF Bjornson, D Roge, CT Moritz, **KM Steele** (2024) “Effects of interval treadmill training on spatiotemporal parameters in children with cerebral palsy: a machine learning approach” *Journal of Biomechanics* DOI: 10.1016/j.jbiomech.2024.112397
- J10. ²KA Ingraham, HA Feldner, **KM Steele** (2024) “Forward first: Joystick interactions of toddlers during digital play” *PloS One* 19.12 DOI: 10.1371/journal.pone.0316097
- J11. ^{*}SR Shrivastav, ¹CD Caskey, ³VM Landrum, KF Bjornson, D Roge, **KM Steele**, CT Moritz (2024) “Transcutaneous spinal stimulation and short-burst interval treadmill training in children with cerebral palsy: a pilot study” *IEEE Transactions on Biomedical Engineering* DOI: 10.1109/TBME.2024.3522317
- J12. ¹NL Zaino, ²KA Ingraham, ¹ME Hoffman, HA Feldner, **KM Steele** (2024) “Quantifying toddler exploration in different postures with powered mobility” *Assistive Technology* DOI: 10.1080/10400435.2024.2400463
- J13. ¹AM Spomer, BC Conner, MH Schwartz, ZF Lerner, **KM Steele** (2024) “Multi-session adaptation to audiovisual and sensorimotor biofeedback is heterogeneous among adolescents with cerebral palsy” *PloS One* 19.11 DOI: 10.1371/journal.pone.0313617
- J14. ¹MR Ebers, JP Williams, **KM Steele**, JN Kutz (2024) “Leveraging arbitrary mobile sensor trajectories with shallow recurrent decoder networks for full-state reconstruction” *IEEE Access* DOI: 10.1109/ACCESS.2024.3423679
- J15. ²AA Portnova-Fahreeva, ¹M Yamagami, A Robert-Gonzalez, J Mankoff, HA Feldner, and **KM Steele** (2024) “Accuracy of Video-Based Hand Tracking for People with Upper-Body Disabilities” *IEEE Transactions on Neural Systems and Rehabilitation Engineering* DOI: 10.1109/TNSRE.2024.3398610
- J16. FJ Valero-Cuevas, J Finley, A Orsborn, N Fung, JL Hicks, HH Huang, D Reinkensmeyer, N Schweighofer, D Weber, **KM Steele** (2024) “NSF DARE: Transforming modeling in

- neurorehabilitation – four threads for catalyzing progress” *Journal of NeuroEngineering & Rehabilitation* DOI: 10.1186/s12984-024-01324-x
- J17. ¹MR Ebers, **KM Steele**, JN Kutz (2024) “Discrepancy modeling framework: Learning missing physics, modeling systematic residuals, and disambiguating between deterministic and random effects” (2024) *SIAM Journal on Applied Dynamical Systems* DOI: 10.1137/22M148375X
- J18. ¹NL Zaino, ³Z McKee, ¹CD Caskey, **KM Steele**, HA Feldner (2024) “Perceptions and experiences of first mobility aid provision for young children with cerebral palsy in the United States: a mixed-methods study” *Disability & Rehabilitation: Assistive Technology* DOI: 10.1080/17483107.2023.2301376
- J19. ¹EC Kuska, **KM Steele** (2024) “Does crouch alter the effects of neuromuscular impairments on gait? A simulation study” *Journal of Biomechanics* PMID: PMC10939721 DOI: 10.1016/j.jbiomech.2024.112015
- J20. ¹MC Rosenberg, JL Proctor, **KM Steele** (2024) “Quantifying changes in individual-specific template-based representations of center-of-mass dynamics during walking with ankle exoskeletons using Hybrid-SINDy” *Scientific Reports* DOI: 10.1038/s41598-023-50999-0 PMID: PMC10781730
- J21. ¹AM Spomer, BC Conner, MH Schwartz, ZF Lerner, **KM Steele** (2023) “Audiovisual biofeedback amplifies plantarflexor adaptation during walking among children with cerebral palsy” *Journal of NeuroEngineering & Rehabilitation* PMID: PMC10704679, DOI: 10.1186/s12984-023-01279-5
- J22. BC Conner, ¹AM Spomer, **KM Steele**, ZF Lerner (2023) “Factors influencing neuromuscular responses to gait training with a robotic ankle exoskeleton in cerebral palsy” *Assistive Technology* DOI: 10.1080/10400435.2022.2121324
- J23. ¹ME Hoffman, **KM Steele**, JE Froehlich, KN Winfree, HA Feldner (2023) “Off to the park: a geospatial investigation of adapted ride-on car usage” *Disability and Rehabilitation: Assistive Technology* Sep 13:1-9 DOI: 10.1080/17483107.2023.2248218
- J24. ¹MR Ebers, ¹MC Rosenberg, JN Kutz, **KM Steele** (2023) “A machine learning approach to quantify individual gait responses to ankle exoskeletons” *Journal of Biomechanics* 2023 Jun 24:111695 DOI: 10.1016/j.jbiomech.2023.111695
- J25. ¹PK Gill, **KM Steele**, JM Donelan, MH Schwartz (2023) “Causal modelling demonstrates metabolic power is largely affected by gait kinematics and motor control in children with cerebral palsy” *Plos one* May 24;18(5):e0285667 DOI: 10.1371/journal.pone.0285667
- J26. ¹AM Spomer, ³RZ Yan, MH Schwartz, **KM Steele** (2023) “Motor control complexity can be dynamically simplified during gait pattern exploration using motor control-based biofeedback.” *Journal of Neurophysiology* May 1;129(5):984-98 DOI: 10.1152/jn.00323.2022 PMID: PMC10125030
- J27. MH Schwartz, **KM Steele**, AJ Ries, AG Georgiadis, BA MacWilliams (2022) “A model for understanding the causes and consequences of walking impairments” *PloS One* 17(12): e0270731 DOI: 10.1371/journal.pone.0270731 PMID: PMC9797092
- J28. BC Conner, ¹AM Spomer, S Bishe, **KM Steele**, ZF Lerner (2022) “Soleus H-reflex modulation in cerebral palsy and its relationship with neural control complexity” *Experimental Brain Research* 240(7-8):2073-2084 DOI: 10.1007/s00221-022-06399-3
- J29. BC Conner, ¹AM Spomer, **KM Steele**, ZF Lerner (2022) “Factors influencing neuromuscular responses to gait training with a robotic ankle exoskeleton in cerebral palsy” *Assistive Technology* DOI: 10.1080/10400435.2022.2121324
- J30. ¹M Yamagami, K Mack, J Mankoff, **KM Steele** (2022) “I’m Just Overwhelmed: Investigating physical therapy accessibility and technology interventions for people with disabilities and chronic conditions” *Transactions on Accessible Computing* 15(4):1-22 DOI: 10.1145/3563396
- J31. **KM Steele**, MH Schwartz (2022) “Causal effects of motor control on gait kinematics after orthopedic surgery in cerebral palsy: a machine-learning approach” *Frontiers in Human Neuroscience* 16:846205. PMID: PMC9204855 DOI: 10.3389/fnhum.2022.846205

- J32. ¹NL Zaino, ¹M Yamagami, DJ Gaebler-Spira, **KM Steele**, KF Bjornson, HA Feldner (2022) "That's frustrating": perceptions of AFO provision, use, and needs among people with cerebral palsy and caregivers" *Prosthetics & Orthotics International* 47(2):147-154 DOI: 10.1097/PXR.000000000000165
- J33. ¹EC Kuska, ²N Mehrabi, MH Schwartz, **KM Steele** (2022) "Number of synergies impacts sensitivity of gait to weakness and contracture" *Journal of Biomechanics* 134: 111012 DOI: 10.1016/j.jbiomech.2022.111012 PMID: PMC8976766
- J34. ¹AM Spomer, ³RZ Yan, MH Schwartz, **KM Steele** (2022) "Synergies are minimally affected during emulation of cerebral palsy gait patterns" *Journal of Biomechanics*, 133:110953 DOI: 10.1016/j.jbiomech.2022.110953
- J35. S Samejima, ¹CD Caskey, F Inanici, SR Shrivastav, LN Brighton, J Pradarelli, V Martinez, **KM Steele**, R Saigal, CT Moritz (2022) "Multisite transcutaneous spinal stimulation for walking and autonomic recovery in motor-incomplete tetraplegia: a single-subject design" *Physical Therapy & Rehabilitation* 102(1):pzab228 DOI: 10.1093/ptj/pzab228
- J36. AM Wilson, CA Richburg, AJ Anderson, BC Muir, J Czerniecki, **KM Steele**, PM Aubin (2021) "Evaluation of a quasi-passive biarticular prosthesis to replicate gastrocnemius function in transtibial amputee gait" *Journal of Biomechanics* 129:110749 DOI: 10.1016/j.jbiomech.2021.110749
- J37. M Goudriaan, E Papageorgiou, BR Shuman, **KM Steele**, N Dominici, AV Campenhout, E Ortibus, G Molenaers, K Desloovere (2021) "Muscle synergy structure and gait patterns in children with spastic cerebral palsy" *Developmental Medicine & Child Neurology* 64(4):462-468 DOI: 10.1111/dmcn.15068
- J38. ⁴C Papazian, ⁴NA Baicoianu, ⁴KM Peters, ²HA Feldner, **KM Steele** (2021) "Electromyography recordings detect muscle activity before observable contractions in acute stroke care" *Archives of Rehabilitation Research & Clinical Translation* 3(3): 100136 DOI: 10.1016/j.arrct.2021.100136
- J39. ²HA Feldner, ⁴C Papazian, ⁴KM Peters, C Creutzfeldt, **KM Steele** (2021) "Clinical use of surface electromyography to track acute upper extremity muscle recovery after stroke: a descriptive case study" *Applied System Innovation* 4(2):
- J40. ¹NL Zaino, **KM Steele**, JM Donelan, MH Schwartz (2020) "Energy consumption does not change after selective dorsal rhizotomy in children with spastic cerebral palsy" *Developmental Medicine & Child Neurology*. 62(9):1047-53 DOI: 10.1111/dmcn.14541
- J41. **KM Steele**, ⁴C Papazian, ²HA Feldner (2020) "Muscle activity after stroke: Perspectives on deploying surface electromyography in acute care" *Frontiers in Neurology* 11 PMID: PMC7538789 DOI: 10.3389/fneur.2020.576757
- J42. ²HA Feldner, ⁴C Papazian, ⁴KM Peters, **KM Steele** (2020) "It's all sort of cool and interesting But what do I do with it? A qualitative study of stroke survivors perceptions of surface electromyography" *Frontiers in Neurology* 11(1037) PMID: PMC7527473 DOI: 10.3389/fneur.2020.01037
- J43. I Vandekerckhove, N De Beukelaer, M Van den Hauwe, ¹BR Shuman, **KM Steele**, A Van Campenhout, N Goemans, K Desloovere, M Goudriaan (2020) "Muscle weakness has a limited effect on motor control of gait in Duchenne muscular dystrophy." *PloS one* 15.9: e0238445 PMID: PMC7467330 DOI: 10.1371/journal.pone.0238445
- J44. ¹J Zistatsis, ⁴KM Peters, ³D Ballesteros, ²HA Feldner, K Bjornson, **KM Steele** (2020) "Evaluation of a passive pediatric leg exoskeleton during gait" *Prosthetics & Orthotics International*, 0309364620956868. DOI: 10.1177/0309364620956868
- J45. ¹MC Rosenberg, BS Banjanin, SA Burden, **KM Steele** (2020) "Predicting walking response to ankle exoskeletons using data-driven models" *Journal of the Royal Society Interface*, 17(171), 20200487. PMID: PMC7653383 DOI: 10.1098/rsif.2020.0487
- J46. ¹B Nguyen, ⁴N Baicoianu, ⁴D Howell, ⁴KM Peters, **KM Steele** (2020) "Accuracy and repeatability of smartphone sensors for measuring shank-to-vertical angle" *Prosthetics & Orthotics International*, 44(3):172-179 DOI: 10.1177/0309364620911314

