Gregory S. Sawicki, PhD Curriculum Vitae 1/30/2023

Georgia Institute of Technology
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Current Positions

Associate Professor *08/1/2017 – Present**
Georgia Institute of Technology, School of Mechanical Engineering[3/4] and
School of Biological Sciences[1/4], Atlanta, GA.

Associate Professor -- Program Faculty *05/1/2018 – Present**
Georgia Institute of Technology and Emory University, Dept. of Biomedical Engineering, Atlanta, GA.

Director and Founder *07/2010 – Present**
Human Physiology of Wearable Robotics (PoWeR) Laboratory,
Georgia Institute of Technology, School of Mechanical Engineering, Atlanta, GA

Senior Research Scientist *01/2022 – Present**
Institute for Human and Machine Cognition (IHMC), Pensacola, FL

Past Positions

Visiting Sabbatical Scholar *01/2016 – 07/2016*
Georgia Institute of Technology, School of Applied Physiology, Atlanta, GA.

Associate Professor and University Faculty Scholar '13 *08/2015 – 07/2017*
North Carolina State University and University of North Carolina at Chapel Hill, Joint Dept. of Biomedical Engineering, Raleigh, NC.

Associate Director, Rehabilitation Engineering Core *08//2015 – 07/2017*
North Carolina State University and University of North Carolina at Chapel Hill, Joint Dept. of Biomedical Engineering, Raleigh, NC.

Adjunct Associate Professor *01/2010 – 07/2017*
University of North Carolina at Chapel Hill, School of Medicine, Dept. of Allied Health Sciences, Chapel Hill, NC.

Associate Faculty Member *03/2010 – 07/2017*
North Carolina State University, Dept. of Mechanical and Aerospace Engineering, Raleigh, NC.

Assistant Professor *08/2009 – 08/2015*
North Carolina State University and University of North Carolina at Chapel Hill, Joint Dept. of Biomedical Engineering, Raleigh, NC.

Research Engineer *05/1999 – 08/1999*
The Hospital for Special Surgery, New York, NY.

Education/Training

Post-Doc, Integrative Biology- *10/2007 – 7/2009*
Brown University, Dept. of Ecology and Evolutionary Biology, The Roberts Lab, Providence, RI.
*NIH Sponsored Trainee (F32 - Kirschstein)

Ph.D., Neuromechanics[1,2]- *08/2002 – 09/2007*
University of Michigan-Ann Arbor, Div. of Kinesiology[1] and Dept. of Mechanical Engineering[2], Ann Arbor, MI.
*Dissertation Title: Mechanics and energetics of walking with powered ankle exoskeletons

Graduate Certificate, Complex Systems- *08/2003 – 12/2006*
University of Michigan-Ann Arbor, Center for the Study of Complex Systems, Ann Arbor, MI.

Graduate Summer Fellow, Complex Systems - *06/2004*
Santa Fe Institute, Santa Fe, NM.

M.S., Mechanical and Aeronautical Engineering - *09/1999 – 06/2001*
University of California at Davis, School of Mechanical and Aeronautical Engineering, Davis, CA.

B.S. in Mechanical Engineering - *08/1995 – 05/1999*
Cornell University, Sibley School of Mechanical Engineering, Ithaca, NY
*Recognition in Biological Engineering (Bio-Option Program)
*Concentration in Dynamic Systems

Journal Papers (Peer-Reviewed)

Google Scholar Citations: Total Citations=6941; h-index=36; i-10 index=59

***73.** Leestma JK, Golyski PR, Smith CR, **Sawicki GS**, Young AJ, (In Press) "Linking whole-body angular momentum and step placement during perturbed walking". *Journal of Experimental Biology.*
*Early Career Researcher (ECR) spotlight interview selection.

***72.** Beck ON, Shepherd MK, Rastogi R, Martino G, Ting LH, **Sawicki GS**, (In Press) "Exoskeletons need to react faster than physiological responses to improve standing balance". *Sci. Robot.* Feb 15. (2023).
*Cover article

71. Boyer KA, …. **Sawicki GS**, …. Kent JA, (In Press) "Age-related changes in gait biomechanics: Impact on the metabolic cost of walking: Report from a National Institute on Aging workshop". *Exp. Gerontol.* (2023).

70. Williamson JL, Lichtwark GA, **Sawicki GS**, Dick TJM, (In Press) "The influence of elastic ankle exoskeletons on lower limb mechanical energetics during unexpected perturbations". *R. Soc. Open Sci.* (2023).

69. Beck ON, Schroeder JN, Trejo LH, Franz JR, **Sawicki GS**, "Shorter muscle fascicle operating lengths increase the metabolic cost of cyclic force production". *J Appl Physiol.* (1985). Jul 14; 133 (3), 524-533 (2022).

68. Pan YT, Kang I, Joh J, Kim P, Herrin KR, **Sawicki GS,** Kesar TM, Young AJ, "Effects of bilateral assistance for hemiparetic gait post-stroke using a powered hip exoskeleton". *Annals of Biomedical Engineering.* 1-12 (2022).

67. Rabani S, Mizrachi S, **Sawicki GS**, Riemer R, “Parametric equations to study and predict lower-limb joint kinematics and kinetics during human walking and slow running on slopes”. *PLoS One.*17 (8) e0269061

66. Shafer B, Young AJ, **Sawicki GS** “Emulator-based optimization of a semi-active hip exoskeleton concept: Sweeping impedance across walking speeds”*. IEEE Trans Biomed Eng.* Jul 5; 70 (1), 271-282 (2022).

***65.** Rubenson J, **Sawicki GS**, “Running birds reveal secrets for legged robot design”. *Sci Robot.* 7 (64) eabo2147 Mar 16; (2022).
*Invited Perspective

64. Shepherd MK, Molinaro DD, **Sawicki GS**, Young AJ, “Deep learning enables exoboot control to augment variable-speed walking”*. IEEE Robotics and Automation Letters (RA-L)* 7 (2), 3571-3577 (2022).

63. Golyski PR, **Sawicki GS** “Which lower-limb joints compensate for destabilizing energy during walking in humans?". *J R Soc Interface.* 19 (191) (2022).

62. Golyski PR, Vazquez E, Leestma JK, **Sawicki GS**, “Onset timing of treadmill belt perturbations influences stability during walking”. *J Biomech.* 130, 110800 (2022).

61. Krupenevich RL, Beck ON, **Sawicki GS**, Franz JR, “Reduced Achilles tendon stiffness disrupts calf muscle neuromechanics in elderly gait”. *Gerontology.* 68 (3), 241-251 (2022).

60. McCain EM, Berno M, Libera T, Lewek M, **Sawicki GS**, Saul K, “Reduced joint motion supersedes asymmetry in explaining increased metabolic demand during walking with mechanical restriction”*. J Biomech.* 126, 110621 (2021).

***59.** Riemer R, Nuckols RW, **Sawicki GS**, “Extracting electricity with exosuit braking”. *Science.* May 28; 372(6545):909-911 (2021).
*Invited Perspective

58. Rosa L, Zia J, Inan O, **Sawicki GS**, “Machine learning to extract muscle fascicle length changes from dynamic ultrasound images in real-time". *PLoS One.* May 26; 16 (5), e0246611 (2021).

57. Shafer B, Philius S, Nuckols RW, Young AJ, **Sawicki GS**, “Neuromechanics and energetics of walking with an ankle exoskeleton using neuromuscular-model based control: a parameter study”*. Front Bioeng Biotechnol - Bionics and Biomimetics.* 9, 210 (2021).

56. Dick TJM, Clemente CJ, Punith LK, **Sawicki GS**, “Series elasticity facilitates safe soleus muscle-tendon shock absorption during perturbed human hopping”*. Proc Biol Sci.* Mar31; 288 (1947): 20210201 (2021).

55. Sartori M, **Sawicki GS**, “Closing the loop between wearable technology and human biology: A new paradigm for steering neuromuscular form and function”. *Prog. Biomed. Eng.* 3 (2) 023001 (2021).

54. McCain EM, Libera T, Berno M, **Sawicki GS**, Saul K, Lewek M “Isolating the energetic and mechanical consequences of imposed reductions in ankle and knee flexion during gait”*. J Neuroeng Rehabil.* Feb 1;8(1):21 (2021).

53. Beck ON, Golyski PR, **Sawicki GS,** “Adding carbon fiber to shoe soles may not improve running economy: a muscle-level explanation”*. Sci Rep.* Oct 13; 10(1):17154 (2020).

52. Nuckols RW, Takahashi KZ, Farris DJ, Mizrachi S, Riemer R, **Sawicki GS**, "Mechanics and energetics of walking and running up and downhill: A joint-level perspective to guide design of lower-limb exoskeletons". *PloS One.* Aug 28; 15(8):e0231996 (2020).

51. Beck ON, Gosyne J, Franz JR, **Sawicki GS,** "Cyclically producing the same average muscle-tendon force with a smaller duty increases metabolic rate". *Proc Biol Sci.* Aug 26; 287(1933):20200431 (2020).

50. Nuckols RW, **Sawicki GS**, "Impact of elastic ankle exoskeleton stiffness on neuromechanics and energetics of human walking across multiple speeds". *J Neuroeng Rehabil*. Jun 15; 17(1):75 (2020).

49. Krupenevich RL, Clark WH, **Sawicki GS,** Franz JR "Older adults overcome reduced triceps surae structural stiffness to preserve ankle joint quasi-stiffness during walking". *J Appl Biomech.* Jun 5; 1-8 (2020).

48. Nuckols RW, Dick TJ, Beck ON, **Sawicki GS**, "Ultrasound imaging links soleus muscle neuromechanics and energetics during human walking with elastic ankle exoskeletons". *Sci Rep.* Feb 27; 10(1):3604 (2020).

47. Sawicki GS, Beck ON, Kang I, Young AJ "The exoskeleton expansion: Improving walking and running economy". *J Neuroeng Rehabil.* Feb 19; 17(1):25 (2020).

46. Dick TJM, Punith LK, **Sawicki GS** "Humans falling in holes: Adaptations in lower-limb joint mechanics in response to a rapid change in substrate height during human hopping". *J R Soc Interface.* Oct 31; 16(159):20190292 (2019).

45. Beck ON, Punith LK, Nuckols RW, **Sawicki GS** "Exoskeletons improve locomotion economy by reducing active muscle volume." *Exerc Sport Sci Rev*. Oct; 47(4): 237-245 (2019).

44. Abbott E, Newzek T, Schmitt DO, **Sawicki GS** "Hurry up and get out of the way!: Exploring the limits of muscle-based latch systems for power amplification*". Integr Comp Biol.* Dec 1; 59(6):1546-1558 (2019).

43. McCain E, Giest T, Dick TJ, Nuckols R, Lewek MD, **Sawicki GS** "Mechanics and energetics of post-stroke walking aided by a powered ankle exoskeleton with speed-adaptive myoelectric control." *Journal Neuroeng Rehabil.* May 15; 16(1):57 (2019).

42. Lewek MD, **Sawicki GS** "Trailing limb angle is a surrogate for propulsive limb forces during walking post-stroke." *Clin Biomech.* May 9; 67:115-118 (2019).

41. Lewis MJ, Williams KD, Langley T, Jarvis LM, **Sawicki GS**, Olby NJ "Development of a novel gait analysis tool measuring center of pressure for evaluation of canine chronic thoracolumbar spinal cord injury". *J Neurotrauma.* Nov 1; 36(21):3018-3025 (2019).

40. Blau SR, Davis LM, Gorney AM, Dohse CS, Williams KD, Lim JH, Pfitzner WG, Laber E, **Sawicki GS**, Olby NJ "Quantifying center of pressure variability in chondrodystrophoid dogs". *Vet J.* Aug; 226:26-31 Aug; 226:26-31 (2017).

***39.**Robertson BD, Vadakkeveedu S, **Sawicki GS**, "A benchtop biorobotic platform for in vitro observation of muscle-tendon dynamics with parallel mechanical assistance from an elastic exoskeleton". *J Biomech.* May 24; 57:8-17 (2017).

*This article was selected as the 2016 American Society of Biomechanics Journal of Biomechanics Award winner.

38. Rosario MV, Sutton GP, Patek SN, **Sawicki GS**, “Muscle-spring dynamics in time-limited, elastic movements”. *Proc Biol Sci.* Sep 14; 283(1838) (2016).