- J47. ³YC Pan, ¹BM Goodwin, E Sabelhaus, ⁴KM Peters, KF Bjornson, KL Pham, WO Walker, **KM Steele** (2020) “Feasibility of using acceleration-derived jerk to quantify bimanual arm use” *Journal of NeuroEngineering and Rehabilitation*, 17(1):1-8. PMID: PMC7076987 DOI: 10.1186/s12984-020-0653-2
- J48. ¹CL McDonald, ¹CL Bennett, DK Rosner, **KM Steele** (2020) “Perceptions of ability among adults with upper limb absence: impacts of learning, identity, and community” *Disability & Rehabilitation*, 42(23):3306-3315 DOI: 10.1080/09638288.2019.1592243
- J49. ^{*}¹BM Goodwin, ^{*}EK Sabelhaus, ³YC Pan, KF Bjornson, KL Pham, WO Walker, **KM Steele** (2020) “Accelerometer measurements indicate that arm movement of children with cerebral palsy does not increase after constraint induced movement therapy” *American Journal of Occupational Therapy*, 74(5): 7405205100p1-7405205100p9 PMID: PMC7430726 DOI: 10.5014/ajot.2020.040246
- J50. ¹BR Shuman, M Goudriaan, K Desloovere, MH Schwartz, **KM Steele** (2019) “Muscle synergy constraints do not improve estimates of muscle activity from static optimization during gait for unimpaired children or children with cerebral palsy” *Frontiers in NeuroRobotics*, 13(102) PMID: PMC6927914 DOI: 10.3389/fnbot.2019.00102
- J51. ¹BR Shuman, M Goudriaan, K Desloovere, MH Schwartz, **KM Steele** (2019) “Muscle synergies demonstrate only minimal changes after treatment in cerebral palsy” *Journal of NeuroEngineering & Rehabilitation*, 16(1):1-10 PMID: PMC6441188 DOI: 10.1186/s12984-019-0502-3
- J52. ²N Mehrabi, MH Schwartz, and **KM Steele** (2019) "Can altered muscle synergies control unimpaired gait?" *Journal of Biomechanics* 90: 84-91 PMID: PMC7605274 DOI: 10.1016/j.jbiomech.2019.04.038
- J53. **KM Steele**, ME Munger, ⁴KM Peters, ¹BR Shuman, MH Schwartz (2019) “Repeatability of electromyography recordings and muscle synergies during gait among children with cerebral palsy” *Gait & Posture*, 67: 290-295 PMID: PMC6283402 DOI: 10.1016/j.gaitpost.2018.10.009
- J54. ²HA Feldner, ⁴D Howell, VE Kelly, S McCoy, **KM Steele** (2019) “Look, your muscles are firing! A qualitative study of clinician perspectives on the use of surface electromyography in neurorehabilitation” *Archives of Physical Medicine & Rehabilitation*, 100(4):663-675 PMID: PMC6435407 DOI: 10.1016/j.apmr.2018.09.120
- J55. **KM Steele**, B Blaser, M Cakmak (2018) “Accessible Making: Designing makerspaces for accessibility” *International Journal of Designs for Learning* 9.1: 114-121 DOI:10.14434/ijdl.v9i1.22648
- J56. ¹M Yamagami, ⁴KM Peters, ²I Milovanovic, I Kuang, Z Yang, N Lu, **KM Steele** (2018) “Assessment of dry epidermal electrodes for long-term electromyography measurements” *Sensors*, 18(4):1269 PMID: PMC5948629 DOI: 10.3390/s18041269
- J57. ¹AM Wilson, CA Richburg, JM Czerniecki, **KM Steele**, PM Aubin (2018) “Design and development of a quasi-passive transtibial biarticular prosthesis to replicate gastrocnemius function in walking” *ASME Journal of Medical Devices* 14(2) PMID: PMC7104771 (available on 2021-06-01) DOI: 10.1115/1.4045879
- J58. ¹BR Shuman, M Goudriaan, K Desloovere, MH Schwartz, **KM Steele** (2018) “Associations between muscle synergies and treatment outcomes in cerebral palsy are robust across clinical centers” *Archives of Physical Medicine & Rehabilitation*, 99(11):2175-2182 PMID: PMC6179956 DOI: 10.1016/j.apmr.2018.03.006
- J59. ³A Portnova, ¹G Mukherjee, K Peters, ^A Yamane, **KM Steele** (2018) “Design of a 3D-printed, open-source wrist-driven orthosis for individuals with spinal cord injury” *PLOS ONE*, 13(2), e0193106 PMID: PMC5823450 DOI: 10.1371/journal.pone.
- J60. **KM Steele**, E Roh, D Meister, A Ladd, J Rose (2018) “Golf swing rotational velocity: the essential follow-through” *Annals of Rehabilitation Medicine*, 42(5):713-721 PMID: PMC6246863 DOI: 10.5535/arm.2018.42.5.713
- J61. M Goudriaan, ¹BR Shuman, **KM Steele**, M Van den Hauwe, N Goemans, G Molenaers, K Desloovere (2018) “Non-neural muscle weakness has limited influence on complexity of motor

- control during gait” *Frontiers in Human Neuroscience*, 12(5) PMID: PMC5797794 DOI: 10.3389/fnhum.2018.00005
- J62. DA Jacobs, JR Koller, **KM Steele**, DP Ferris (2018) “Synergies of muscle recruitment during adaptation to walking in a powered ankle exoskeleton” *Journal of NeuroEngineering & Rehabilitation*, 15(1):2 PMID: PMC5751608 DOI: 10.1186/s12984-017-0343-x
- J63. ⁴KM Peters, VE Kelly, T Chang, MC Weismann, S Westcott-McCoy, **KM Steele** (2018) “Muscle recruitment and coordination during upper-extremity functional tests” *Journal of Electromyography & Kinesiology*, 38:143-150 PMID: PMC5808900 DOI: 10.1016/j.jelekin.2017.12.002
- J64. ¹H Choi, ⁴K Peters, ³M MacConnell, ³K Ly, ³E Eckert, **KM Steele** (2017) “Impact of ankle foot orthosis stiffness on Achilles and gastrocnemius function during gait” *Journal of Biomechanics*, 64:145-152 DOI: 10.1016/j.jbiomech.2017.09.015
- J65. A Rozumalski, **KM Steele**, MH Schwartz (2017) “Muscle synergies are similar when typically developing children walk on a treadmill at different speeds and slopes” *Journal of Biomechanics*, 64:112-119 DOI: 10.1016/j.jbiomech.2017.09.002
- J66. ¹M Rosenberg, **KM Steele** (2017) “Simulated impacts of ankle foot orthoses on muscle demand and recruitment in children with cerebral palsy and crouch gait,” *PLOS ONE* 12.7, 30180319 PMID: PMC5509139 DOI: 10.1371/journal.pone.0180219
- J67. ¹BR Shuman, MH Schwartz, **KM Steele** (2017) “Electromyography data processing impacts muscle synergies during gait for unimpaired children and children with cerebral palsy” *Frontiers in Human Neuroscience*, 11(50) PMID: PMC5460588 DOI: 10.3389/fncom.2017.00050
- J68. **KM Steele**, RW Jackson, ¹B Shuman, SH Collins (2017) “Muscle recruitment and coordination with an ankle exoskeleton” *Journal of Biomechanics*, 59: 50-58 PMID: PMC5644499 DOI: 10.1016/j.jbiomech.2017.05.010
- J69. **KM Steele**, ¹BR Shuman, MH Schwartz, (2017) “Crouch severity is a poor predictor of elevated oxygen consumption in cerebral palsy” *Journal of Biomechanics*, 60: 170-174 PMID: PMC5546236 DOI: 10.1016/j.jbiomech.2017.06.036
- J70. ¹H Choi, TL Wren, **KM Steele**, (2017) “Gastrocnemius operating length with ankle foot orthoses in cerebral palsy.” *Prosthetics & Orthotics International*, 41(3): 274-285 DOI: 10.1177/0309364616665731
- J71. MH Schwartz, A Rozumalski, **KM Steele**, (2016) “Dynamic motor control is associated with treatment outcomes for children with cerebral palsy,” *Developmental Medicine & Child Neurology*, 58 (11) 1139-1145 DOI: 10.1111/dmcn.13126 [Cited by 111]
- J72. ¹BR Shuman, M Goudriaan, L Bar-On, MH Schwartz, K Desloovere, **KM Steele**, (2016) “Repeatability of muscle synergies within and between days for typically developing children and children with cerebral palsy.” *Gait & Posture* 45:127-32 DOI:10.1016/j.gaitpost.2016.01.011
- J73. EE Bulter, **KM Steele**, L Torburn, JG Gamble, J Rose, (2016) “Clinical motion analyses over eight consecutive years in a child with crouch gait: a case report.” *Journal of Medical Case Reports*, 10(157) PMID: PMC4908800 DOI: 10.1186/s13256-016-0920-9
- J74. SSM Lee, D Gaebler-Spira, LQ Zhang, WZ Rymer, **KM Steele**, (2016) “Use of shear wave ultrasound elastography to quantify muscle properties in cerebral palsy.” *Clinical Biomechanics*, 31:20-28. PMID: PMC4729598 PMID: PMC4729598 DOI: 10.1016/j.clinbiomech.2015.10.006 [Cited by 119]
- J75. ¹H Choi, K Bjornson, S Fatone, **KM Steele**, (2016) “Using musculoskeletal modeling to evaluate the effect of ankle foot orthosis tuning on musculotendon dynamics: a case study.” *Disability and Rehabilitation*, 0, 1-6. PMID: PMC4522403 PMID: PMC4522403 DOI: 10.3109/17483107.2015.1005030
- J76. **KM Steele**, A Rozumalski, MH Schwartz, (2015) “Muscle synergies and complexity of neuromuscular control during gait in cerebral palsy.” *Developmental Medicine & Child Neurology*, 57(12):1176-1182 PMID: PMC4683117 DOI: 10.1111/dmcn.12826 [Cited by 308]