37. Danos N, Holt N, **Sawicki GS,** Azizi E, “Modeling age-related changes in muscle tendon dynamics during cyclical contractions in the rat gastrocnemius muscle”. *J Appl Physiol (1985).* Oct 1; 124(4): 1004-1012 Epub Aug 4 (2016).

36. Takahashi KZ, Gross MT, van Werkhoven H, Piazza SJ, **Sawicki GS**, “Adding stiffness to the foot modulates soleus force-velocity behaviour during human walking”. *Sci Rep.* Jul 15; 6:29870 (2016).

35. Sawicki GS, Khan N, “A simple model to estimate plantarflexor muscle-tendon dynamics during walking with elastic ankle exoskeletons”. *IEEE Trans Biomed Eng.* May; 63(5):914-923. Epub 2015 Oct 15, (2016).
*Invited submission to special issue.

34. Huang H, Crouch DL, Liu M, **Sawicki GS**, Wang D, "A cyber expert system for auto-tuning powered prosthesis impedance control parameters". *Ann Biomed Eng.* May; 44(5): 1613-24. Epub 2015 Sep 25. (2016).

33. Sawicki GS, Sheppard P, Roberts TJ, "Power amplification in an isolated muscle-tendon unit is load dependent". *J Exp Biol.* Nov; 218(Pt 22):3700-9. (2015).

32. Robertson BD, **Sawicki GS**, "Unconstrained muscle-tendon workloops indicate resonance tuning as a mechanism for elastic limb behavior during terrestrial locomotion". *Proc Natl Acad Sci U S A*. Oct 27; 112(43):E5891-8. (2015).

31. Sawicki GS, Robertson BD, Azizi E, Roberts TJ, “Timing matters: Tuning the mechanics of a muscle-tendon unit by adjusting simulation phase during cyclic contractions”. *J Exp Biol*. Oct; 218 (Pt 19):3150-9. (2015).

30. Collins SH, Wiggin MB, **Sawicki GS**, “Reducing the energy cost of human walking using an unpowered exoskeleton”. *Nature.* Jun 11; 522(7555):212-5. (2015).

29. Takahashi KZ, Lewek MD, **Sawicki GS**, "A neuromechanics-based powered ankle exoskeleton to assist walking post-stroke: A feasibility study". *J Neuroeng Rehabil.* Feb 25; 12:23. (2015).

28. Farris DJ, Hampton AS, Lewek MD, **Sawicki GS**, "Revisiting the mechanics and energetics of walking in individuals with chronic hemiparesis following stroke: From individual limbs to lower-limb joints". *J Neuroeng Rehabil.* Feb 27; 12(1): 24 (2015).

27. Mahon C, Farris DJ, **Sawicki GS**, Lewek MD, "Individual limb mechanical analysis of gait following stroke". *J Biomech.* Apr 13; 48(6):984-9. (2015).

***26.** Zelik K, Takahashi KZ, **Sawicki GS**, "Six degree-of-freedom analysis of hip, knee, ankle and foot provides updated understanding of biomechanical work during human walking". *J Exp Biol*. Mar; 218(Pt 6): 876-86. (2015).
*This article was featured in the column 'Inside JEB'.

25. Farris DJ, Hicks J, Delp S, Sawicki GS, "Musculoskeletal modelling deconstructs the paradoxical effects of elastic ankle exoskeletons on plantar-flexor mechanics and energetics during hopping". *J Exp Biol*. Nov 15; 217(Pt 22) 4018-28. (2014).

24. Robertson BD, Farris DJ, **Sawicki GS**, "More is not always better: Modeling the effects of elastic exoskeleton compliance on underlying ankle muscle-tendon dynamics". *Bioinspir Biomim*. Nov 24; 9(4): 046018. (2014).

23. Robertson BD, **Sawicki GS**, “Exploiting elasticity: Modeling the influence of neural control on the mechanics and energetics of ankle muscle-tendons during human hopping”. *J Theor Biol.* Mar 16. [Epub ahead of print] (2014).

22. Shamaei K, **Sawicki GS**, Dollar A, "Estimation of quasi-stiffness of the human hip in the stance phase of walking". *PLoS One*. 8(12): e81841. Epub Dec 9. (2013).

21. Matta P, Myers J, **Sawicki GS**, “The influence of available reaction time on ball-player impact probability in youth baseball”. *Sports Health.* Mar;7(2):154-60. 2015. Epub (2013)

20. Farris DJ, Robertson, BD, **Sawicki GS**, “Passive elastic exoskeletons reduce soleus muscle force but not work in human hopping”. *J Appl Physiol.* Epub Jun 20. (2013).

19. Shamaei K, **Sawicki GS**, Dollar A, "Estimation of quasi-stiffness and propulsive work of the human ankle in the stance phase of walking". *PLoS One.* 8(3): e59935. Epub Mar 21. (2013).

18. Shamaei K, **Sawicki GS**, Dollar A, "Estimation of quasi-stiffness of the human knee in the stance phase of walking". *PLoS One.* 8(3): e59993. Epub Mar 22. (2013).

17. Farris DJ, **Sawicki GS**, “Linking the mechanics and energetics of human hopping with passive-elastic ankle exoskeletons”. *J Appl Physiol.* Dec 15; 113(12): 1862-72. Epub Oct 11. (2012).

16. Richards CR, **Sawicki GS**, “Elastic recoil can either amplify or attenuate muscle-tendon power, depending on inertial versus fluid dynamic loading”. *J Theor Biol.* Aug 8; 313C: 68-78. (2012).

15. Wutzke C, **Sawicki GS**, Lewek M, “The influence of a unilateral fixed ankle on metabolic and mechanical demands during walking in unimpaired young adults”. *J Biomech.* Sept 21; 45(14): 2405-10. Epub Jul 26. (2012).

14. Farris D, **Sawicki GS** “Human medial gastrocnemius force-velocity behavior shifts with locomotion speed and gait”. *Proc Natl Acad of Sci USA.* Jan 17; 109(3):977-82. Epub Jan 4. (2012).

13. Farris D, **Sawicki GS**, “The mechanics and energetics of human walking and running: a joint-level perspective”. *J R Soc Interface.* Jan 7; 9(66): 110-8. Epub 2011 May 25. (2012).

12. Sawicki GS, Lewis CL, Ferris DP, “It pays to have a spring in your step”. *Exerc Sport Sci Rev*. 37(3):130-8 (2009).

11. Sawicki GS, Ferris DP, “A pneumatically powered knee-ankle-foot orthosis (KAFO) with myoelectric activation and inhibition”. *J Neuroeng Rehabil*. 6(1):23 (2009).

10. Sawicki GS, Ferris DP, “Mechanics and energetics of incline walking with robotic ankle exoskeletons”. *J Exp Biol.* 212:32-41 (2009).

9. Sawicki GS, Ferris DP, “Powered exoskeletons reveal the metabolic cost of ankle plantar flexor work during level walking with increasing step length”. *J Exp Biol.* 212:21-31 (2009).

***8. Sawicki GS**, Ferris DP, “Mechanics and energetics of level walking with powered ankle exoskeletons”. *J Exp Biol.* 211:1402-1413 (2008).
*This article was highlighted in the column ‘Inside JEB’.

7. Ferris DP, **Sawicki GS**, Daley, MA, “A physiologist’s perspective on robotic exoskeletons for human locomotion”. *International Journal of Humanoid Robotics.* 4:507-528 (2007).

6. Domingo A, **Sawicki GS**, Ferris DP, “Kinematics and muscle activity of individuals with incomplete spinal cord injury during treadmill stepping with and without manual assistance”. *J Neuroengineering Rehabil.* 4:32 (2007).

5. **Sawicki GS**, Domingo A, Ferris DP, “The effects of powered ankle-foot orthoses on joint kinematics and muscle activation during walking in individuals with incomplete spinal cord injury”. *J Neuroengineering Rehabil.* 3:3 (2006).

4. Gordon KE, **Sawicki GS**, Ferris DP, “Mechanical performance of artificial pneumatic muscles to power an ankle-foot orthosis”. *J Biomech.* 39(10):1832-41 (2006).

3. Ferris DP, Gordon KE, **Sawicki GS**, Peethambaran A, “An improved powered ankle-foot orthosis using proportional myoelectric control”. *Gait Posture.* 23(4): 425-28 (2006).

2. Ferris DP, **Sawicki GS**, Domingo A, “Powered lower limb orthoses for gait rehabilitation”. *Top Spinal Cord Inj Rehabil.* 11(2):34-49 (2005).

1a. **Sawicki GS**, Hubbard M, Stronge WJ, “Reply to Comment on “How to hit home runs: Optimum baseball swing parameters for maximum range trajectories,” by G. S. Sawicki, M. Hubbard, and W. J. Stronge [Am. J. Phys. 71(11):1152-62 (2003)]”. *Am J Phys.* 73(2):185-89 (2005).

***1.** **Sawicki GS**, Hubbard M, Stronge WJ, “How to hit homeruns: Optimum bat swing parameters for maximum range trajectories”. *Am J Phys.* 71(11):1152-62 (2003).
*This article was highlighted in Science: 202.1655 (5 Dec 2003) and on the NPR radio program 'Day to Day' with Mike Pesca and Ira Flatow.

Engineering Conference Papers (Peer-Reviewed)

6. Kumar V, Ha S, **Sawicki GS**, Liu CK, “Learning a control policy for fall prevention on an assistive walking device”*. International Conference on Robotics and Automation (ICRA)* (2020).

5. Cox S, Rubenson J, **Sawicki GS,** "A soft-exosuit enables multi-scale analysis of wearable robotics in a bipedal animal model". *IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS* (pp. 4685-4691). (2018).

4. Elliot G, **Sawicki GS,** Marecki A, Herr H, "The biomechanics and energetics of human running using an elastic knee exoskeleton". *IEEE Int Conf Rehabil Robot.* 2013 Jun; 2013:6650418. (2013).

3. Robertson BD, **Sawicki GS**, “Influence of a parallel spring-loaded exoskeleton on ankle muscle-tendon dynamics during simulated human hopping”. *Conf Proc IEEE Med Biol Soc.* 2011; 2011:583-6. (2011).

***2.** Wiggin MB, Collins SH, **Sawicki GS**, “An exoskeleton using controlled energy storage and release to aid ankle propulsion”. *IEEE Int Conf Rehabil Robot.* 2011 Jun 29-Jul 1: 5975342 (2011).
*This article was highlighted in Nature: 503.S16-17 (14 Nov 2013).

1. **Sawicki GS**, Gordon, KE, Ferris DP, “Powered lower limb orthoses: Applications in Motor Adaptation and Rehabilitation”. *IEEE Int Conf Rehabil Robot.* 2005 Jun 28-Jul 1: 206-11 (2005).

Journal Manuscripts in Revision/Review

6. McCain EM, Dalman M, Berno M, Libera T, Lewek M, **Sawicki GS**, Saul K, (In Revision) “The influence of induced gait asymmetry on joint reaction forces”*. Journal of Biomechanics.*

5. Sponberg S, Abbott E, **Sawicki GS** (In Revision) “Perturbing the muscle work loop paradigm to unravel the neuromechanics of unsteady locomotion*. Journal of Experimental Biology*.

4. Nuesslein C, Bhakta K, Fernandez J, Davenport F, Leestma J, Kim R, Lee D, Mazumdar A, **Sawicki GS**, Young AJ, (In Review) “Comparing metabolic cost and muscle activation of lower-body exoskeletons across a variety of walking and lifting tasks”*. IEEE Transactions on Biomedical Engineering.*

3. Abbott EM, Stephens J, Wood L, Simha SN, Nardelli PJ, Cope T, **Sawicki GS**, Ting LH, (In Review) “Attenuation of muscle spindle feedback with artificially increased series compliance”*. Journal of Experimental Physiology*.

2. Funk CJ, Krupenevich RL, **Sawicki GS**, Franz JR, (In Review) “Exploring the functional boundaries and metabolic consequences of triceps surae force-length relations during walking”*. Journal of Biomechanics*.

1. Leestma JK, Smith CR, **Sawicki GS**, Young AJ, (In Review) “Deep learning-driven estimation of human center of mass state during perturbed locomotion using various lower limb exoskeleton sensor configurations”*. IEEE Robotics and Automation Letters (RA-L)*.