- J77. **KM Steele**, MC Tresch, EJ Perreault, (2015). “Consequences of biomechanically constrained tasks in the design and interpretation of synergy analyses.” *Journal of Neurophysiology*, 113(7):2102-2113 PMID: PMC4416545 DOI: 10.1152/jn.00769.2013 [**Cited by 93**]
- J78. R Klemetti, **KM Steele**, P Moilanen, J Avela, J Timonen, (2014) “Contributions of individual muscles to the sagittal- and frontal-plane angular accelerations of the trunk in walking.” *Journal of Biomechanics*, 47(1), 2263-8 DOI: 10.1016/j.jbiomech.2014.04.052
- J79. **KM Steele**, S Brunhaver, SD Sheppard (2014) “Feedback from in-class worksheets and discussion improves performance on the Statics Concept Inventory.” *International Journal of Engineering Education*, 30(4):992-9
- J80. **KM Steele**, MC Tresch, EJ Perreault (2013) “The number and choice of muscles impact the results of muscle synergy analyses,” *Frontiers in Computational Neuroscience*, 7:105 PMID: PMC3737463 DOI: 10.3389/fncom.2013.00105 [**Cited by 240**]
- J81. SR Hamner, A Seth, **KM Steele**, SL Delp (2013) “A rolling constraint reproduces ground reaction forces and moments in dynamic simulations of walking, running, and crouch gait.” *Journal of Biomechanics*, 46(10):1772-6 PMID: PMC3993009 DOI: 10.1016/j.jbiomech.2013.03.030
- J82. **KM Steele**, A Seth, JL Hicks, MH Schwartz, SL Delp, (2013) “Muscle contributions to vertical and fore-aft accelerations are altered in subjects with crouch gait.” *Gait & Posture*, 38(1):86-91. PMID: PMC3600387 DOI: 10.1016/j.gaitpost.2012.10.019 [**Cited by 99**]
- J83. **KM Steele**, M van der Krogt, M Schwartz, SL Delp, (2012) “How much muscle strength is required to walk in a crouch gait?” *Journal of Biomechanics* 45(15):2564-9 PMID: PMC3524281 DOI: 10.1016/j.jbiomech.2012.07.028 [**Cited by 155**]
- J84. **KM Steele**, DL Damiano, M Unger, M Eek, S Delp, (2012) “Characteristics associated with improved knee extension after strength training for individuals with cerebral palsy and crouch gait.” *Journal of Pediatric Rehabilitation Medicine* 5(2):99-106 PMID: PMC3579590 DOI: 10.3233/PRM-2012-0201
- J85. **KM Steele**, M Demers, M Schwartz, SL Delp, (2011) “Compressive tibiofemoral forces during crouch gait.” *Gait & Posture* 35(4):556-560 PMID: PMC3319529 DOI: 10.1016/j.gaitpost.2011.11.023 [**Cited by 415**]
- J86. DL Damiano, AS Arnold, **KM Steele**, S Delp, (2010) “Can strength training predictably improve gait kinematics in cerebral palsy?” *Physical Therapy* 90(2):269-79 PMID: PMC2816027 DOI: 10.2522/ptj.20090062 [**Cited by 180**]
- J87. **KM Steele**, A Seth, JL Hicks, M Schwartz, SL Delp, (2010) “Muscle contributions to support during single-limb stance in crouch gait.” *Journal of Biomechanics*, 43(11):2099-105. PMID: PMC2914221 DOI: 10.1016/j.jbiomech.2010.04.003 [**Cited by 271**]

Conference Publications (peer-reviewed papers)

- J88. ²KA Ingraham, HA Feldner, **KM Steele** (2024) “An Instrumented 'Explorer Mini' for Quantitative Analysis of Toddlers Using Powered Mobility for Exploratory, Mobile, and Digital Play” *IEEE RAS EMBS 10th International Conference on Biomedical Robotics and Biomechatronics (BioRob 2024)* DOI: 10.1109/BioRob60516.2024.10719716
- J89. ¹M Yamagami, **KM Steele**, SA Burden (2020) “Decoding intent with control theory: Comparing muscle versus manual interface performance” *CHI Human Factors in Computing Systems*, ACM DOI: 10.1145/3313831.3376224
- J90. ¹CL Bennett, ³K Cen, **KM Steele**, DK Rosner, (2016) “An intimate laboratory? Prostheses as a tool for experimenting with identity and normalcy” *CHI Human Factors in Computing Systems*, ACM DOI:10.1145/2858036.2858564
- J91. ¹CL Bennett, K Shinohara, B Blaser, A Davidson, **KM Steele** (2016) “Using a design workshop to explore accessible ideation” *CHI Human Factors in Computing Systems*, ACM DOI: 10.1145/2982142.2982209

- J92. ²B Soran, L Lowes, **KM Steele**, (2016) “Evaluation of infants with spinal muscular atrophy type-I using convolutional neural networks” *European Conference on Computer Vision*. DOI: 10.1007/978-3-319-48881-3_34
- J93. ¹J Wu, ¹BR Shuman, BW Brunton, **KM Steele**, JD Olson, RPN Rao (2016) “Multistep model for predicting upper-limb 3D isometric force application from pre-movement electrocorticographic features.” *IEEE Engineering Medicine & Biology* 1564-1567 DOI: 10.1109/EMBC.2016.7591010
- J94. B Blaser, S Burgstahler, **KM Steele**, (2015) “Including universal design in engineering courses to attract diverse students.” *American Society for Engineering Education*, 26.935.1-26.935.12 DOI:10.18260/p.24272.
- J95. **KM Steele**, S Lee, (2014) “Using dynamic musculoskeletal simulation to evaluate altered muscle properties in cerebral palsy.” *Proceedings of the ASME Dynamics Systems and Control*, V002T16A007, DOI:10.1115/DSCC2014-5955.

Book Chapters

- B1. **KM Steele** (2022) “Shaping Inclusive and Equitable Makerspaces” *After Universal Design: The Disability Design Revolution*, Edited by Elizabeth Guffey, Bloomsbury. ISBN: 9781350241527
- B2. **KM Steele** & AG Georgiadis (2020) “Lever arm dysfunction: Improving care requires greater knowledge of early development and long-term consequences” *Improving Quality of Life for Individuals with Cerebral Palsy through Treatment of Gait Impairment*, MacKeith Press.
- B3. **KM Steele** & WA Marks (2020) “Motor control: Missing links between neurological injury and movement that limit care and function” *Improving Quality of Life for Individuals with Cerebral Palsy through Treatment of Gait Impairment*, MacKeith Press.

Patents

- P1. “Compact catheter assembly,” October 15, 2013 (U.S. Patent No. 8,556,884)
- P2. “Methods for analyzing and providing feedback for improved power generation in a golf swing.” February 24, 2014 (U.S. Patent No. 8,696,450)
- P3. “Robust adaptable foot prosthesis,” March 20, 2018 (U.S. Patent No. 9,918,855)
- P4. *[pending]* Oct 9, 2025 “Methods and systems to reduce symptoms of cerebral palsy in children” (U.S. Patent App. 18863278)

Technical Reports

- R1. “Making a Makerspace? Guidelines for Accessibility and Universal Design” Available online: <http://www.washington.edu/doit/making-makerspace-guidelines-accessibility-and-universal-design>
Featured on KING5 News, KUOW, UW News, and School Library Journal

Websites (<https://linktr.ee/kat.steele>)

- W1. Neuromechanics & Mobility Lab Website (2012 – present) <http://steelelab.me.uw.edu>
- W2. AccessEngineering (2014 – present) <http://www.washington.edu/doit/programs/accessengineering/overview>
- W3. Simulations of Crouch Gait (2013 – present) <https://simtk.org/home/crouchgait/>
- W4. Synergy-Based Control OpenSim Toolkit (2016 – present) <https://simtk.org/home/synergy/>
- W5. HuskyADAPT: Accessible Design & Play Technology (2018 – present) <https://depts.washington.edu/adaptuw/>
- W6. AMP Lab: Amplifying Human Movement & Performance (2018 – present) <https://depts.washington.edu/amplify/>

W7.CREATE” Center for Research & Education on Accessible Technology & Experiences
(2020-present) <https://create.uw.edu/>

Conference Proceedings

Award Winners & Finalists

- C1. ¹AK Clarke, AJ Ries, JM Donelan, MH Schwartz, **KM Steele**, “Biomechanics of bodyweight support in children with cerebral palsy” Society of Women Engineers National Conference (New Orleans, LA) Oct 23-25, 2025
First Place PhD Research Competition
- C2. ¹ME Hoffman, ³R Bernas, ³A Bose, ³K Bokowy, HA Feldner, **KM Steele**, “Measuring early intervention provider’s use of a novel switch-accessible play kit” Rehabilitation Engineering Society of North America (Chicago, IL) May 12-16, 2025
First Place PhD Student Paper Competition
- C3. ¹ME McCreary, KA Ingraham, HA Feldner, **KM Steele**, “Kicking it off: Do toddlers with disabilities activate leg muscles to drive powered mobility devices?” Rehabilitation Engineering Society of North America (Chicago, IL) May 12-16, 2025
Second Place PhD Student Paper Competition
- C4. ¹ME McCreary, KA Ingraham, HA Feldner, **KM Steele**, “Does toddler leg muscle activation change with posture?” Northwest Biomechanics Symposium (Vancouver, BC) May 2-3, 2025
First Place PhD Podium Presentation
- C5. ¹AK Clarke, AJ Ries, JM Donelan, MH Schwartz, **KM Steele**, “Influence of bodyweight support on motor control in children with cerebral palsy” Northwest Biomechanics Symposium (Vancouver, BC) May 2-3, 2025
Second Place PhD Podium Presentation
- C6. ¹CD Caskey “Machine learning for quantifying rehabilitation responses for children with cerebral palsy” Society of Women Engineers (Los Angeles, CA) Oct 26-28, 2023.
First Place Graduate Research Competition
- C7. ¹NL Zaino, MH Schwartz, **KM Steele**, “Spasticity reduction in children with cerebral palsy is not associated with reduced energy consumption during walking” European Society of Movement Analysis for Adults & Children (Amsterdam, Netherlands) Sept 14-19, 2020.
Best Paper Award
- C8. ¹NL Zaino, MH Schwartz, **KM Steele**, “Spasticity reduction by rhizotomy does not lead to reduced energy consumption” International Society of Biomechanics (Calgary, Canada) July 31-Aug 4, 2019.
Finalist, David Winter Young Investigator Award
- C9. ¹B Nguyen, ⁴D Howell, ⁴N Baicoianu, **KM Steele**, “Accuracy and repeatability of using smartphone-based sensors for orthotic tuning” RehabWeek: ISPO Canada (Toronto, Canada) June 24-28, 2019.
ISPO Canada Best Student Poster Award
- C10. ¹B Goodwin, E Sabelhaus, ³YC Pan, KF Bjornson, KLD Pham, WO Walker, **KM Steele**, “Accelerometers used to measure magnitude and frequency of movement for children with cerebral palsy during constraint induced movement therapy” Summer Biomechanics, Bioengineering, & Biotransport Conference (Seven Springs, PA) June 25-28, 2019.
Third place MS Student Paper Competition
- C11. **KM Steele**, A Rozumalski, MH Schwartz, “Altered muscle synergies during gait in cerebral palsy are not due to altered kinematics or kinetics.” International Society of Biomechanics (Glasgow, UK) July 12-16, 2015.
Young investigator presentation at Motor Control Symposium
Finalist, David Winter Young Investigator Award

- C12. ¹B Shuman, M Goudriaan, K Desloovere, **KM Steele**, “Repeatability of muscle synergies between days for unimpaired individuals and individuals with cerebral palsy,” Gait & Clinical Movement Analysis Society (Portland, OR) March 18-21, 2015.
Best Paper Award
- C13. MC Deem, AJ Patrella, **KM Steele**, AK Silverman, “Effects of muscle weakness on musculotendon model estimates of metabolic energy cost in children with cerebral palsy,” Gait & Clinical Movement Analysis Society (Portland, OR) March 18-21, 2015.
Best Poster Award
- C14. **KM Steele**, MH Schwartz, “Predicting metabolic costs of pathologic gait in cerebral palsy.” Biomedical Engineering Society (San Antonio, TX) October 22-24, 2014.
Top Presentation, Neural Engineering Track
- C15. **KM Steele**, MH Schwartz, “Is crouch gait inefficient in children with cerebral palsy?” Clinical Movement Analysis World Conference (Rome, Italy) October 2-4, 2014.
BTS Congress Prize, awarded to outstanding young investigator
- C16. S Lee, D Gaebler-Spira, WZ Rymer, **KM Steele**, “Use of shear wave ultrasound elastography to quantify muscle material properties in individuals with cerebral palsy.” Gait & Clinical Movement Analysis Society (Newark, Delaware) June 24-27, 2014.
Best Paper Finalist
- C17. **KM Steele**, A Seth, M Schwartz, SL Delp, “How do muscle contributions to support and propulsion change during crouch gait,” Gait & Clinical Movement Analysis Society, (Grand Rapids, MI) May 12, 2012.
Kevin Granata Young Investigator Award.
- C18. **KM Steele**, SL Delp, “How do muscle contributions to motion change with crouch severity?” Biocomputation at Stanford (Stanford, CA) November 12, 2011.
Best Student Presentation
- C19. **KM Steele**, A Seth, JL Hicks, M Schwartz, SL Delp, “Contributions of the ankle plantarflexors to joint and mass center accelerations during crouch gait,” Biocomputation at Stanford, (Stanford, CA) November 7, 2009.
2nd Place, Student Presentation Competition

Please see our website and google scholar for additional conference proceedings:

<https://steelelab.me.uw.edu/>

PRESENTATIONS

Invited Presentations

Keynote Presentations

1. Rocky Mountain Biomechanics Symposium (Estes Park, CO) *Neuromechanics of Early Mobility: Challenges in supporting development, play, & participation* April 7, 2023.
2. Gait & Clinical Movement Analysis Society (virtual) *Untangling control: Understanding the role of altered motor control on gait in cerebral palsy*, June 7, 2022.
3. Pediatric NeuroRecovery Summit (Louisville, KY) *Strategies to quantify and improve control for kids with cerebral palsy*, May 15, 2019.
4. University of Pittsburgh Bioengineering Day (Pittsburgh, PA) *The Ultimate Machine: engineering to improve movement for kids with cerebral palsy*, April 6, 2017.
5. Shriners Children’s Hospital Motion Analysis Laboratory Consortium (Sacramento, CA) *Musculoskeletal Modeling & Simulation: Advances, assumptions, and challenges for clinical care*, November 17, 2016.

External Symposia & Seminars

6. Neural Control of Movement, Satellite Symposium on Clinical Neurorehabilitation, *Neuromechanics to support on-time mobility for toddlers with disabilities*, April 20, 2026
7. University of Utah, Mechanical Engineering, *Engineering to support early mobility*, August 29, 2025.
8. University of Southern California, Biokinesiology and Physical Therapy, *Neuromechanics of Early Mobility: Challenges in supporting development, play, and participation*, November 14, 2024.
9. American Academy of Cerebral Palsy & Developmental Medicine, *An international perspective on technology integration in rehabilitation: overcoming barriers and innovating care*, October 24, 2024.
10. ShirleyRyan Ability Lab, Annual Cerebral Palsy Course: Rehabilitation Milestones Across the Lifespan (virtual) *Spinal Stimulation for Children with Cerebral Palsy*, May 17, 2024.
11. Stevens Institute of Technology, Biomedical Engineering Seminar (virtual), *Neuromechanics of Early Mobility: Engineering to support movement for children with disabilities*, May 1, 2024.
12. University of Colorado-Boulder, Integrative Physiology, *Spinal Stimulation for Children with Cerebral Palsy* April 15, 2024.
13. ShirleyRyan Ability Lab, NIH C-STAR (virtual), *Neuromechanics of Early Mobility: Challenges in Supporting Development, Play, & Participation*, January 8, 2024.
14. American Society of Biomechanics, *Preparing an NIH grant application*, August 10, 2023.
15. Boyer Clinic, *Investigating the impact of powered mobility for kids with disabilities*, August 19, 2022.
16. National Institutes of Health (virtual), *Mobilizing for Cerebral Palsy: The science, team, & tech to move forward*, August 18, 2022.
17. University of Texas-Austin Rehabilitation Engineering (virtual), *Wearable Sensors in Pediatric Rehabilitation: Challenges + Opportunities to Support Movement*, February 9, 2022.
18. Stanford University, Perspectives in Assistive Technology (virtual), *Patient to Maker: How might we enhance human ability through access to engineering and design?* February 4, 2022.
19. Training in Grantsmanship in Rehabilitation Research (virtual) *Assistive Professor Toolbox*, January 9, 2022.
20. University of Florida (virtual) *Motor Control Matters: Strategies to quantify and improve motor control for kids with cerebral palsy* November 5, 2021.
21. C-STAR: Wearable Sensors & Machine Learning to Enhance Ability (virtual) *Wearable Sensors in Pediatric Rehabilitation*, October 27, 2021.
22. NSF LIBERATE Convergence Accelerator (virtual), *Amplifying Mobility, Safety & Inclusion for Assistive Technology*, May 26, 2021.
23. NSF Convergence Accelerator on Accelerating Disability Inclusion in Workplaces through Technology (virtual), *Accessible Workplaces: Ideas for Inclusion*, May 20, 2021.
24. University of Pennsylvania (virtual), *Challenges in Predicting Human Performance*, March 31, 2021.
25. Medical Rehabilitation Research Resource Network (virtual), *Mentoring & Pivoting: Supporting graduate students during COVID-19* March 18, 2021.
26. Stanford University, Perspectives in Assistive Technology (virtual), *Disability Studies for Engineers*, March 2, 2021.
27. Stanford University, ME Women Seminar (virtual), *Finding Opportunity in Uncertainty: Prototype Life*, January 28, 2021
28. Training in Grantsmanship in Rehabilitation Research (virtual) *Tools for Tenure-Track Faculty*, January 10, 2021.