Engineering Conference Papers in Revision/Review

n/a

Journal Manuscripts in Preparation (data collection complete, writing up)

19. McCall J, Shafer B, Philius S, Nuckols R, **Sawicki GS** (In Prep) “Performance of a powered ankle exoskeleton using neuromuscular model-based control over a range of walking speeds". *IEEE Transactions on Neural Systems and Rehabilitation Engineering.*

18. Davenport F, Leestma J, … Mazumdar A, Young AJ, **Sawicki GS**, (In Prep) “Estimating knee and back joint contact forces during high-intensity industrial tasks ". *Journal of Biomechanics.*

17. Upton E, Pan YT, Herrin KR, Kesar TM, **Sawicki GS**, Young AJ, (In Prep) “Ankle exoskeleton with limb angle biofeedback for assisting post-stroke walking: A feasibility study. " *IEEE Transactions on Neural Systems and Engineering.*

16. Pimentel R, **Sawicki GS**, Franz JR, (In Prep) “The independent and combined effects of push-off intensity and tendon stiffness on walking metabolic cost". *Journal of Experimental Biology.*

15. Schroeder J, **Sawicki GS**, (In Prep) “Modeling the impact of long-term exoskeleton use on Achilles tendon stiffness". *Frontiers in Physiology - Exercise Physiology.*

14. Trejo L, Franz JR, **Sawicki GS**, (In Prep) “Motor or spring?: Modeling the interaction effects between musculotendon morphology and exoskeleton assistance strategy on metabolic cost of walking". *IEEE Transactions on Biomedical Engineering.*

13. Golyski P, **Sawicki GS** (In Prep) “Mechanical energetic contributions of the rectus femoris during perturbed human walking”. *Journal of Experimental Biology.*

12. Golyski P, Panizzolo F, **Sawicki GS** (In Prep) “Effects of a passive hip exoskeleton on stabilizing responses during perturbed human walking”. *Journal of Biomechanics.*

11. Gosyne J, **Sawicki GS** (In Prep) “Optimizing stiffness and contact area of an unpowered foot-ankle exoskeleton to normalize metabolic cost of locomotion on sand”. *Bioinspiration and Biomimetics.*

10. Gosyne J, **Sawicki GS** (In Prep) “Human hopping on sand: Linking lower-limb joint mechanics and whole-body metabolic energetics”. *Journal of Royal Society Interface.*

9. Gosyne J, **Sawicki GS** (In Prep) “Human hopping on sand: Shifts in plantarflexor muscle-tendon dynamics on dissipative terrain”. *Journal of Experimental Biology.*”

8. Punith LK, Abbott EM, **Sawicki GS** (In Prep) “Unconstrained work loops reveal phase dependent response of compliant muscle-tendon units to energy perturbations in vitro”. *Proceedings of the National Academy of Sciences.*

7. Punith LK, **Sawicki GS** (In Prep) “Trading off economy, stability and agility across a plausible range of musculotendon actuator morphologies”*. Journal of the Royal Society Interface.*

6. Punith LK, Dick TJM, **Sawicki GS** (In Prep) “Elastic exoskeletons can tune muscle-tendon structure for rapid perturbation response”. *PLoS Computational Biology.*

5. Shafer B, Prates MT, **Sawicki GS**, Young AJ, (In Prep) “Rapid offline optimization of an EMG-driven neuromuscular model for hip exoskeleton assistance enables adaptation to locomotor task demand”*. IEEE Transactions on Neural Systems and Rehabilitation Engineering.*

4. Govindaraj T, Nichols TR, **Sawicki GS**, (In Prep) “A simple model of the interaction between length and force dependent reflex feedback on joint impedance". *Journal of Neurophysiology.*

3. Abbott EM, Nardelli P, **Sawicki GS**, Cope T, (In Prep) “Activation dependent response of muscle spindle organs during ramp stretches of the rat gastrocnemius depends on in-series stiffness". *Journal of Experimental Biology.*

2. Abbott EM, Wood L, Nardelli P, Cope T, **Sawicki GS**, (In Prep) “Response of muscle spindle organs during sinusoidal work loops with phase dependent activation in the rat gastrocnemius". *Journal of Experimental Biology.*

1. Abbott EM, Nardelli P, Cope T, **Sawicki GS**, (In Prep) “A novel neuromechanical approach using muscle-tendon workloops to explore sensory physiology". *Journal of Experimental Biology.*

Patents/IP Disclosures

3. Wiggin MB, **Sawicki GS**, “Low power electromechanical unidirectional rotary clutch”.
*Provisional Patent Application #61/894,272 filed **10/22/2013.***
*International Patent Application PCT/US2014/061,668 filed **10/22/2014.***
Pub. No.: WO 2015/061380 A1; **Pub. Date: 4/30/2015**.

2. Wiggin MB, Westbrook AE, **Sawicki GS**, Willson AK, Rahhal TB, Barnette WC, Lasater KE, “Ankle-foot orthotic devices with integrated vibrotactile biofeedback and related methods”.
*Non-Provisional Patent Application #13/886,247 filed **05/02/2013**.
Pub. No.: US 2013/0296741 A1; **Pub. Date: 11/07/2013**.

1. Wiggin MB, **Sawicki GS**, Collins SH, “Apparatus and clutch for using controlled storage and release of mechanical energy to aid locomotion”.
*Non-Provisional Patent Application #13/586,528 filed **08/15/2012**.
Pub. No.: US 2013/0046218 A1; **Pub. Date: 02/21/2013**.
Issued Nov. 15 2016: US No. 9,492,302

Current Grant Support (= ~1.8 million$)

Bold = funds to GaTech; % = Sawicki's share

-Extramural:

5. National Institutes of Health (NIH) R01
"Multiscale models of proprioceptive encoding to reveal mechanisms of impaired sensorimotor control"
July 2021-June 2026
Role: Multi-PI, G.S. Sawicki
Collaborators: Tim Cope (Multi-PI, GaTech - BioSci); Lena Ting (Multi-PI, Emory - BME)
Award: **1,120,000$** (50%)
***AIM:** To use an in vivo rat model to identify poorly understood neural mechanisms of limb-joint hyper-resistance, demonstrate how they may be identified through clinically feasible assessments, and develop predictive computational models to identify rational, individual-specific targets for novel treatments

4. German Research Foundation (DFG)
"EPA-2: Integrating Locomotor Subfunctions with Electric-Pneumatic Actuation."
April 2021-March 2024
Role: co-I, G.S. Sawicki (Mercator Fellow)
Collaborators: Maziar Sharbafi (co-PI, TU Darmstadt); Andre Seyfarth (co-PI, TU Darmstadt)
Award: **~10,000$** (100%)
***AIM:** Establish a new understanding of the morphological and reflex architecture roles in human locomotion and apply it in bio-inspired design applications including autonomous bipeds and exoskeletons.

3. Department of Energy (DOE) - Sandia National Laboratories
"Quantitative biomechanics, modeling, and device evaluation for DOE wearable robots".
December 2020-June 2024
Role: co-PI, G.S. Sawicki
Collaborators: Ani Mazumdar (co-PI, GaTech); Aaron Young (co-PI, GaTech)
Award: **826,937$** (33%)
***AIM:** To characterize biomechanical demands of DOE relevant movement tasks and examine whether wearable robotics can improve performance by reducing fatigue and injury risk in these tasks.

2. National Institutes of Health (NIH) R01
"Dynamic imaging to guide wearable robotic intervention for enhanced mobility in aging".
August 2018-April 2024 (NCE)
Role: Multi-PI, G.S. Sawicki
Collaborators: Jason R. Franz (Multi-PI, Univ. of North Carolina at Chapel Hill)
Award: **944,000$** (100%)
***AIM:** To test a novel, neuromechanical explanation for age-related reductions in walking performance and economy and investigate the efficacy of biologically-inspired ankle exoskeletons to improve gait performance and reduce metabolic energy cost during walking in older adults.

1. National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
"Rehabilitation Engineering Research Center: Assisting Stroke Survivors with Engineering Technology (ASSET)".
October 2022-September 2027
Role: co-PI, G.S. Sawicki

Collaborators: Derek Kamper (co-PI, NCSU), Michael Lewek (co-PI, Univ. of North Carolina at Chapel Hill)
Award: **114,000$** (100%)
***AIM:** To test whether elastic ankle exoskeletons along with trailing limb angle biofeedback can improve self-selected walking speed in stroke survivors.

-Intramural:

2. Woodruff Launch Seed Grant - School of Mechanical Engineering – Georgia Institute of Technology
"Programmable Exo-skins to optimize limb-joint impedance and augment human movement"
January 2023-June 2023
Role: co-I, G.S. Sawicki
Collaborators: Emily Sanders (PI, ME), David Hu (co-I, ME), and Elisabetta Matsumoto (co-I, Physics)
Award: 15,000$
***AIM:** Develop a pipeline for optimal design and and testing of customized, architected exo-skins for human joint stiffness enhancement

1. Huck Innovative and Transformative Seed Fund - Huck Institutes of the Life Sciences - Penn State University
"Embodied Synthetic Muscles for Adaptive Preservation of Locomotor Function in Aging"
March 2022-February 2024
Role: co-PI, G.S. Sawicki
Collaborators: Jonas Rubenson (co-PI - Penn State); Huanyu Cheng (co-PI - Penn State); Bo Cheng (co-PI, Penn State); Michael Ayanardi (co-PI, Penn State)
Award: 160,287$
***AIM:** Develop and test implantable micro-actuators that can communicate with living tissues through an embedded network of biosensors to prevent loss of mobility by maintaining musculoskeletal function across the lifespan.

Pending Grant Support (= ~1 million$)

-Extramural:

2. National Institutes of Health (NIH)
"Personalized hip vs. ankle exoskeleton assistance with biofeedback to maximize mobility post-stroke".
September 2023 - August 2028
Role: MPI, G.S. Sawicki
Collaborators: A. Young (MPI, GaTech); T. Kesar (co-I, Emory)
Award: **3,092,476$** (33%)
***AIM:** To compare the effect of adding biofeedback on limb posture to hip vs. ankle powered assistance for improving walking cost of transport during walking post-stroke

1. National Science Foundation (NSF)
BII: "Integrative Movement Science Institute (IMSI)
September 2023 - August 2028
Role: co-I, G.S. Sawicki
Collaborators: Monica Daley (Director, UC Irvine); Kiisa Nishikawa (co-Director, Northern Arizona U.); Simon Sponberg (co-PI, GaTech Physics); Lena Ting (co-PI, Emory BME)
Award: **Postdoctoral and Graduate Trainee Support** (33%)
***AIM:** To develop a new paradigm for muscle biology and movement control that predicts dynamic interactions among mechanical, neuromuscular, and sensorimotor systems.

-Intramural:
N/A

Past Grant Support (= ~2.3 million$)

-Extramural:

8. National Institutes of Health (NIH) R13
"American Society of Biomechanics Annual Meeting".
September 2020-September 2022 (NCE)
Role: PI, G.S. Sawicki
Award: **13,000$** (100%)
***AIM:** To execute diversity, equity and inclusion program at the 44th Annual Meeting of the American Society of Biomechanics in 2021. Planned for in-person in Atlanta 2020. Rescheduled to virtual due to COVID-19 in 2021.

7. Department of Defense (DoD) - NSRDEC - US Army Soldier Systems Center-Natick)
"Optimizing hip, knee and ankle exoskeleton assistance during walking and running at various speeds and loads".
June 2018-September 2021 (NCE)
Role: co-PI, G.S. Sawicki
Collaborators: Steven H. Collins (co-PI, Stanford)
Award: **575,000$** (100%)
***AIM:** To build and test a lower-limb powered hip, knee, ankle exoskeleton for able-bodied humans.

6. National Robotics Initiative (NRI)/National Institutes of Health (NIH) R01
"NRI: Novel platform for rapid exploration of robotic ankle exoskeleton control strategies to augment healthy or restore post-stroke locomotion".
September 2013-August 2019 (NCE)
Role: PI, G.S. Sawicki
Award: **750,000$** (100%)
***AIM:** To build a state of the art ankle exoskeleton testbed and evaluate locomotion performance during mechanically assisted walking using different control strategies in both healthy and post-stroke populations.