29. NIH Research Plan on Rehabilitation Research (virtual), *Normalcy Fallacy: Reimagining Mobility for Scientific Discovery & Innovation*, October 16, 2020.
30. Training in Grantsmanship in Rehabilitation Research (Charleston, South Carolina) *A toolbox for life as an assistant professor*, January 10, 2020.
31. International Cerebral Palsy Function & Mobility Symposium (Banff, Canada) *Motor Control: Consequences & Management*, December 12, 2019.
32. International Cerebral Palsy Function & Mobility Symposium (Banff, Canada), *Biomechanical Quantification & Consequences*, December 11, 2019.
33. Young Adult Stroke Survivors (Seattle, Washington) *Muscle sensors for recovery and device control*, Sept 21, 2019.
34. American Academy of Cerebral Palsy & Developmental Medicine (Anaheim, California), *Muscle synergies – From neuroscience to the clinic*, Sept 20, 2019.
35. International Society of Biomechanics (Calgary, Canada) *EMG recordings in acute care? Tracking muscle activity and movement in the initial days after stroke*, Aug 2, 2019.
36. International Society of Biomechanics (Calgary, Canada) *Passive pediatric exoskeletons – from ankle foot orthoses to exotendons*, Aug 1, 2019.
37. Neuromechanics Satellite Meeting, International Society of Biomechanics (Calgary, Canada) *Motor Control Matters: Can altered synergies control unimpaired gait?* July 30, 2019.
38. IEEE Canada Women in Engineering (Toronto), *Future of disruptive technologies – How diversity & inclusion contribute*, June 27, 2019.
39. IdeaGen 2019 (Microsoft), *Inclusive design & engineering panel*, June 4, 2019.
40. Seattle Children's Hospital Cerebral Palsy Research Center, *Research to improve mobility for children with cerebral palsy*, June 15, 2018.
41. Seattle Children's Hospital Developmental Medicine, *Motor control matters: quantifying impaired control in children with cerebral palsy*, March 1, 2018.
42. American Society of Biomechanics, *Neuromuscular control during gait in cerebral palsy*, August 9, 2017.
43. Seattle Children's Hospital, *Fundamentals of Clinical Gait Analysis*, July 24, 2017.
44. Carnegie Mellon University, *Optimizing orthoses: challenges in predicting human performance*, April 7, 2017.
45. Wyss Institute, Harvard University, *Optimizing orthoses: challenges in predicting human performance*, March 23, 2017.
46. Temple University, *Synergies & Simulation: Improving movement for individuals with cerebral palsy*, October 28, 2016.
47. International Society of Electrophysiology & Kinesiology (Chicago, IL): *Stepping forward? Patient-specific measures of altered control to improve treatment outcomes in cerebral palsy*, July 8, 2016.
48. KU Leuven & Pellenberg Hospital, *Clinical Gait Analysis: A Focus on Interpretation*, June 30 - July 2, 2016.
49. Biomechanics and Neural Control of Movement (Deer Creek State Park, Ohio): *Optimizing human-machine interaction in health and rehabilitation*, June 16, 2016.
50. NSF AccessERC Capacity Building Institute, *Making for All: A case study of universal design to support individuals with disabilities in engineering*, February 24, 2016.
51. Smith College: *Patient to Maker: How might we support and encourage individuals with disabilities to pursue careers in engineering?* February 22, 2016.
52. Seattle Association for Women in Science: *Advances & Applications in 3D-Printing*, February 17, 2016.
53. National Center for Simulation in Rehabilitation Research Webinar, *Synergy-based control in OpenSim*, January 27, 2016.
54. Society of Women Engineers National Webinar, *Strategies to support individuals with disabilities pursuing careers in engineering*, January 19, 2016.

55. Clinical Gait Analysis: A focus on interpretation: *Guest faculty for three-day workshop hosted by Gillette Children's Specialty Healthcare, Connecticut Children's Medical Center, and University Hospital Pellenberg-Belgium for physicians, therapists, and engineers*, May 13-15, 2015.
56. American Academy of Prosthetists & Orthotists, Northwest Regional Meeting: *Optimizing AFO design & prescription*, April 17, 2015.
57. Seattle Children's Hospital Department of Orthopedics, *Simulation & Synergies: New tools for understanding and improving impaired movement*, April 15, 2015.
58. Nike High Performance Lab, *The Ultimate Machine: Quantifying human movement and performance*, March 18, 2015.
59. Oregon State University Research Seminar, *Optimizing the design and fabrication of ankle foot orthoses*, March 17, 2015.
60. Stanford University Research Seminar, *Synergies & Simulation: Quantifying altered neuromuscular control in cerebral palsy*, March 6, 2015.
61. Stanford University ME Women Seminar, *Prototyping Pathways in engineering & medicine*, March 5, 2015.
62. American Academy of Cerebral Palsy & Developmental Medicine, *AFO Design & Prescription: Innovation in modeling, analysis, and fabrication*, GCMAS Symposium, San Diego, CA, September 10, 2014.
63. IEEE Engineering in Medicine and Biology Conference, "*Synergies and Simulation: Modeling altered neuromuscular control*," NIH K12 Symposium, (Chicago, IL) August 28, 2014.
64. International Society of Biomechanics Motor Control Symposium (Glasgow, Scotland): *Altered muscle synergies during gait in cerebral palsy are not due to altered kinematics or kinetics*, July 12, 2015.
65. World Congress of Biomechanics, "*Using musculoskeletal modeling to evaluate the effects of tuning ankle foot orthoses*." (Boston, MA) July 6, 2014.
66. Gait & Clinical Movement Analysis Society, *Rapid Prototyping Life: Preparing for life after graduate school*, June 24, 2014.
67. Microsoft Research Symposium on Gait & Balance, *New tools and techniques for clinical gait analysis*, May 23, 2014.
68. Seattle Association for Women in Science, *The ultimate machine: using engineering to improve human mobility*, April 16, 2014.
69. Simon Fraser University, *The ultimate machine: strategies for understanding and improving pathologic gait*, January 28, 2014.
70. Seattle Children's Hospital, *Gait analysis fundamentals: analyzing the dynamics and control of human movement*, January 21, 2014.
71. IEEE Smart Tech Workshop, *Dynamics of human movement: an introduction to OpenSim*, November 1, 2013.
72. Movement and Rehabilitation Science Training Day, Northwestern University, *Using musculoskeletal simulation to evaluate synergy-based control*, August 27, 2013.
73. Shriners Children's Hospital, *Musculoskeletal modeling and simulation for the clinical setting*, July 24, 2013.
74. International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, "*The number and choice of muscles impact the results of muscle synergy analyses*." (Salt Lake City, Utah) April 3-6, 2013.
75. Northeastern Illinois University, *Women in STEM: Exploring diverse paths to a satisfying career in science and health*, March 28, 2013.
76. IEEE Engineering in Medicine & Biology Conference, "*Don't drive with your parking brake on: Support and propulsion during crouch gait*." (San Diego, CA) August 28, 2012.

77. Aspen Ideas Festival, *CompactCath: User-inspired design for improving quality of life for individuals with urinary incontinence*, June 29, 2012.
78. Georgia Tech, *Dynamics of crouch gait in cerebral palsy: using musculoskeletal simulation to examine pathologic gait patterns*, April 3, 2012.
79. University of Nebraska at Lincoln, *Dynamics of crouch gait in cerebral palsy: using musculoskeletal simulation to examine pathologic gait patterns*, March 26, 2012.
80. Cornell University, *Dynamics of crouch gait in cerebral palsy: using musculoskeletal simulation to examine pathologic gait patterns*, March 14, 2012.
81. University of Illinois at Urbana-Champaign, *Dynamics of crouch gait in cerebral palsy: using musculoskeletal simulation to examine pathologic gait patterns*, February 15, 2012.
82. Dim Sum of Mechanical Engineering, Stanford University, *Walking, running, and sprinting to a PhD*, November 12, 2010.
83. American Academy of Cerebral Palsy, NIH Workshop, Washington DC, *Understanding and interpreting muscle potentials*, September 21, 2010.
84. Artificial walking for FES-assisted gait, NIH Workshop, *OpenSim Models of Crouch Gait in Children with Cerebral Palsy: Applications to FES-assisted Gait*, April 24, 2010.

University of Washington Seminars

1. UW Obstetrics & Gynecology Research Hour, *Leveraging wearables to support personalized care in reproductive endocrinology*, Oct 1, 2025.
2. UW Foundation Board, *CREATE: Making the world accessible through technology*, April 25, 2024.
3. UW Rehabilitation Medicine Grand Rounds, *Neuromechanics of Early Mobility: Challenges and opportunities to support play and exploration*, Nov 14, 2023.
4. Center for Statistics & the Social Sciences, *15 surgeons & 2 engineers: Adventures in “big” data and causal analyses to advance mobility*, Feb 22, 2023.
5. Neural Computation & Engineering Connection, *Optimizing gait for children with cerebral palsy*, January 25, 2019.
6. UW Bioengineering Seminar, *The Ultimate Machine: Engineering to improve movement after neurologic injury*, January 26, 2017.
7. UW Engineering 101, *The Ultimate Machine: Mechanical engineering to improve human performance*, November 9, 2016.
8. Seattle Aerospace Scholars, *The Ultimate Machine: Mechanical engineering to improve human performance*, July 13, 2016.
9. DO-IT Summer Program for Students with Disabilities, *Design! Accessible ideation and prototyping*, July 13, 2016.
10. Opportunities in Advanced Materials & Additive Manufacturing, *Orthotic Innovation: Optimizing fabrication, fit, and function with 3D printing*. May 14, 2016.
11. Rehabilitation Medicine Grand Rounds, *The Ultimate Machine: Strategies for understanding and improving movement after neurologic injury*. February 9, 2016.
12. UW Leadership Seminar, *Prototyping Life: One path through engineering and medicine*, February 5, 2016.
13. UW Graduate Student Seminar, *Preparing for Careers in Academia*, October 27, 2015.
14. UW Institute of Neural Engineering: *Synergies & Simulation: Understanding altered control after brain injury*, October 14, 2015.
15. UW ADVANCE, *Prototyping the NSF CAREER: Tips for preparing and submitting*, May 5, 2015.
16. UW Leadership Seminar, *Prototyping Life: One path through engineering and medicine*, January 9, 2015.

17. UW ENGR 101 Seminar, *The Ultimate Machine: Engineering to improve movement after brain injury*, November 5, 2014.
18. UW Undergraduate Research Seminar, *The Ultimate Machine: Improving movement for individuals with neurological disorders*, November 5, 2014.
19. UW Industrial & Systems Engineering, Graduate Seminar, *Quantifying the complexity of the ultimate machine*, November 4, 2014.
20. NSF Center for Sensorimotor Neural Engineering, Kavli BRAIN Coffee Hours, *Simulation and Synergies: Understanding altered neuromuscular control after brain injury*, October 29, 2014.
21. UW Accessibility Research Seminar, *Improving mobility for individuals with neurological disorders*, May 27, 2014.
22. UW Neuroscience in Rehabilitation, *Musculoskeletal modeling and simulation in neurorehabilitation*, May 20, 2014.
23. UW Biomechanics Seminar, *The Ultimate Machine: Biomechanics tools and techniques to enhance human movement*, April 29, 2014.
24. UW Human-Computer Interaction and Design, *Need-based engineering and design to improve human mobility*, April 2, 2014.
25. UW Robotics Colloquia, *The ultimate machine: understanding and improving movement disorders*, October 25, 2013.

Webinars

1. United Engineering Foundation, *Strategies for engaging in accessibility across campus*, Sept 4, 2019.
2. Association on Higher Education and Disability, *Introducing accessible technology in IT and engineering courses*, February 28, 2017.
https://www.ahead.org/learn/virtual-learning/at_webinars_spring-2017
3. National Alliance for Partnerships in Equity, *Making engineering welcoming and accessible for students with disabilities*, January 18, 2017
<https://www.napequity.org/professional-development/webinars/>
4. National Center for Simulation in Rehabilitation Research, *Synergy-based control in OpenSim*, January 27, 2016. Available at: <http://opensim.stanford.edu/support/webinars.html>
5. Society of Women Engineers, *Strategies to support individuals with disabilities pursuing careers in engineering*, two part series, December 2015 & January 2016. Available at: <http://advancelearning.swe.org/>
6. Equal Access to Software and Information, *Including accessibility & universal design content in engineering courses*, November 5, 2015.
7. National Center for Simulation in Rehabilitation in Research, *Dynamic simulations of pathologic gait: methods, results, and clinical applications*, July 29, 2011 and September 8, 2011. Available at: <http://opensim.stanford.edu/support/webinars.html>

Videos

1. Women in Data Science: Dismantling the normalcy fallacy with data science (2023)
2. NBC Learn: Engineering Your World (2019): nbclearn.com/engineering/cuecard/120759

Podcasts

1. Biomechanics on our Minds (2021) *Mobility, Accessibility, & Design*
2. Friends with Wheels (2023) *Interview with Laszlo Jajczay*
3. NIH Building up the Nerve (2024) *Securing Funding for Research*

STUDENTS & ADVISING

Postdoctoral Fellows

Sasha Portnova, PhD Mechanical Engineering, Northwestern University <i>Research Scientist – Meta Reality Labs</i>	2022-2024
Kimberly Ingraham, PhD Mechanical Engineering, University of Michigan <i>Assistant Professor – University of Washington</i>	2021-2022
Naser Mehrabi, PhD Mechanical Engineering, Waterloo University <i>Dynamics Controls Engineer at General Motors</i>	2017-2018
Heather Feldner, DPT, PhD Disability Studies, University of Illinois-Chicago <i>Associate Professor - University of Washington</i>	2016-2018
Ivana Milovanovic, PhD Biomedical Engineering, University of Belgrade (Serbia) <i>Applied Scientist at Microsoft</i>	2016-2017
Bilge Soran, PhD Computer Science, University of Washington <i>Research Scientist Meta AML/FAI</i>	2015-2016

Chaired Doctoral Degrees

1. Hwan Choi, Chair Fall 2012-Fall 2016
Dissertation: Evaluation of gait and muscle function with ankle foot orthoses
Postdoctoral Fellow: University of Michigan (2017-2018)
Assistant Professor: University of Central Florida (2018 – 2025)
Associate Professor: University of Central Florida (2025 – present)
Gatzert Child Welfare Fellowship 2016
2. Benjamin Shuman, Chair Fall 2013-Spring 2019
Dissertation: Evaluation of muscle synergies in individuals with cerebral palsy
Postdoctoral Fellow: Center for Limb Loss & Mobility (2019-2021)
Scientist, Jackson Foundation for the Advancement of Military Medicine (2021-present)
Affiliate Professor, Mechanical Engineering, University of Washington (2022-present)
Best Paper, Gait & Clinical Movement Analysis Society 2015
UW Institute of Neural Engineering Graduate Fellow 2015
3. Michael Rosenberg, Chair Fall 2015-Spring 2021
Dissertation: Modeling and predicting response to ankle exoskeletons
NSF Graduate Research Fellowship, 2017
Gatzert Child Welfare Fellowship 2021
Postdoctoral Fellow: Emory University (2021-2024)
Assistant Professor, University of Vermont, Biomedical Engineering (2025-present)
4. Momona Yamagami, Co-Chair with Sam Burden Fall 2016-Spring 2022
Dissertation: Modeling and enhancing human-machine interaction for accessibility and health
UW Institute of Neural Engineering Graduate Fellow 2017
Center for Neurotechnology Best Paper Award 2020
UW ECE Irene Peden Fellowship 2020
UW College of Engineering Student Research Award 2021

Postdoctoral Fellow: Meta + Jen Mankoff, UW CSE
Assistant Professor – Rice University Electrical Engineering – Fall 2023

5. Alyssa Spomer, Chair Fall 2017-Fall 2022
Dissertation: Evaluating multimodal biofeedback to target and improve motor control in cerebral palsy
Husky100 2020
NSF Graduate Research Fellowship 2019
TL1 Translational Research Training Fellowship 2019
Clinical Research Scientist – Gillette Children’s Specialty Healthcare (2022-Present)

6. Megan Ebers, Co-Chair with Nathan Kutz Fall 2018-Spring 2023
Dissertation: Machine learning for dynamical models of human movement
Passed qualifying exam, Fall 2020
Passed general exam, Fall 2021
NSF Graduate Research Fellowship 2019
Postdoctoral fellow – University of Washington Applied Math (2023-2024)
Data Scientist – Pacific Northwest National Labs (2024-Presents)

7. Nicole Zaino, Co-Chair with Heather Feldner Fall 2018- Spring 2023
Dissertation: Walking and Rolling: Evaluating Technology to Support Multimodal Mobility for Individuals with Disabilities
Passed qualifying exam, Fall 2019
Passed general exam, Fall 2021
NSF Graduate Research Fellowship 2018
U.S. Paralympics Team 2026
Crosscut Elite Training & LUCI (2023-Present)

8. Elijah Kuska, Chair Fall 2019- Spring 2023
Dissertation: In Silico Techniques to Improve Understanding of Gait in Cerebral Palsy
Passed qualifying exam, Fall 2020
Passed general exam, Fall 2021
TL1 Translational Research Training Program 2020
NSF Graduate Research Fellowship Honorable Mention 2019
Assistant Teaching Professor – Colorado School of Mines (2024-Present)

9. Charlotte R. (Caskey) DeVol, Chair Fall 2019-Spring 2024
Dissertation: Effects of Spinal Cord Stimulation on Neuromechanics of Gait for Children with Cerebral Palsy
Passed qualifying exam, Fall 2020
Passed general exam, Fall 2022
NSF Graduate Research Fellowship 2019
Dean’s Fellowship 2019
T32 Postdoctoral Fellow – University of Florida (2024-Present)

Current Doctoral Students

10. Mia Hoffman, Co-Chair with Heather Feldner Fall 2021-Spring 2026
Passed qualifying exam, Fall 2022
NSF Graduate Research Fellowship 2021
Presidential Postdoctoral Fellowship – Ohio State University 2026

11. Mackenzie Pitts, Co-Chair with Cristine Agresta Winter 2023-Present
Passed qualifying exam, Spring 2024

12. Ally Clarke Fall 2024-Present
Bucknell University
NSF Graduate Research Fellowship 2024
Dean's Fellowship 2024

13. Madeline McCreary Fall 2024-Present
University of Florida
Top Scholar 2024
NSF Graduate Research Fellowship 2025

Masters Theses

1. Jessica Zistatsis, Chair Fall 2016-Winter 2018
Design of a passive pediatric exoskeleton
Current position: Orthocare Innovations (2018-present)
Orthotic & Prosthetic Education and Research Foundation Fellowship
University of Washington, Husky 100

2. Brianna Goodwin, Chair Fall 2017-Spring 2018
Position after graduation: Mayo Clinic (2018-2020)
Current position: Microsoft (2020-present)
Ubiquitous sensing for constraint-induced movement therapy

Doctorate Physical Therapy

- Brandon (Tuan) Nguyen Fall 2016-Spring 2019
Undergraduate & DPT Research
HuskySTEPS: Quantifying gait for personalized orthotic tuning with a mobile app
UW Graduate Medal 2019

Masters Research

- Minnat Choudhury, ME, *Youth volleyball biomechanics* 2021-2022
Advisor: Sophia Ulman, Texas Scottish Rite Hospital
- Olivia Hurd, ME, *Inertial measurements of powered mobility* 2022
- Yusuke Mauro, ME, *Control system for support and stabilization* 2023-2023
- Anna Kropidowski, ME, *Smartwatch assessment of gait dynamics* 2025-Present

Current Undergraduate Students

1. Alisha Bose, HCDE (2024-2026) Clinician perceptions of SwitchKit – **Mary Gates**
2. David Green, CSE (2025-present) Real-time metabolic measurement
3. Spencer Hensley, CSE (2025-present) Assistive devices Down syndrome – **Mary Gates**
4. Katie Leija, ME (2025-present) Assessing motion in Down syndrome
5. Alyssa Miller, ME (2026-present) Cerebral palsy energetics

Prior Undergraduate Students

1. Katie Bokowy, ME (2023-2025)
SwitchKit development for early intervention
2. Victoria (Tori) Landrum, ME (2021-2024)
Spinal stimulation and exoskeleton use for children with cerebral palsy
 - **Mary Gates Scholar**

3. Grace O'Connor, ME (2022-2024)
Powered mobility devices for toddlers with disabilities
4. Avocet Yilai Nagle-Christensen, ME (2021-2023)
Powered mobility devices for toddlers with disabilities
 - **Mary Gates Scholar**
5. Miriam Roberts, ME (2022-2023)
Powered mobility devices for toddlers with disabilities
6. Zahra McKee, ME (2020 – 2022)
Parent and clinician perceptions of early mobility devices
 - **Mary Gates Scholar**
2. Noah Lukosky, ME (2020 – 2021)
Simulating impacts of reduced complexity of control on walking energetics
 - **Mary Gates Scholar**
3. Haydn Turn, BIOE Georgia Highlands College (Summer 2020 & Summer 2021)
Simulating impacts of stimulation for children with cerebral palsy
 - **Center for Neurotechnology Summer Fellow**
4. Mako Eyre, ME (2017 – 2020)
Motion analysis to evaluate ankle foot orthosis function
 - **UW Institute of Neuroengineering Undergraduate Fellowship**
7. Robin Yan, ME (2019 – 2020)
Fabrication and testing of passive dynamic walker for algorithm testing
 - **Center for Neurotechnology Summer Fellow**
8. Qilang (Damon) Ding, ME (2019 – 2020)
Fabrication and testing of passive dynamic walker for algorithm testing
 - **UW Institute of Neuroengineering Undergraduate Fellowship**
9. Preston Pan, BioE (2018 – 2019)
 - Wearable technology to monitor hand use during therapy
10. Ava Lakmazaheri, ME Olin College (Summer 2019), Exoskeleton simulations
 - **Center for Neurotechnology REU Fellowship**
 - **NSF Graduate Research Fellowship**
11. Katherine Chamblin UW Speech (Summer 2019), Language and early mobility
 - **Center for Neurotechnology REU Fellowship**
 - **Husky 100**
12. Eric Eckert, HCDE (2015 – 2018), AFO function and therapist perceptions
13. Joe Laler, ME (Summer 2018), Simulations of exoskeletons
 - **CSNE REU Fellowship**
14. Daniel Ballesteros, BioE (2017-2018), PlayGait – mechanics of a pediatric exoskeleton
15. Karley Benoff, ME (2016 – 2018), End-effector design for body-powered orthoses
 - **UW Institute of Neuroengineering Undergraduate Fellowship**
16. Jacqueline Li, HCDE (2016 – 2018), Provider perceptions of EMG recordings
17. Claire Mitchell. BIOE (2016 – 2018), Web interface for synergy analyses (BIOE Thesis)
 - **CSNE REU Fellowship**
18. Wing-Sum Law, ME Columbia University (2017-2018), Simulating orthoses for CP
 - **NSF Graduate Research Fellowship**
19. Larry (Lok Yiu) To, BioE (2015 – 2017), Muscle activity in daily life (BIOE Thesis)
20. Jessy Ha, Biophys (2016 – 2017), Body-powered orthoses for hemispherectomy
21. Michael MacConnell, ME (2014 – 2017) Fabrication of 3D-printed orthoses
 - **Mary Gates Scholar**
22. Bradley Wachter, ME (2015 – 2017) Orthoses for individuals with hemispherectomy
 - **Mary Gates Scholar**