5. National Institutes of Health (NIH) R21
"Robotic ankle to restore symmetry and reduce energy cost of walking post-stroke".
September 2014-September 2017 (NCE)
Role: PI, G.S. Sawicki
Collaborators: M.D. Lewek (co-I, University of North Carolina - Chapel Hill)
Award: **411,000$** (90%)
***AIM:** To examine long-term effects of a pneumatically powered wearable robotic device with force-gated proportional myoelectric control on walking mechanics and energetics in participants with post-stroke hemiplegia.

4. US-Israel Binational Science Foundation (BSF) Start-up Grant
"An integrated framework linking ankle muscle-tendon mechanics and energetics during human locomotion".
October 2012-September 2015
Role: co-PI, G.S. Sawicki
Collaborators: Raziel Riemer (co-PI, Ben-Gurion University of the Negev)
Award: **75,000$** (100%)

***AIM:** To develop and apply a novel theoretical and experimental framework for studying the relationship between muscle-tendon unit work and metabolic energy use at the ankle joint during an isolated bouncing task and during uphill walking with and without elastic exoskeletons.

3. Rehabilitation Institute of Chicago (RIC) and National Institutes of Health (NIH) R24 Pilot
"Robotic ankle exoskeleton to restore mechanical symmetry and normalize metabolic energy expenditure of post-stroke walking"
March 2012-August 2013
Role: PI, G.S. Sawicki
Award: **50,000$** (100%)
***AIM:** Examine whether a pneumatically powered wearable robotic device to assist the paretic limb in patients with post-stroke hemiplegia can restore fast, stable and economical walking.

2. National Center for Simulation in Rehabilitation Research (NCSRR)
"OpenSim framework to evaluate effects of robotic exoskeletons on individual muscle-tendon mechanics during walking"
March 2012
Role: PI, G.S. Sawicki
Award: **5,000$** (100%)
***AIM:** Develop an OpenSim computer modeling framework to evaluate individual muscle-level dynamics during walking with robotic ankles in both neurologically intact and hemiplegic populations.

1. National Institutes of Health (NIH) National Research Service Award (F32)
"Influence of tendon elasticity on muscle-tendon contractile element mechanics"
October 2008 - September 2011 (Completed August 2009)
Impact/Priority Score: 130 (11%)
Role: PI, G.S. Sawicki (100%)
Award: **65,000$ (NIH Post Doc Salary for 1.5 yrs.)**
***AIM:** Determine how elastic tissues in series with muscle fascicles influence the mechanics of force/work production during cyclic contractions in vitro in frog muscle.

-Intramural:

10. Institute for Bioengineering and Bioscience (IBB) Interdisciplinary Research Seed Grant
"Modifying musculotendon neuromechanics to improve proprioception in aging".
July 2019-June 2021
Role: co-PI, G.S. Sawicki
Collaborators: Tim Cope (co-PI, GaTech - BioSci)
Award: **100,000$** (50%)
***AIM:** To examine if increasing musculotendon compliance (*e.g.,* due to aging) attenuates sensory feedback and whether adding external stiffness in parallel (*e.g.,* with an exoskeleton) can mitigate sensory loss.

9. Institute for Robotics and Intelligent Machines (IRIM) Seed Grant
"Merging terradynamics and musculotendon neuromechanics: Toward wearable robots for augmented human locomotion on non -uniform surfaces."
July 2018- June 2019
Role: co-PI, G.S. Sawicki
Collaborators: Daniel Goldman (co-PI, GaTech Physics)
Award: **25,000$** (50%)
***AIM:** To examine how human calf muscle-tendon dynamics change during locomotion in sand and develop wearable technology to normalize the metabolic cost of locomotion on soft surfaces.

8. NCSU Research and Innovation Seed Funding (RISF) Program
"Relationship between gait analysis, MRI findings and response to potassium channel blockade in chronically paralyzed dogs: A personalized medicine pilot study".
January 2015-December 2016
Role: co-I, G.S. Sawicki PI
Collaborators: Natasha Olby (PI, NCSU CVM)
Award: **2,000$** (0%)
***AIM:** To examine the relationship between detailed kinematic gait characteristics, MRI features and response to 4-aminopyridine in a group of chronically paralyzed dogs, in order to identify predictors of drug response.

7. NCSU Rehabilitation Engineering Center (REC) Pilot
"Reverse-engineering musculoskeletal design to inform clinical interventions for ankle-foot related pathologies".
May 2014-April 2015
Role: PI, G.S. Sawicki
Collaborators: M. Gross (co-I, UNC Physical Therapy)
Award: **25,000$** (90%)
***AIM:** To use custom in-sole foot orthoses in order to gain insight into the interaction between foot stiffness and the muscle-tendon dynamics of the ankle plantarflexors.

6. NCSU Rehabilitation Engineering Center (REC) Pilot
"Targeted, in vivo expression of channelrhodopsin-2 in peripheral nerves"
January 2013-December 2013
Role: PI, G.S. Sawicki
Collaborators: Paul Dayton (co-I, UNC BME)
Award: **25,000$** (100%)
***AIM:** Assess the feasibility of using focused ultrasound and microbubbles to deliver a custom plasmid construct for in vivo expression of ChR2 to optically control skeletal muscle contraction in vivo.

5. NCSU Chancellor's Innovation Fund (CIF) Grant
"A passive-elastic ankle exoskeleton using controlled energy storage and release (CESR) to aid propulsion during human walking".
July 2012-June 2013
Role: PI, G.S. Sawicki
Award: **75,000$** (100%)
***AIM:** To develop and test 'energy neutral' elastic ankle exoskeletons and two novel clutching mechanisms along with springs of varying stiffnesses during both unimpaired and post-stroke walking. Pilot data will be used to obtain licensing agreements with established companies or establish a start-up company.

4. NCSU Rehabilitation Engineering Center (REC) Pilot
"Linking mechanics and energetics of post-stroke locomotion"
January 2012-June 2013
Role: PI, G.S. Sawicki
Collaborators: M. Lewek (co-I, UNC Physical Therapy)
Award: **25,000$** (50%)
***AIM:** Assess lower-limb joint mechanics and metabolic energy expenditure of stroke patients and matched healthy controls during walking at different speeds and on different surface gradients.

3. North Carolina Translational and Clinical Sciences Institute (NCTraCS)
"Robotic ankle exoskeletons to restore gait symmetry post-stroke"
August 2010-September 2011
Role: PI, G.S. Sawicki
Award: **50,000$** (100%)
***AIM:** Examine whether pneumatically powered ankle exoskeleton providing push-off power to the hemiparetic limb can restore gait symmetry and reduce energy expenditure during human walking post-stroke.

2. NCSU College of Engineering Faculty Research and Professional Development Fund (FRPD)
"A passive-elastic ankle exoskeleton to reduce energy expenditure during human walking"
July 2010-June 2011
Role: PI, G.S. Sawicki
Award: **7,000$** (100%)
***AIM:** Determine whether an ankle exoskeleton without any motors, batteries or electronics can reduce the metabolic cost of human walking.

1. University of Michigan Rackham Graduate School Pre-Doctoral Fellowship
"Mechanics and energetics of walking with powered exoskeletons"
September 2005-August 2006
Role: PI, G.S. Sawicki
Award: **22,000$ (12-month grad stipend)**
***AIM:** Evaluate the human physiological response during walking with powered ankle exoskeletons at different speeds and grades.

Grant Proposals (submitted - not funded)

08/2022 National Institutes of Health (NIH)
"Personalized hip-ankle exoskeleton assistance with biofeedback to enhance mobility post-stroke".
Role: co-I, G.S. Sawicki
Collaborators: A. Young (PI, GaTech); T. Kesar (co-I, Emory)
Award: 3,092,476$ Score: Impact 47, Percent 41

05/2022 Defense Health Agency (DHA) - DHA224-D003: Adaptive Technology to Optimize Rehabilitation of Lower Extremity Musculoskeletal Injuries Throughout Recovery
"Humotech Warfighter Ankle-Exo-Brace for Recovery and Endurance (H-WARE)".
Role: co-PI, G.S. Sawicki
Collaborators: Josh Caputo (co-PI, Humotech Inc.)
Award: 109,713$

03/2022 National Science Foundation (NSF) M3X
"Learning and Composing Co-Adaptive Exoskeleton Control Policies for Safe Locomotion in Unsteady Conditions".
Role: co-PI, G.S. Sawicki
Collaborators: Ye Zhao (co-PI, GaTech); Aaron Young (co-PI, GaTech)
Award: 937,311$ Score: Low Priority

06/2021 National Institutes of Health (NIH)
"Personalized hip-ankle exoskeleton assistance with biofeedback to enhance mobility post-stroke".
Role: co-I, G.S. Sawicki
Collaborators: A. Young (PI, GaTech); T. Kesar (co-I, Emory)
Award: 3,092,476$ Score: Impact 55, Percent 46

06/2021 United States Army Medical Research and Development Command (USAMRDC)
"Humotech Warfighters Ankle-exo-brace for Recovery & Endurance (H-WARE) to Enable Effective Combat Mobility"
Role: co-PI, G.S. Sawicki (GaTech);
Collaborators: Joshua Caputo (co-PI, Human Motion Technologies)
Award: 750,000$ Score: 2.6/5 (1 highest) = Fair

02/2020 National Science Foundation (NSF) - National Robotics Initiative (NRI 2.0)
"NRI: FND: Adaptive control for hip exoskeleton technology to augment mobility"
Role: co-PI, G.S. Sawicki;
Collaborators: A. Young (co-PI, GaTech)
Award: 750,000$ Score: Low Priority

12/2020 National Institutes of Disability, Independent Living, and Rehabilitation Research (NIDILRR) Field Initiated Program - Research
"Learning to use an assistive device for enhanced gait post-stroke".
Role: co-PI, G.S. Sawicki (GaTech);
Collaborators: M.D. Lewek (co-PI, Univ. of North Carolina at Chapel Hill)
Award: $127,949 Score: 78/100

02/2019 National Institutes of Health (NIH)
"Adaptive control for hip exoskeleton technology to augment mobility in aging"
Role: co-I, G.S. Sawicki;
Collaborators: A. Young (PI, GaTech)
Award: 2,000,000$ Score: ND

10/2018 Department of Defense (OPORP)
"Optimizing hip exoskeleton control for continuous adaptation to user and environment during real-world locomotion".
Role: PI, G.S. Sawicki;
Collaborators: A. Young (co-I, GaTech)
Award: 1,499,826$ Score: 1.8/5 (1 highest) = Excellent

1/2018 National Science Foundation (NSF)
"Collaborative Research: Linking user value to biomechanical system attributes for rehabilitation devices."
Role: co-PI, G.S. Sawicki (GaTech);
Collaborators: S. Ferguson (co-PI, NCSU)
Award: 165,000$ Score: Medium Priority

10/2016 National Science Foundation (NSF)
"Optimizing a powered prosthesis for trans-femoral amputees: Effects of varying knee and ankle power on physiological performance".
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: Helen Huang (co-PI, NCSU)
Award: 371,355$ Score: Medium Priority

10/2016 Department of Defense (STTR Phase I)
"Optimizing performance of an unpowered foot-ankle prosthesis using emulator-based experimentation and musculoskeletal simulation".
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: Joshua Caputo (co-PI, Human Motion Technologies)

Award: 150,000$ Score: Not Available

8/2016 National Institutes of Health (NIH) R21
“Wearable ultrasound technology for continuous monitoring of muscle dynamics during human locomotion”.
Role: co-I, G.S. Sawicki (NCSU);
Collaborators: Omer Oralkan (PI, NCSU)
Award: ~400,000 (~50k Sawicki) Score: Impact 50: Percent 47+

11/2015 Department of Defense (OPORP)
“Wearable ultrasound imaging technology for continuous monitoring of muscle dynamics during human locomotion”.
Role: co-I, G.S. Sawicki (NCSU);
Collaborators: Omer Oralkan (PI, NCSU)
Award: 500,000$ Score: 2.5/5 (1 highest) = Good

11/2015 Department of Defense (OPORP)
“A modeling and simulation framework for prescription of passive-elastic ankle-foot prostheses”.
Role: co-I, G.S. Sawicki (NCSU);
Collaborators: Katherine Saul (PI, NCSU)
Award: 500,000$ Score: 2.1/5 (1 highest) = Good

2/2015 National Institutes of Health (NIH) R01
“Wearable ultrasound technology for continuous monitoring of muscle dynamics during human locomotion”.
Role: co-I, G.S. Sawicki (NCSU);
Collaborators: Omer Oralkan (PI, NCSU)
Award: ~2,500,000$ (~500k Sawicki) Score: ND

1/2015 National Science Foundation (NSF)
“The role of proprioception in the adaptation toward economical gait patterns”.
Role: co-I, G.S. Sawicki (NCSU);
Collaborators: Jesse Dean (PI, Med. U. South Carolina);
Award: ~500,000$ (~75k Sawicki) Score: Medium Priority

1/2015 National Science Foundation (NSF) Integrative and Organismal Systems (IOS)
“IOS PreProposal: Collaborative Research: Mapping form to function: Linking musculoskeletal morphology to muscle energy budget in bouncing gaits”.
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: C.P. McGowan (co-PI, University of Idaho)
Award: ~1,000,000$ (~500k Sawicki) Score: Medium Priority

9/2014 Army Research Office (ARO)
“Biorobotic testbed to elucidate fundamental form-function relationships and maximize performance in musculotendon systems”.
Role: PI, G.S. Sawicki (NCSU)
Award: 400,000$ Score: Not Available

8/2014 National Science Foundation (NSF) Integrative and Organismal Systems (IOS)
“Collaborative Research: Mapping form to function: Linking musculoskeletal morphology to muscle energy budget in bouncing gaits”.
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: C.P. McGowan (co-PI, University of Idaho)

Award: ~1,000,000$ (~500k Sawicki) Score: Medium Priority

2/2014 NCSU Rehabilitation Engineering Center (REC) Pilot
"Optimization of Clubfooted Walking with a Dynamic Foot Abduction Brace"
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: E. Campion (co-PI, UNC Orthopaedics); A. DiMeo (co-PI, NCSU BME)
Award: 25,000$

10/2013 NCSU Research Innovation Seed Funding (RISF)
"Reverse-Engineering Musculoskeletal Design to Inform Clinical Interventions for Ankle-Foot Related Pathologies"
Role: PI, G.S. Sawicki (NCSU);
Collaborators: M. Gross (co-I, UNC Physical Therapy)
Award: 37,500$

9/2013 NCSU Rehabilitation Engineering Center (REC) Pilot
"Mechanics and Energetics of Walking with Ponseti-Treated Clubfoot"
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: E. Campion (co-PI, UNC Orthopaedics); A. DiMeo (co-PI, NCSU BME)
Award: 25,000$

3/2013 Human Frontiers in Science
"Discovering optimality laws for legged locomotion using an animal-machine interface with biofeedback".
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: J. Rubenson (co-PI, University of Western Australia), A. Spence (co-PI, Royal Veterinary College, UK), C. Walsh (co-PI, Wyss Institute, Harvard University)
Award: ~300,000$

2/2013 NCSU Research Innovation Seed Funding (RISF)
"Exploiting functional interaction between ankle and foot structures during human locomotion: Insights for next generation 'bio-inspired' devices to aid mobility"
Role: co-PI, G.S. Sawicki (NCSU)
Collaborators: M. Gross (co-PI, UNC Physical Therapy)
Award: 37,500$

1/2013 National Science Foundation (NSF) Integrative and Organismal Systems (IOS)
"IOS Preliminary Proposal: Collaborative Research: Linking Metabolic Energy Budget to Muscle-Tendon Morphology and the Mechanical Demand of Locomotion"
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: C.P. McGowan (co-PI, University of Idaho)
Award: - ~1,000,000$ (~500k Sawicki) Score: Medium Priority

8/2012 National Science Foundation (NSF) Integrative and Organismal Systems (IOS)
"Collaborative Research: Understanding the link between muscle dynamics and metabolic cost".
Role: co-PI, G.S. Sawicki (NCSU);
Collaborators: C.P. McGowan (co-PI, University of Idaho)
Award: ~1,000,000$ (~500k Sawicki) Score: Medium Priority

11/2011 National Science Foundation (NSF) National Robotics Initiative (NRI)
"Collaborative research: NRI Small: Rapid exploration of assistive ankle control strategies for locomotion using a novel co-robot testbed".
Role: co-PI, G.S. Sawicki (NCSU);

Collaborators: S.H. Collins (co-PI, Carnegie Mellon University)
Award: ~2,000,000$ (~800k Sawicki) Score: Highly Competitive

11/2011 Defense Advanced Research Projects Administration (DARPA)
"Wearable Robotic Simulator for design of Warrior Web control and sensing"
Role: co-I, G.S. Sawicki (NCSU);
Collaborators: H. Herr (PI, MIT)
Award: 391,600$

07/2011 National Center for Simulation in Rehabilitation Research (NCSRR)
"OpenSim framework to evaluate effects of robotic exoskeletons on individual muscle-tendon mechanics during walking"
Role: PI, G.S. Sawicki (NCSU)
Award: 25,000$

06/2011 National Institutes of Health (NIH) R21
"Robotic ankle to restore symmetry and reduce energy cost of walking post-stroke".
Role: PI, G.S. Sawicki (NCSU)
Award: 275,000$ - Impact/Priority Score: 46 (42%).

04/2011 North Carolina State University Chancellor's Innovation Fund (CIF)
"A passive-elastic ankle exoskeleton using controlled energy storage and release (CESR) to aid propulsion during human walking".
Role: PI, G.S. Sawicki (NCSU)
Award: 75,000$

04/2011 David and Lucille Packard Foundation Fellowship for Science and Engineering
"The Physiology of Wearable Robotics (PoWeR): Bridging the gap between human and machine"
Role: PI, G.S. Sawicki (NCSU)
Award: 875,000$

12/2010 Wallace H. Coulter Translational Research Awards in Biomedical Engineering
"A passive elastic ankle exoskeleton using controlled energy storage and release to aid propulsion during human walking"
Role: PI, G.S. Sawicki (NCSU)
Award: 180,000$

11/2009, 11/2010 National Institutes of Health (NIH) Loan Repayment Program (LRP)
"Powered ankle-orthoses to restore limb mechanics and reduce metabolic cost of walking post-stroke"
Role: PI, G.S. Sawicki (NCSU)
Award: <=35,000$

Funded Training Grants for Doctoral and Postdoctoral Trainees

9. American Society for Engineering Education (ASEE) eFellows Postdoctoral Fellowship
"Physiologically inspired, machine learning-based exoskeleton controller to prevent falls"
October 2022-September 2024
Awardee: Kristen Jakubowski (Postdoctoral Fellow at Emory and Georgia Tech)
Role: Sawicki co-Sponsor with Lena Ting (Emory), Aaron Young (GaTech)
Award: 2 years stipend

8. American Heart Association (AHA) Predoctoral Fellowship

"Learning to translate exoskeleton assistance into meaningful gait post-stroke."
July 2022-June 2024
Awardee: David Rowland (Doctoral Student at UNC-Chapel Hill)
Role: Sawicki co-Sponsor with Michael Lewek (UNC-CH), Jason Franz (UNC-CH), Kate Saul (NCSU)
Award: 2 years stipend and tuition

7. National Science Foundation (NSF) GRFP
"Learning from humans to optimize hip exoskeleton balance recovery strategies."
May 2021-April 2024
Awardee: Jennifer Leestma (Doctoral Student at GaTech)
Role: Sawicki co-Advisor with A. Young (GaTech)
Award: 3 years stipend and tuition

6. National Institutes of Health (NIH) R01 - Supplement to Promote Diversity in Health-Related Research
"Age-related changes in the structure and function of the soleus muscle and Achilles tendon".
October 2020-April 2023
Awardee: Jordyn Schroeder (Doctoral Candidate at GaTech)
Role: Sawicki Primary Sponsor
Award: 133,693$
***AIM:** Examine how aging changes stiffness of the elements of the calf muscle- tendon complex and how these changes impact dynamic ankle joint function.

5. National Institutes of Health (NIH) R01 - Supplement to Promote Diversity in Health-Related Research
"Non-invasive extraction of real-time muscle fascicle length changes from human movement".
July 2020-June 2021
Awardee: Luis Rosa (Doctoral Candidate at GaTech)
Role: Sawicki co-Sponsor with Omer Inan GaTech
Award: 72,254$
***AIM:** Develop machine-learning algorithms to generate real-time signals from non-invasive acoustic and ultrasound recordings of joint and muscle dynamics.

4. National Institutes of Health (NIH) Postdoctoral Fellowship (F32)
"Linking muscle-tendon dynamics and energetics to inform exoskeleton design for improved locomotor economy in aging".
July 2019-June 2021
Awardee: Owen Beck (Post Doc)
Role: Sawicki Primary Sponsor
Award: 178,866$
***AIM:** Examine how passive exoskeletons influence metabolic energy expenditure of individual muscles during walking in older adults.

3. National Science Foundation (GRFP)
"Improving neuromechanics of the human hip during perturbation responses a passive-elastic hip exoskeleton".
May 2019-April 2022
Awardee: Pawel Golyski (Doctoral Candidate at GaTech)
Role: Sawicki Primary Advisor
Award: 3 years stipend and tuition

2. National Institutes of Health (NIH) Predoctoral Fellowship (F31)
"Optimizing impedance control of an ankle exoskeleton to improve post-stroke walking mechanics and energetics".
May 2019-May 2021
Awardee: Emily McCain (Doctoral Candidate at NCSU)
Role: Sawicki co-Sponsor with Kate Saul (NCSU), Michael Lewek (UNC-CH)
Award: 146,456$
***AIM:** Examine whether elastic ankle exoskeletons can improve walking mechanics and energetics post-stroke.

1. National Center for Simulation in Rehabilitation Research (NCSRR) Postdoctoral Fellowship
"The effects of spring-loaded ankle exoskeletons on individual muscle-tendon mechanics during human hopping"
June-August 2012
Awardee: D.J. Farris (Post Doc at NCSU)
Role: Sawicki Primary Sponsor
Award: 15,000$ Stipend
***AIM:** Develop an OpenSim computer modeling framework to evaluate individual muscle-level dynamics during hopping with spring-loaded ankles of various stiffnesses.

Training Grants for Doctoral and Postdoctoral Trainees (submitted - not funded)

8/2022 National Institutes of Health (F32)
"Physiologically-inspired exoskeleton controller to enhance human balance."
Trainee: Kristen Jakubowski (Post Doc at Emory and GaTech)
Role: Sawicki co-Sponsor
Award: NIH Postdoctoral salary support
Impact Score =36 Percentile =42 (11/2022)

8/2021 National Institutes of Health (F31)
"Neuromuscular Effects of Achilles Tendinosis: Investigations into Muscle-Tendon Unit Structure and Function."
Trainee: David Ortiz-Weissberg (Doctoral Student at University of Southern California)
Role: Sawicki co-Sponsor
Award: NIH Doctoral salary support
Impact Score =ND (11/2021)

8/2018 National Institutes of Health (F32)
"Biorobotic tools for linking muscle-tendon morphology and sensory feedback".
Trainee: Emily Abbott (Post Doc at GaTech)
Role: Sawicki Primary Sponsor
Award: NIH Postdoctoral salary support
Impact Priority =ND (12/2018)

4/2013, 11/2013 National Institutes of Health (F32) "Functional Interaction between Ankle Joint and Foot Structures during Locomotion"
Trainee: Kota Takahashi (Post Doc)
Role: Sawicki Primary Sponsor
Award: NIH Postdoctoral salary support
Impact Priority =48 (8/2013) = ND (3/2014)

9/2013 Burroughs Wellcome Foundation Career Awards at the Scientific Interface "The interplay of ankle and foot musculoskeletal structures during human locomotion"
Trainee: Kota Takahashi (Post Doc)
Role: Sawicki Primary Sponsor
Award: Postdoctoral salary/research support = 500,000$

7/2013 Helen Hay Whitney Foundation "Functional Interaction between Ankle Joint and Foot Structures during Locomotion"
Trainee: Kota Takahashi (Post Doc)
Role: Sawicki Primary Sponsor
Award: Postdoctoral salary/research support