- **Husky 100**
23. Morgan Ciliv (Summer 2016) Gesture control for rehabilitation
 24. Michael Wang (Summer 2016) Impacts of orthoses on muscle activations
 - **CSNE REV Fellowship**
 25. Brett Musolf (Summer 2016) Ankle foot orthosis design optimization
 - **CSNE REU Fellowship**
 26. Larissa Ho, CS&E (2015 – 2016) Depth camera to monitor hand function
 27. Bingbing Huang, CS&E (2015 – 2016) App-based system for infant motion
 28. Destiny Mora, EE (2015 – 2016) Normative muscle activity in functional tasks
 29. Neha Nuguru, HCDE (2015 – 2016) Using accelerometry to monitor hand use
 30. Alexandra (Sasha) Portnova, ME (2014 – 2016) 3D-printed orthosis for spinal cord injury
 - **Undergraduate Research on Capitol Hill**
 - **Mary Gates Scholar**
 - **UW Levinson Scholar**
 - **Northwest Biomechanics Symposium Best Poster**
 - **3rd Place US Precision Medicine Initiative Challenge**
 - **NSF Graduate Research Fellowship**
 31. Cassandra (C.J.) Smith, (2015 – 2016) Body-powered orthosis
 32. Claudia Covelli, ME (2015 – 2016) Hand use during daily life
 33. Rick Shibata, ME (2015 – 2016) Cartilage health in cerebral palsy
 34. Khalil Somani, HCDE (2015 – 2016) EMG data for patients and clinicians
 35. Yina Zhu, CS&E (2015 – 2016) Using depth cameras to monitor hand function
 36. Chris Space, ME (2015 – 2016) Cartilage health in amputees
 37. Lekha Anatuni, NSF REU Arizona State University (Summer 2015)
 - **CSNE REU Fellowship**
 38. Kevin Davis, NSF REU Brigham Young University (Summer 2014)
 - **CSNE REU Fellowship**
 39. Debra Diepenbrock, NSF REU Oklahoma Christian University (Summer 2014)
 - **CSNE REU Fellowship**
 40. Jonathan Ellington, BS CS&EE (2014): Long-term electromyography measurement
 41. Samuel Kinn, BS EE (2014 – 2015): Affordable system for monitoring muscle activity
 42. Nhat-Cuong Ly, BS CS&E (2014 – 2015): Depth camera to quantify hand function
 43. Albert Perez, Jr. NSF REU San Diego State University (Summer 2015)
 - **CSNE REU Fellowship**
 44. Mathew Yang, BS ME (2014-2015): Optimizing ankle foot orthosis design

TEACHING

Student Teaching Evaluations (0-5 scale)

Raw Scores

Course Number	Title	Quarter	Responses/Enrollment	Median rating of course (Item 1)	Median rating of content (Item 2)	Median rating instructor's contribution (Item 3)	Median rating instructor's effectiveness (Item 4)	Combined Items 1-4
ME230	Dynamics	Wi 2024	94/197	4.0	4.1	4.3	4.0	4.1
		Wi 2026	91/194	4.0	4	4.2	4.3	4.1
ENGR202	Foundations	Au 2021	23/28	4.6	4.3	4.8	4.7	4.6
		Au 2022	23/33	4.2	4.5	4.5	4.7	4.5
ME460	Kinematics	Au 2013	15/27	4.8	4.8	4.7	4.7	4.7
ME412/512	Biomechanics	Sp 2014	21/24	4.4	4.6	4.9	4.8	4.7
		Wi 2015	18/19	4.5	4.3	4.8	4.7	4.6
		Wi 2017	25/27	3.6	3.7	4.4	3.9	3.9
		Wi 2019	32/41	4.1	4.6	4.7	4.5	4.5
		Wi 2021	35/59	4.6	4.5	4.9	4.6	4.6
		Au 2024	20/46	4.0	4.1	4.3	4.3	4.2
ME414	Eng in Med	Au 2014	20/28	4.6	4.8	4.7	4.6	4.7
		Wi 2015	18/19	4.5	4.3	4.8	4.7	4.6
		Au 2015	34/51	4.0	3.8	4.4	4.0	4.1
		Wi 2016	26/37	4.0	3.9	4.2	4.0	4.0
		Spr 2017	17/36	4.6	4.2	4.0	4.1	4.2
ENGR497	HuskyADAPT	Au 2017	26/29	4.3	4.1	4.8	4.7	4.5
		Wi 2019	14/19	3.9	4.1	4.5	4.3	4.2
Average:				4.3	4.3	4.6	4.4	4.4

ADJUSTED scores to equate for class size, grading leniency, and required/elective courses

Course Number	Title	Quarter	Responses/Enrollment	Median rating of course (Item 1)	Median rating of content (Item 2)	Median rating instructor's contribution (Item 3)	Median rating instructor's effectiveness (Item 4)	Combined Items 1-4
ME230	Dynamics	Wi 2024	94/197	4.5	4.5	4.7	4.5	4.5
		Wi 2026	91/194	4.5	4.5	4.6	4.7	4.6
ENGR202	Foundations	Au 2021	23/28	4.0	3.7	4.3	4.1	4.1
		Au 2022	23/33	3.7	4.1	4.1	4.2	4.0
ME460	Kinematics	Au 2013	15/27	4.6	4.6	4.6	4.5	4.6
ME412/512	Biomechanics	Sp 2014	21/24	4.4	4.6	4.9	4.8	4.7
		Wi 2015	18/19	4.6	4.4	4.9	4.8	4.7
		Wi 2017	25/27	3.8	3.9	4.6	4.1	4.1
		Wi 2019	32/41	4.4	4.7	4.9	4.8	4.7
		Wi 2021	35/59	4.8	4.6	4.9	4.8	4.8
		Au 2024	20/46	4.1	4.2	4.5	4.5	4.3
ME414	Eng in Med	Au 2014	20/28	4.3	4.5	4.5	4.3	4.4
		Wi 2015	18/19	4.6	4.4	4.9	4.8	4.7
		Au 2015	34/51	4.0	3.7	4.4	4.0	4.0
		Wi 2016	26/37	3.8	3.8	4.1	3.9	3.9
		Spr 2017	17/36	4.4	4.1	3.9	4.0	4.1
ENGR497	HuskyADAPT	Au 2017	26/29	3.9	3.8	4.5	4.3	4.1
		Wi 2019	14/19	3.8	4.0	4.4	4.2	4.0
Average:				4.2	4.2	4.5	4.4	4.4

List of all undergraduate and graduate courses taught

1. ME520: Mechanical Engineering Seminar, 1 credit
Seminar for ME MS and PhD students with speakers from academia, industry, and government to share research and career experience.
 - Winter 2025: 66 students
 - Spring 2025: 76 students
 - Fall 2025: 69 students
 - Winter 2026: 62 students
2. ME230: Dynamics (sophomore required course), 4 credits
This course bridges physics to engineering for incoming student in ME, Aero/Astro, and other engineering departments with a focus on planar kinematics and kinetics.
 - Winter 2026: 194 students
 - Winter 2024: 197 students
3. ME460: Kinematics and Linkage Design (senior elective), 3 credits
This course introduces students to kinematic principles of mechanism synthesis and analysis including analytical, graphical, and computational techniques.
 - Autumn 2013: 27 students (26 ME, 1 Physics)
4. ME599: Human Engineering, 1 credit
Multidisciplinary weekly reading group and laboratory for students interested in the diagnosis, evaluation, and treatment of neurological disorders. Each quarter a theme is selected to guide reading and laboratory activities.
 - Autumn 2013: 8 students (4 ME, 2 Rehab Med, 2 BioE)
Gait pathologies in cerebral palsy
 - Winter 2014: 12 students (7 ME, 3 BioE, 1 Neurobio, 1 Visiting Scholar)
Musculoskeletal impairments after brain injury
 - Spring 2014: 11 students (6 ME, 3 BioE, 1 Neurobio, 1 Rehab Med)
Technologies for evaluating human movement outside the lab
 - Winter 2016: 11 students (8 ME, 2 EE, 1 Rehab Med)
Fundamentals of Neuromechanics
 - Winter 2017: 16 students (6 ME, 6 EE, 4 Rehab Med)
Motor Control & Learning
5. ME412/512: Biomechanics of Movement, 3 credits
Course for senior undergraduates and beginning graduate students on the dynamics and control of movement including the experimental and computational tools to evaluate human movement.
 - Spring 2014: 24 students (23 ME, 1 MSE)
 - Winter 2015: 18 students (15 ME, 1 EE, 1 Rehab Med, 1 Biochem)
 - Winter 2017: 27 students (26 ME, 1 BIOE)
 - Winter 2019: 40 students (37 ME, 1 BIOE, 1 EE, 1 Rehab Med)
 - Winter 2021: 59 students (55 ME, 3 Speech & Hearing, 1 Rehab Med)
 - Autumn 2024: 46 students (44, ME, 1 MSE, 1 AA)
6. ME414 & ME416 (+ME495): Engineering in Health, 7 credits
Co-teaching design course for seniors and graduate students across the college of engineering. I have brought to this course my experience working in hospitals and creating a medical device start-up. I have been the leader in creating the curriculum including creating the syllabi and assignments to guide the students through the design process from need-finding to prototyping to user testing.
 - 2014-2015: 50 students Fall, 16 students Winter/Spring
 - 2015-2016: 65 students Fall, 37 students Winter/Spring
7. ENGR297/497 HuskyADAPT: Accessible Design & Play Technology, 2 credits/quarter

Two-quarter design course for undergraduate and graduate students that matches multidisciplinary teams of students with local need experts – local individuals with disabilities and the communities that support them. These design challenges and course materials give students a hands-on experience to learn about accessibility, inclusive design, and the human-centered design process.