Invited Talks

Indicates *scheduled talks not yet delivered or #postponed talks due to COVID-19

***78.** LokoAssist Symposium – "Pushing beyond locomotion economy – What can exoskeletons do on the shortest and longest timescales?" – TU Darmstadt, Germany – **April 20-21, 2023.**

77. ReWalk Inc. **-** Topics in NeuroRehab - Episode 31: – "Exoskeletons for improving mobility post-stroke" – on-line recording – **November 22, 2022.**

76. Symposium: Fast Movements, Impacts and Deformations: Nature, Robotics and Materials – "Can wearable elastic systems cheat biological limits to augment human limb mechanical power?" – Washington Duke Inn and Conference Center, Duke University, Durham, NC – **July 19-21, 2022.**

75. Symposium: Biomechanics of Assistive Devices – "Exoskeletons as Wearable Bioreactors: Is it Possible to Shape Musculoskeletal Tissue Properties via Targeted External Loading?**"** – 9th World Congress of Biomechanics (WCB), Tapei international Convention Center, Tapei, Taiwan – **July 10-14, 2022.**

74. 4th Workshop on Integrating Multidisciplinary Approaches to Advance Physical Human-Robot Interaction: Challenges of Interfacing Wearable Robots with the Human Neuromotor System – "Pushing beyond locomotion economy – What can exoskeletons do on the shortest and longest timescales?"– International Conference on Robotics and Automation (ICRA), Philadelphia, PA – **May 27, 2022.**

73. weaRAcon '22, Wearable Robotics Association Conference - Exoskeletons in Industry Track, "Biomechanics-informed exoskeleton development for DOE relevant tasks." – Scottsdale, AZ – **April 26, 2022.**

#**72.** Journal of Experimental Biology Symposium – Integrating Biomechanics, Energetics and Ecology in Locomotion "Merging engineered and biological structures to elucidate locomotion energetics" – Hotel Eiger, Muerren, Switzerland – Postponed from **March 2022** due to COVID-19

#**71.** Academy of Neurologic Physical Therapy (APTA) Combined Sections Meeting (CSM), Workshop: Gait Training after Neuromotor Injury: Therapies and Technologies That Restore Versus Substitute Impaired Locomotion, "Ankle exoskeletons to improve mobility post-stroke" - Orlando, Florida – Postponed from **February 2022** due to COVID-19

70. Pensacola Afternoon Lecture Series, "A biologically inspired approach to lower-limb exoskeleton design." – Institute for Human and Machine Cognition (IHMC), Pensacola, FL – **August 17, 2021.**

69. Fall School on Medical Robotics/International Symposium on Medical Robotics, “Exoskeleton control using physiological states.” – Georgia Center for Medical Robotics (GCMR), Georgia Institute of Technology, Atlanta, GA – **November 17, 2021.**

68. Symposium – Age-Related Changes in Gait Biomechanics, “Exoskeletons to improve mobility in aging.” – The Division of Geriatrics and Clinical Gerontology, National Institutes of Health, National Institute on Aging (NIH NIA), Bethesda, MD – **September 20-21, 2021.**

67. Workshop - Fielding Legged Robotics Off the Beaten Path, “Exoskeleton control using physiological states.” - American Control Conferences (ACC), New Orleans, LA – **May 24, 2021.**

66. Human Performance Laboratory, Faculty of Kinesiology, University of Calgary, “Getting ‘under the skin’ to examine muscle dynamics during walking with elastic ankle exoskeletons- Calgary, AB – **April 8, 2021.**

65. Department of Mechanical and Aerospace Engineering Seminar Series, University of Virginia, “Getting ‘under the skin’ to examine muscle dynamics during walking with elastic ankle exoskeletons” - Charlottesville, VA – **March 25, 2021.**

64. Department of Mechanical Engineering Seminar Series, Florida A&M/Florida State University, “A biologically inspired approach to lower-limb exoskeleton design.” - Tallahassee, FL – November 17, **2021.**

63. Institute for Robotics and Intelligent Machines (IRIM) Debate Series, “Drop the Mic! - Cost of Transport, the Correct Metric for Mobile Systems?" - Georgia Institute of Technology - Atlanta, GA – **September 16, 2021.**

62. Nike Inc. + Georgia Institute of Technology, Center for Biologically Inspired Design (CBID) Roundtable - “A biologically inspired approach to lower-limb exoskeleton design” - Virtual Seminar – **December 3, 2020.**

61. Google X - Wearable Robotics Group - “Physiology of Wearable Robotics - Toward Symbiotic Movement Assistance” - Virtual Seminar – **September 10, 2020.**

60. Parker H. Petit Institute for Bioengineering and Bioscience (IBB), Georgia Institute of Technology, “A biologically-inspired approach to lower-limb exoskeleton design”- Atlanta, Georgia – **September 8, 2020.**

[#]**59.** Institute of Sport Science Seminar Series, Technical University of Darmstadt, “Can passive elastic exoskeletons improve walking economy in aging?” - Darmstadt, Germany – Postponed from **March 2020** due to COVID-19

58. Neuroengineering and Medicine Seminar Series, University of California at Davis, “Ankle exoskeletons to restore mobility post-stroke”- Davis, California – **March 11, 2020.**

57. College of Engineering, Informatics and Applied Sciences Seminar Series, Northern Arizona University, “A biologically-inspired approach to lower-limb exoskeleton design”- Flagstaff, Arizona – **September 12, 2019.**

56. Georgia Center for Medical Robotics (GCMR) Seminar Series, Georgia Institute of Technology, “Ankle exoskeletons to restore mobility post-stroke”- Atlanta, Georgia – **September 10, 2019.**

55. Symposium - Comparative biomechanics across organizational scales: tissues to whole body dynamics, “Getting ‘under the skin’ to examine how exoskeletons steer muscle dynamics during

locomotion." - XXVII Congress of the International Society of Biomechanics (ISB) and 43rd Annual Meeting of the American Society of Biomechanics (ASB), Calgary, Alberta - **August 4, 2019.**

54. Symposium - Sensorimotor and mechanical factors underlying stable and agile legged locomotion, "Keynote: Passive-elastic exoskeletons can improve stability of unsteady locomotion." - Annual Meeting of the Society of Experimental Biology (SEB), Seville, Spain - **July 5, 2019.**

53. Institute of Bioengineering - School of Engineering Seminar Series, Swiss Federal Institute of Technology (EPFL), "Can passive elastic exoskeletons improve walking economy in aging?", Lausanne, Switzerland - **July 3, 2019.**

52. Orthotic and Prosthetic Innovative Technologies Conference (OPTech), School of Medicine, University of Michigan, "Can passive elastic exoskeletons improve walking economy in aging?", Ann Arbor, MI - **May 17, 2019.**

51. Symposium - Playing with Power: Mechanisms of Energy Flow in Organismal Movement, "Exploring the theoretical and empirical limits of muscle-based latch systems for power amplification."- Annual Meeting of the Society for Integrative and Comparative Biology (SICB), Tampa, Florida - **January 4, 2019.**

50. Department of Biomechanics and Center for Research in Human Movement Variability Seminar Series, University of Nebraska - Omaha, "A biologically inspired approach to lower-limb exoskeleton design"- Omaha, Nebraska - **October 19, 2018.**

49. Workshop on Symbiotic Exoskeletons: Exploring the Human Side, IEEE International Conference on Intelligent Robots and Systems (IROS), "Animal models for multi-scale analysis of wearable robotics for locomotion"- Madrid, Spain - **October 3, 2018.**

48. Department of Chemical and Biomedical Engineering Seminar Series, West Virginia University, "A biologically inspired approach to lower-limb exoskeleton design"- Morgantown, West Virginia - **September 28, 2018.**

47. Gordon Research Conference on Musculoskeletal Biology and Bioengineering –the Coordinated Continuum of biological Systems Supporting Human Motion, "Biologically inspired concepts guiding lower-limb exoskeleton design"- Andover, Massachusetts - **August 8, 2018.**

46. U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC), Exoskeleton Technical Exchange, "What is 'the next' in lower-limb exoskeleton development?" Natick, Massachusetts - **April 26, 2018.**

45. The Shirley Ryan Ability Lab Seminar Series, "Biologically inspired concepts guiding lower-limb exoskeleton design"- Chicago, Illinois - **March 17, 2018.**

44. Department of Bioengineering Seminar Series, University of Illinois at Chicago, "Biologically inspired concepts guiding lower-limb exoskeleton design"- Chicago, Illinois - **March 17, 2018.**

43. GRASP Laboratory Seminar Series, University of Pennsylvania, "Biologically-inspired concepts guiding lower-limb exoskeleton design"- Philadelphia, Pennsylvania - **March 2, 2018.**

42. Symposium: Spatial Scale and Structural Heterogeneity in Skeletal Muscle Performance, "Perturbing the work loop paradigm to unravel the neuromechanics of unsteady locomotion"- Annual Meeting of the Society for Integrative and Comparative Biology (SICB), San Francisco, California - **January 4, 2018.**

41. 4th International Autumn School on Movement Science, “Biologically-inspired concepts guiding lower-limb exoskeleton design”- Berlin School of Movement Science (BSMS), Humboldt University of Berlin, Berlin Germany - **October 13, 2017.**

40. Tutorial: “Biologically-inspired concepts guiding lower-limb exoskeleton design” - XXVI Congress of the International Society of Biomechanics, Brisbane, QL, Australia - **July 23, 2017.**

39. 12th Annual Meeting of Dynamic Walking: “Humans falling in holes: How does the human lower-limb handle perturbations?” - Mariehamn, Aaland Islands, Finland - **June 4, 2017.**

38. Workshop on Mechanics of Human Locomotion and the Development of Wearable Robotic Systems, Meeting of IEEE International Conference on Robotics and Automation (ICRA), “Biologically inspired lower-limb exoskeletons: Tuning the neuromechanics of human-machine interaction for improved locomotion performance” - Singapore - **May 29, 2017.**

37. Special Session on Neuromechanical Modeling for Wearable Assistive Technologies, 3rd International Conference on NeuroRehabilitation (ICNR), 2nd International Conference on Wearable robotics (WeRob), “Merging models and experiments to examine changes in musculotendon dynamics during locomotion with lower-limb exoskeletons” - Segovia, Spain - **October 18, 2016.**

36. Mechanical Engineering and Biological Sciences Joint Seminar Series, Georgia Institute of Technology, “Biologically inspired lower-limb exoskeletons: Tuning the neuromechanics of human-machine interaction for improved locomotion performance” - Atlanta, GA – **September 15, 2016.**

35. Workshop on Assistive Robotic Devices for Dynamic Locomotion, 12th Meeting of Robotics: Science and Systems (RSS), “A biologically inspired approach to lower-limb exoskeleton design” - Ann Arbor, MI - **June 18-22, 2016.**

34. Integrative Physiology Seminar Series, University of Colorado, “A bio-robotic approach for understanding elastic mechanisms in locomotion” - Boulder, CO - **April 18, 2016.**

33. Keynote: American Society of Biomechanics--Rocky Mountain Regional Meeting, “A biologically inspired approach to lower-limb exoskeleton design”- Estes Park, CO - **April 15, 2016.**

32. Keynote: WeaRAcon ‘16, Wearable Robotics Association Conference, “A biologically inspired approach to lower-limb exoskeleton design”- Phoenix, AZ - **February 10, 2016.**

31. Mechanical Engineering Seminar Series, Arizona State University, “A biologically inspired approach to lower-limb exoskeleton design”- Tempe, AZ - **November 13, 2015.**

30. Mechanical and Aerospace Engineering Seminar Series, University of Michigan “A biologically inspired approach to lower-limb exoskeleton design” - **Ann Arbor, MI - November 2, 2015.**

29. Applied Physiology Seminar Series, Georgia Institute of Technology, “A bio-robotic approach for understanding elastic mechanisms in locomotion” - Atlanta, GA - **September 9, 2015.**

28. 7th International Symposium on Adaptive Motion of Animals and Machines (AMAM), Massachusetts Institute of Technology, “Spring-loading locomotion: Considering muscle-tendon dynamics on the human side of the human-machine interface”- Boston, MA - **June 21, 2015.**

27. Keynote: Prosthetics and Orthotics Capstone Colloquium Series, Georgia Institute of Technology, “A biologically inspired approach to lower-limb exoskeleton design”- Atlanta, GA - **April 17, 2015.**

26. Mechanical Engineering Seminar Series, Vanderbilt University, “Spring-loading human locomotion: Taking inspiration from biology to improve lower-limb exoskeleton design.” - Nashville, TN - **April 13, 2015.**

25. The Robotics Institute Seminar Series, Carnegie Mellon University, “Spring-loading human locomotion: Taking inspiration from biology to improve lower-limb exoskeleton design.” - Pittsburgh, PA - **October 24, 2014.**

24. 7th World Congress on Biomechanics Symposium: Dynamic Walking, “Applying principles of dynamic walking in bio-inspired exoskeleton designs.” - Boston, MA - **July 11, 2014.**

23. Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS) - Invited Tutorial, “From Body to Joints to Muscles: An integrative multi-scale assessment of ankle and foot function in human locomotion.” (co Presenting with K. Takahashi, D. Farris, B. Robertson and S. Piazza) - Newark, DE - **June 24, 2014.**

22. Simtk.org - OpenSim Webinar, “Developing modeling and simulation tools to optimize performance of lower-limb exoskeletons for enhanced human locomotion.” - International live webcast from Stanford University, Palo Alto, CA - **February 6th, 2014.**

21. National Science Foundation - 3rd Annual Winter Workshop on Neuromechanical Locomotion, “Muscle-tendon performance: Linking morphology, environment dynamics and task demand.” - Princeton, NJ - **January 31, 2014.**

20. Human Movement Science Curriculum Seminar Series, University of North Carolina at Chapel Hill, “User controlled robotic ankle exoskeletons to restore gait symmetry post-stroke.” - Chapel Hill, NC - **November 13, 2013.**

19. Department of Mechanical Engineering and Materials Science, Yale University, “Biologically-inspired wearable robotics to assist human locomotion.”- New Haven, Connecticut - **October 30, 2013.**

18. Motor Behavior Research Network: University of North Carolina at Greensboro, “In silico and in vitro approaches for optimizing design of elastic exoskeletons for human locomotion assistance.” - Greensboro, NC - **October 17, 2013.**

17. Society of Experimental Biology Symposium: Muscle-tendon biomechanics, “Muscle-tendon interaction during human locomotion with elastic exoskeletons.” - **Valencia, Spain - July 4, 2013.**

16. Department of Biology, Northeastern University, “Biologically-inspired wearable robotics to assist human locomotion.” - Boston, Massachusetts - **November 26, 2012.**

15. Weldon School of Biomedical Engineering, Purdue University, “Biologically-inspired wearable robotics to assist human locomotion.” - West Lafayette, Indiana - **October 17, 2012.**

14. Department of Kinesiology, Pennsylvania State University, “Human PoWeR- the Physiology of Wearable Robotics.” - State College, Pennsylvania - **December 7, 2011.**

13. 6th Annual Meeting of Dynamic Walking: Friedrich-Schiller University, “Compliant muscle-tendon interaction during locomotion with robotic assistance.” - Jena, Germany - **July 20, 2011.**

12. Department of Physical Medicine and Rehabilitation, UNC-Chapel Hill. “Powered ankle-foot orthoses to restore walking mechanics following spinal cord injury and stroke.” - Chapel Hill, North Carolina - **September 8, 2010.**

11. 6th World Congress on Biomechanics Symposium: Muscle-Tendon Interaction, “Benefits of compliant muscle-tendon architecture in steady and accelerative movements.” - Singapore, Indonesia - **August 4, 2010.**

10. 5th Annual Meeting of Dynamic Walking: Massachusetts Institute of Technology, “Mechanics and control of a compliant muscle-tendon during cyclic contractions.” - Boston, Massachusetts - **July 9, 2010.**

9. Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS) - Invited Tutorial, “How to build a powered lower-limb exoskeleton.” (Co-presenter with D.P. Ferris, K.E. Gordon, C.L. Lewis) - Miami, Florida - **May 12, 2010.**

8. 33rd Annual Meeting of the American Society of Biomechanics, “How to build a powered lower-limb exoskeleton: A tutorial.” (Co-presenter with D.P. Ferris, K.E. Gordon C.L. Lewis - State College, Pennsylvania - **August 26, 2009.**

7. Department of Kinesiology, University of Massachusetts, “It pays to have a spring in your step.” - Amherst, Massachusetts - **April 21, 2009.**

6. Concord Field Station Structure-Function Seminar Series, Harvard University, “It pays to have a spring in your step: Insights from human walking and isolated frog muscle-tendon." - Bedford, Massachusetts - **April 15, 2009.**

5. Society of Experimental Biology Symposium: Integrating the Mechanics and Energetics of Locomotion, “Tendon elasticity influences the mechanics, energetics and control of muscle contraction: Insights from human walking and isolated frog muscle-tendon.” - Marseille, France - **July 8, 2008.**

4. Joint Department of Biomedical Engineering, University of North Carolina at Chapel Hill and North Carolina State University, ”Powered Exoskeletons: Neuromechanics and energetics at the human-machine interface.” - Raleigh, NC - **April 16, 2008.**

3. Department of Orthopaedics, Brown University Medical School, Foot and Ankle Group Seminar, “Mechanics and energetics of walking with powered ankle exoskeletons,” - Providence, RI - **November, 2007.**

2. Department of Mechanical Engineering, University of California at Berkeley, Human Power Augmentation Group Seminar, “Metabolic cost of ankle joint mechanical work,” - Berkeley, CA - **August, 2007.**

1. Department of Ecology and Evolutionary Biology, Brown University, Functional Morphology Group Seminar, “Mechanics and energetics of walking with powered ankle exoskeletons.” - Providence, RI - **February, 2007.**

Conference Presentations with Proceedings

&Indicates co-author that is/was an undergraduate or high school advisee

126. Jakubowski K, **Sawicki GS**, Ting L “Center of mass kinematics robustly predict reactive joint torques at the ankle, knee, and hip during perturbed standing”, *XXIX Congress of the International Society of Biomechanics (ISB)*, July 30- August 3, Fukuoka, Japan (2023).

***125.** Punith LK, Abbott EM, **Sawicki GS**, “Dynamic muscle properties enable rapid recovery from terrain perturbations without change in neural control”, *Annual Meeting of the Society for Integrative and Comparative Biology (SICB)*, January 3-7, Austin, Texas (2023).

*Selected as finalist for D. Dwight Davis Award -Best Student Presentation in the Division of Vertebrate Morphology.

124. Krupenevich RL, **Sawicki GS**, Franz JR. “Age-related reductions in Achilles tendon stiffness persist at matched triceps surae activations” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

123. Davenport FR, Leestma JK, Staten A, Bhakta K, Fernandez J, Mazumdar A, Young AJ, **Sawicki GS**. “Joint-level biomechanics of high-intensity industrial tasks to inform exoskeleton mitigation strategies” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

122. Alshareef A, Stephens J, Ting LH, **Sawicki GS**. “How do elastic exoskeletons influence muscle spindle feedback?” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

121. &Smith CR, Leestma JK, Young AJ, **Sawicki GS**. “A machine learning approach for determining whole body angular momentum from wearable sensors” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

120. Trejo LH, Schroeder JN, **Sawicki GS**. “Submaximal soleus force length characteristics with aging” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

119. Krupenevich RL, **Sawicki GS**, Franz JR. “Linking walking economy and the metabolic cost of isometric plantarflexor action” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

118. Leestma JK, &Smith CR, Golyski PR, Young AJ, **Sawicki GS**. “The utility of stability: whole body angular momentum informs step placement during perturbed walking” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

117. Gosyne JR, **Sawicki GS**. “Why is the metabolic cost of locomotion higher on sand?” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

116. Beck ON, Shepherd MK, Rastogi R, Ting LH, **Sawicki GS**. “Exoskeletons need to react faster than reflexes to improve standing balance” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

115. Shafer BA, Young AJ, **Sawicki GS.** “Overground optimization of ankle exoskeleton assistance for self-selected walking speed” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

114. Golyski PR, **Sawicki GS**. “How the rectus femoris mechanically “works” during perturbed walking” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

***113.** Golyski PR, Panizzolo FA, **Sawicki GS**. “A passive hip flexion device may improve stability during perturbed walking” *North American Congress on Biomechanics*, August 21-25, Ottawa, Canada (2022).

*Selected as the 2022 American Society of Biomechanics Predoctoral Achievement Award winner.

112. Beck ON, Shepherd MK, Rastogi R, Martino G, **Sawicki GS,** Ting LH, “Artificially fast exo-boots improve standing balance while reducing Initial feedback response” *International Society of Posture and Gait Research (ISPGR)*, July 3-7, Montreal, Canada (2022).

111. Simha SN, Horslen B, **Sawicki GS,** Campbell K, Ting LH, "Modeling muscle's intrinsic resistance to stretch: implications for simulations of perturbed posture" *International Society of Posture and Gait Research (ISPGR)*, July 3-7, Montreal, Canada (2022).

110. Stephens JD, Simha SN, Abbott EM, Wood L, Nardelli P, Cope TC, Ting LH, **Sawicki GS**. "Muscle fascicle length does not explain spindle firing rates in passive stretches of rat gastrocnemius with added tendon compliance" *International Society of Posture and Gait Research (ISPGR)*, July 3-7, Montreal, Canada (2022).

109. Trejo LH, Schroeder JN, Beck ON, **Sawicki GS,** (Poster) "Submaximal soleus force-length characteristics with aging". The 45th Annual Meeting of the American Society of Biomechanics (Virtual), August 10-13, (2021).

108. Golyski PR, **Sawicki GS,** (Talk) "Which joints compensate for destabilizing energy during walking?". The 45th Annual Meeting of the American Society of Biomechanics (Virtual), August 10-13, (2021).

107. Beck ON, Trejo LH, Schroeder JN, Franz JR, **Sawicki GS,** (Poster) "Relatively shorter muscled fascicles increase the metabolic cost of cyclic force production". The 45th Annual Meeting of the American Society of Biomechanics (Virtual), August 10-13, (2021).

***106.** &Funk CJ, Krupenevich RL, **Sawicki GS,** Franz JR, (Talk) "Exploring the functional boundaries and metabolism of triceps surae force-length relations during walking". The 45th Annual Meeting of the American Society of Biomechanics (Virtual), August 10-13, (2021).
*Selected as the 2021 American Society of Biomechanics Journal of Biomechanics Award winner.

105. Leestma JK, **Sawicki GS,** Young AJ, (Talk) "Perturbation direction reverses the effect of timing on peal center of mass speed". The 45th Annual Meeting of the American Society of Biomechanics (Virtual), August 10-13, (2021).

104. McCain EM, Lewek MD, **Sawicki GS,** Saul KR, (Talk) "Impact of induced gait asymmetry on knee joint reaction forces". The 45th Annual Meeting of the American Society of Biomechanics (Virtual), August 10-13, (2021).

103. Gosyne JR, **Sawicki GS**, (Talk) "Optimizing contact area and joint stiffness of a passive foot-ankle exoskeleton for locomotion on deformable terrain". Bulletin of the American Physical Society (APS) March 15-19, (2021).

102. Govindaraj T, Howland DR, **Sawicki GS**, Nichols TR (Poster) "Distributed force feedback modulates the dependence of limb stiffness and inter-joint coordination on perturbation direction: a simulation study". The Society for Neuroscience Global Connectome, January 11-13, (2021).

101. Punith LK, Williamson J, Dick TJM, **Sawicki GS**, "Spring-like passive elastic exoskeletons may improve stability and safety of locomotion in uneven terrain"*. International Symposium on Wearable Robotics (WeRob)* (2020).

100. Nuckols RW, Lee S, Swaminathan K, Walsh CJ, Howe RD, **Sawicki GS**, "Ultrasound imaging of plantarflexor muscles during robotic ankle assisted walking: Effects on muscle tendon dynamics and application towards improved exoskeleton and exosuit control"*. International Symposium on Wearable Robotics (WeRob)* (2020).