- *Fall/Winter 2017-2018: 29 students (ME, HCDE, BIOE, EE, & Ind Design)*
 - *Winter/Spring 2019: 20 students (ME, HCDE, EE, Psychology)*
8. ENGR202: Mechanical Engineering Foundations, 2 credits
Course designed for incoming sophomores in mechanical engineering to build community, develop professional skills, and understand the mechanical engineering curriculum. This class was introduced as UW changed the engineering admissions process as a critical building block to support students as they enter the major.
- *2021: 28 students + 5 Senior Peer Mentors (ME)*
 - *2022: 33 students + 6 Senior Peer Mentors (ME)*
9. CSE590W: CREATE Accessible Technology Seminar, 1 credit
Multidisciplinary seminar hosted as part of the Center for Research & Education on Accessible Technology & Experiences for students to learn about accessibility research, disability studies, and inclusive design. Fall quarter is a book club, Winter quarter is seminars by members of the CREATE community, and Spring quarter is a journal club. Students can audit or take for credit.
- *Fall 2021: 14 students (CSE, ECE, ME, HCDE, iSchool)*
 - *Winter 2022: 12 students (CSE, ME, HCDE, Communications)*

Workshops

1. American Society of Biomechanics “Obtaining NIH funding for Biomechanics” August 8, 2023.
2. American Society of Biomechanics “Personalized Neurorehabilitation: Can patient-specific measures of motor learning inform intervention?” (virtual) August 10, 2021.
3. American Academy of Cerebral Palsy & Developmental Medicine, “Muscle Synergies: From neuroscience to the clinic,” (Anaheim, CA) September 20, 2019.
4. American Society for Engineering Education, “Strategies for making engineering welcoming and accessible for students with disabilities,” (New Orleans, LA) June 26, 2016.
5. IEEE Smart Tech Metro Area Workshop, “Dynamics of human movement: an introduction to OpenSim, an open-source software platform for musculoskeletal modeling and simulation,” (Seattle, WA) November 1, 2013.
6. International Conference on Rehabilitation Robotics, “Simulation-based design and evaluation for rehabilitation research with OpenSim,” (Seattle, WA) June 26, 2013.
7. American Academy of Cerebral Palsy and Developmental Medicine, “Instructional course: Simulation of human movement and gait pathology,” (Toronto, Canada) September 12, 2012.

Other teaching contributions and training:

1. Training in Grantsmanship in Rehabilitation Research, Mentor, 2020-present
2. BIOE520: Orthopaedic Biomechanics, Guest Lecture, Winter 2014, 2016, & 2018
3. ASEE National Effective Teaching Institute, January 2016
4. BIOE498C: Neuroengineering, Guest Lecture, Winter 2016
5. ENGR498: Preparing for Careers in Academia, Guest Speaker (2014, 2015)
6. Clinical Gait Analysis: A focus on interpretation: *Guest faculty for workshop hosted by Gillette Children's Specialty Healthcare, Connecticut Children's Medical Center, and University Hospital Pellenberg-Belgium for physicians, therapists, and engineers, May 13-15, 2015 & June 30-July 2, 2016.*

7. Seattle Children's Hospital, Rehabilitation Medicine Fellow Training, Winter 2014, 2018

Design Projects

Senior Design Projects

****Outside Engineering Innovations in Medicine & HuskyADAPT Club Design Teams**

1. Gabriel Hendricksen, Regan Logam, Jocelyn Reyes, Nadia Sanchez (2023 ME Capstone)
Joystick modification of a ride-on car for children with disabilities
2. Jordan Huan, Veronika Pon, Noah Shalaby (2023 ME Capstone) Adaptable switch kit for early intervention therapy for children with disabilities
3. Cameron Ford, Joshua Geiser, Aneesha Singh, Cameron Wenman, Emma Yip (2022 ME-BIOE Capstone) Physical computing and collaborative play for siblings with disabilities
4. Claire Mitchell (2017-2018 – Bioengineering Capstone)
On-line platform for clinical interpretation of muscle synergies
5. Larry Lok Yiu To (2016-2017 – Bioengineering Capstone)
Evaluation of muscle activity in daily life with wearable sensing
6. Andrew Barrett, Simon Lau, John Elliot Chaffee, Rachel Murphy (Spring 2014)
Ankle foot orthoses fabrication with 3D printing and scanning
7. Nicole Hastings, Jack Harrison, Kenn Peterson, Derek Miller (Spring 2014)
Open-source wrist-driven orthosis for spinal cord injury

SERVICE

Departmental service

Associate Chair of Research, 2025-present

HuskyADAPT Faculty Mentor, 2015-present

Faculty Search Committees, 2014, 2017, 2018, 2020, 2022, 2023, 2024

Biomechanics Faculty Committee & Options Management, 2013-present

Diversity & Outreach Committee, 2015-2018

Engineering Innovations in Health, Steering Committee, 2014-2019

Qualifying Exam Reform Committee, 2017

Systems & Dynamics (S&D) Group, 2013-present

University Service

Co-Director AMP Lab – Shared research center between engineering and rehabilitation medicine focused on amplifying human and robotic movement and performance.

<https://depts.washington.edu/amplify/>

Associate Director CREATE – Multidisciplinary center focused on accessible technology and design, with education, research, and outreach experiences and events, as well as industry partners to accelerate translation.

<https://create.uw.edu/>

HuskyADAPT – Faculty mentor for student organization focused on accessible design that hosts annual design teams working on projects proposed by local individuals with disabilities, trains and adapts toys for local families, and hosts outreach events to teach students, teachers, clinicians, and community members about accessible design.

<https://depts.washington.edu/adaptuw/>

AccessEngineering: NSF-supported (2015-2018) center to support and encourage students with disabilities to pursue careers in engineering. Website with over 100 articles and resources to support faculty and students to create an inclusive engineering environment, as well as communities of practice for students and professional engineers with disabilities

<https://www.washington.edu/doi/project/accessengineering>

College of Engineering:

- Strategic Planning: Research (2020)

Professional service

Societies & Conference Organization

American Academy of Cerebral Palsy and Developmental Medicine (Member since: 2009)

American Society of Biomechanics (Member since: 2009)

Symposium Organizer, 2021

Northwest Symposium Host, 2015

World Congress of Biomechanics Session Organizer, 2014 & 2022

Gait & Clinical Movement Analysis Society (Member: 2009-2017)

Education Committee, 2014– 2016

International Society of Electrophysiology & Kinesiology

Scientific Advisory Board, 2016

Symposium Organizer, 2016

NSF-DARE Transformative Opportunities for Computational Modeling for Neurorehabilitation

2022-2023 Co-PI & Organizer | Francisco Valero-Cuevas, James Finley, Amy Orsborn

Society of Women Engineers (Member since: 2003)

Women in Academia Committee, 2012 – 2018

Graduate Student Representative 2008-2010

Regional Collegiate Representative, 2007

Collegiate President, 2006

Tau Beta Pi: Lifetime Member, 2007

Advisory Boards

Seattle Children's Hospital, Cerebral Palsy Executive Committee (2018-present)

Training in Grantsmanship in Rehabilitation Research (2020-present, Co-PI 2023-present)

NIH Mobilize Center External Advisory Committee (2021-present)

Stanford Wearable Technology Symposium 2021

Center for Disease Control, Committee for Cerebral Palsy Common Data Elements, 2015-2016

Grant Review Panels

National Institutes of Health

Musculoskeletal Rehabilitation Science Study Section Member (2022-present)

Panelist (2016, 2019)

National Institute on Disability, Independent Living, & Rehabilitation Research (2017, 2021)

National Science Foundation, Panelist (2014-2018)

UW Royalty Research Fund (2014-2015, 2026)

UW Harlan Hahn Disability Studies Grant Program (2026)

Ireland Health Research Board, International Reviewer (2013)

Editorial Boards

Archives of Physical Medicine & Rehabilitation (2021-2023)

Journal Reviews

Reviews completed for: Annals of Biomedical Engineering, Computer Methods in Biomechanics and Biomedical Engineering, Frontiers in Human Neuroscience, Gait & Posture, Human-Computer Interaction, Human Movement Science, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Neural Systems and Rehabilitation Engineering, IEEE Advanced Robotics, International Journal of Robotics Research, Journal of Biomechanical Engineering, Journal of Biomechanics, Journal of NeuroEngineering and Rehabilitation, Journal

of Neuroscience, Journal of Pediatric Rehabilitation, Journal of Rehabilitation Research & Development, Medicine & Science in Sports & Exercise, Motor Behavior, Muscle & Nerve Physical & Occupational Therapy in Pediatrics, PLOS ONE, Scientific Reports

Conference Reviews

American Society of Biomechanics (2016-2023)
Gait & Clinical Movement Analysis Society (2012-2015)
IEEE BioRobotics (2014, 2018)
Biomedical Engineering Society (2014)
ASME Dynamics Systems & Controls (2014)
Northwest American Biomechanics Symposium (2014-2023)
World Congress of Biomechanics (2022)

Outreach & Tours

UW Engineering Discovery Days (2014-2019, 2024)
DO-IT Summer Scholars Design Experience & Lab Tours (2015-present)
NBC Learn: Engineering Your World (2019): nbclearn.com/engineering/cuecard/120759
STEM Upward Bound Summer Academy (2015, 2021)
Seattle MESA (Mathematics Engineering Science Achievement) Day (2016-2019)
Seattle Expanding Your Horizons (2017-2018)
Taskar Holiday Toy Hack (2016-2019)
Techbridge Elementary Outreach (2016)
Research Experience for Teachers (Summer 2015-2017)
Handathon: 24-hour hackathon to improve the design of 3D-printed prosthetics (2015)