***99.** McCain EM, Saul KR, **Sawicki GS**, Lewek MD. (Talk) "Isolating the energetic consequences of mechanically imposed reductions in ankle and knee flexion during gait". The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

*Finalist for the vASB 3 Minute Doctoral Thesis Competition

98. Gosyne JR, [&]Lou Q, **Sawicki GS.** (Poster) “The effect of frequency on the energetics of hopping in dissipative terrain“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

97. Govindaraj T, Nichols TR, **Sawicki GS.** (Poster) “The influence of inter-joint force-dependent feedback on whole limb impedance over a range of frequencies“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

96. [&]Nevarez-Sanchez W, Shafer BA, Young AJ, **Sawicki GS.** (Poster) “Can EMG accurately predict metabolically optimal step frequency“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

95. [&]White Z, Schroeder JN, Trejo LH, **Sawicki GS.** (Poster) “Reliability of maximum voluntary isometric contractions“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

94. Schroeder JN, Trejo LH, Beck ON, **Sawicki GS.** (Poster) “Relative contribution of material and morphological properties to altered Achilles tendon stiffness in aging“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

93. Abbott EM, Nardelli P, Cope T, **Sawicki GS.** (Talk) “Mechanosensation by muscle spindles during active muscle-tendon work loops“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

92. Leestma JK, **Sawicki GS,** Young AJ. (Poster) “Spatiotemporal recovery responses used to combat translational platform perturbations during walking“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

91. Golyski PR, **Sawicki GS.** (Poster) “Are biceps femoris muscle length changes influenced by in-series compliance across locomotor demand ?“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

90. [&]Vazquez E, Golyski PR, Leestma JK, **Sawicki GS.** (Poster) “Treadmill belt acceleration timing affects stability during walking“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

89. Beck ON, Gosyne JR, Franz JR, **Sawicki GS.** (Poster) “Cyclically producing the same average muscle-tendon force with a smaller duty increases metabolic rate“. The 44th Annual Meeting of the American Society of Biomechanics, August 4-7th, Atlanta, GA (2020).

88. Leestma JK, **Sawicki GS,** Young AJ. (Poster) “Responses to locomotion commotion caused by translation perturbations“. Dynamic Walking Conference, May 14th, Hawley, PA (2020)

87. Govindaraj T, Howland DR, **Sawicki GS**, Nichols TR. (Poster) “A modeling and optimization framework for understanding the role of reflexes in the feline hindlimb in promoting proportional coordination of the joints during yield.” The 49th Annual Meeting of the Society for Neuroscience, October 19th-23rd, Chicago, IL (2019).

86. Punith LK, **Sawicki GS,** (Poster) “Think with your feet, not with your head: A biologically inspired design approach for augmenting unsteady locomotion”. 9th International Symposium on Adaptive Motion of Animals and Machines (AMAM), August 20-23, EPFL, Lausanne, Switzerland (2019).

85. Rock CG, Trejo LH, **Sawicki GS,** Chang YH (Poster) “How to hop on Mars: Neuromechanical model suggests low frequency is optimal”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

84. McCain EM, Dick TJM, Saul KR, Lewek MD, **Sawicki GS** (Poster) “Towards understanding changes in joint loading due to reduced knee flexion in post-stroke gait”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

83. Beck ON, Nuckols RW, **Sawicki GS** (Poster) “Exoskeletons improve walking economy by steering muscle dynamics”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

82. Rosa LG, **Sawicki GS** (Talk) “Real-time muscle fascicle length measurement via machine learning”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

81. Trejo LH, Schroeder JN, **Sawicki GS** (Talk) “Can ankle exoskeletons reduce the metabolic cost of older adult locomotion?”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

80. Schroeder JN, **Sawicki GS** (Poster) “Modeling the impact of long-term exoskeleton use on Achilles tendon mechanical and morphological properties”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

79. Punith LK, Abbott EM, **Sawicki GS** (Poster) “Combining feedforward control and series elasticity enables muscle-tendon units to rapidly and safely reject perturbations”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

78. Punith LK, Abbott EM, **Sawicki GS** (Poster) “Isolated muscle-tendon units reject a broad range of perturbations without feedback”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

77. Shafer BA, Golyski PR, **Sawicki GS**, Young AJ (Poster) “Hip exoskeleton emulator to explore spring-like assistance strategies during walking”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

76. Golyski PR, **Sawicki GS** (Poster) “Optimizing a passive hip exoskeleton for balance on a prosthetic foot”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

75. Gosyne JR, Tomkinson IK, **Sawicki GS** (Poster) “Optimizing contact area and joint stiffness of a passive foot-ankle exoskeleton for hopping on deformable terrain”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

74. Govindaraj T, Nichols TR, **Sawicki GS** (Poster) “Optimizing joint impedances to quickly reject an endpoint force perturbation in a cat hindlimb”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

73. Abbott EM, Punith LK, **Sawicki GS** (Poster) “Biorobotic jumping: antagonist muscle-tendon units can controllably enhance power across a joint”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

72. Abbott EM, Nardelli P, Cope T, **Sawicki GS** (Poster) “Examining changes to proprioceptive signals with increased muscle-tendon compliance in situ”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

71. Oldshue AH, Punith LK, Blum KP, **Sawicki GS**, Ting LH (Poster) “Modeling muscle cross-bridge dynamics for movement simulations”. XXVII Congress of the International Society of Biomechanics, July 31-August 4th, Calgary, Canada (2019).

70. Sawicki GS, (Talk) “Getting ‘under the skin’ to examine how exoskeletons steer muscle dynamics during locomotion”. Dynamic Walking XIII, June 2-5, Canmore, Alberta (2019).

***69.** McCain EM, Giest TN, Saul KR, Dick TJM, **Sawicki GS**, (Talk+Poster) "Post-stroke walking mechanics using a speed-adaptive myoelectric exoskeleton controller". 42nd Annual Meeting of American Society of Biomechanics, August 8-11, Rochester, Minnesota (2018).
*Finalist for the ASB Doctoral Student Presentation Competition.

68. Dick TJM, Nuckols R, **Sawicki GS**, (Thematic Poster) "Tuned or not? Ultrasound measurements of soleus fascicle dynamics during human walking with elastic ankle exoskeletons". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

67. Doering JA, **Sawicki GS**, (Poster) "From hopping on land to treading in water: Understanding limits on muscle-tendon performance in changing environments". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

66. Green BA, **Sawicki GS**, Rubenson J (Thematic Poster) "Energy cost of walking in a passive-elastic ankle-metatarsophalangeal exoskeleton". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

65. McCall JV, Philius SA, Nuckols RW, **Sawicki GS**, (Poster) "Performance of a powered ankle exoskeleton using neuromuscular model-based control over a range of walking speeds". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

64. Nuckols RW, Dick TJ, Franz JR, **Sawicki GS**, (Thematic Poster) "Using elastic ankle exoskeletons to counteract age-related structure-function deficits". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

62. Nuckols RW, **Sawicki GS**, (Poster) "Effect of speed on the mechanics and energetics of walking with an elastic ankle exoskeleton". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

62. Philius SA, McCall JV, Nuckols RW, **Sawicki GS**, (Poster) "Mechanics and energetics of walking with a powered ankle exoskeleton using neuromuscular model-based control -- a parameter study". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

61. Poppo MN, McCain EM, Dick TJ, Saul KR, **Sawicki GS**, (Poster) "Dynamic simulation of elastic ankle exoskeleton effects on plantarflexor muscle-tendon neuromechanics during walking". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

60. Punith LK, McKnight M, Narsipur S, **Sawicki GS**, (Thematic Poster) "Positive force feedback allows for faster and safer recovery in perturbed hopping -- at a cost". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

59. Rabani AS, **Sawicki GS**, Riemer R, (Poster) "Prediction equations for leg kinematics and kinetics during slope running". 41st Annual Meeting of American Society of Biomechanics, August 8-11, Boulder, Colorado (2017).

58. Dick TJ, Punith LK, **Sawicki GS**, (Talk) "How do we recover from falling in a hole? A joint-level analysis". XXVI Congress of the International Society of Biomechanics, July 23-27, Brisbane, QL, Australia (2017).

57. Nuckols R, **Sawicki GS**, (Talk) "Effect of elastic ankle exoskeleton assistance on soleus muscle dynamics during walking". XXVI Congress of the International Society of Biomechanics, July 23-27, Brisbane, QL, Australia (2017).

56. Sawicki GS, Nardelli P, Cope T (Poster) “A novel work loop approach for decoding sensory information in afferent nerves during cyclic muscle contractions”. 46th Annual Meeting of the Society for Neuroscience (SfN), November 12-16, San Diego, California (2016).

55. Danos N, Holt N, **Sawicki GS**, Azizi E, (Poster) "Modeling muscle-tendon dynamics during walking in aged rats (*Rattus norwegius*)”. 40th Annual Meeting of American Society of Biomechanics, August 2-5, Raleigh, North Carolina (2016).

54. Doering J, **Sawicki GS**, (Poster) "Changing environment dynamics can spontaneously shift muscle-tendon function during cyclic contractions”. 40th Annual Meeting of American Society of Biomechanics, August 2-5, Raleigh, North Carolina (2016).

53. Giest TN, **Sawicki GS**, (Thematic Poster) "Speed-dependent, proportional myoelectric exoskeleton controller with adaptive gains”. 40th Annual Meeting of American Society of Biomechanics, August 2-5, Raleigh, North Carolina (2016).

52. McKnight M, Narsipur S, **Sawicki GS**, (Poster) "Muscle-tendon model predicts positive force feedback leads to safer, not faster recovery from perturbation”. 40th Annual Meeting of American Society of Biomechanics, August 2-5, Raleigh, North Carolina (2016).

51. Nuckols R, **Sawicki GS**, (Talk) "The goldilocks zone: Interplay of elastic exoskeleton assistance and walking speed on the mechanics and energetics of walking”. 40th Annual Meeting of American Society of Biomechanics, August 2-5, Raleigh, North Carolina (2016).

50. Nuckols R, Giest T, Philius S, **Sawicki GS**, (Poster) "Embodying human plantarflexor muscle-tendon physiology for neuromuscular model-based control of a powered ankle exoskeleton”. 40th Annual Meeting of American Society of Biomechanics, August 2-5, Raleigh, North Carolina (2016).

***49.** Robertson BD, &Vadakkeveedu S, **Sawicki GS**, (Talk) "An *in vitro* approach for directly observing muscle-tendon dynamics with parallel elastic mechanical assistance”. 40th Annual Meeting of American Society of Biomechanics, August 2-5, Raleigh, North Carolina (2016).
*Winner 2016 American Society of Biomechanics Journal of Biomechanics Award.

48. Browne MG, **Sawicki GS**, (Thematic Poster) "Development of a visual biofeedback system for center of pressure modification during gait". 39th Annual Meeting of American Society of Biomechanics, August 5-8, Columbus, Ohio (2015).

47. Doering JA, **Sawicki GS**, (Talk) "Influence of tendon stiffness on muscle-tendon interaction dynamics during cyclic contractions". 39th Annual Meeting of American Society of Biomechanics, August 5-8, Columbus, Ohio (2015).

46. Nuckols RW, Farris DJ, Riemer R, **Sawicki GS**, (Talk) "Redistribution of lower-limb joint power during uphill and downhill walking and running". 39th Annual Meeting of American Society of Biomechanics, August 5-8, Columbus, Ohio (2015).

45. Takahashi KZ, Gross MT, van Werkhoven H, Piazza SJ, **Sawicki GS**, (Poster) "The effects of added foot stiffness on soleus muscle fascicle behavior during human walking". 39th Annual Meeting of American Society of Biomechanics, August 5-8, Columbus, Ohio (2015).

44. Westbrook AE, **Sawicki GS**, (Thematic Poster) "Modifying ankle joint neuromechanics using an ankle foot orthosis with vibrotactile feedback during human walking". 39th Annual Meeting of American Society of Biomechanics, August 5-8, Columbus, Ohio (2015).

43. Bell EA, Takahashi KZ, Rider PM, **Sawicki GS**, Domire ZJ, (Poster) "Effect of plantar fascia stiffness on foot energy absorption during overground walking". 39th Annual Meeting of American Society of Biomechanics, August 5-8, Columbus, Ohio (2015).

42. Farris DJ, **Sawicki GS**, (Talk) "Paradoxical effects of elastic ankle exoskeletons on plantarflexor muscle mechanics and energetics". 7th World Congress of Biomechanics, July 6-11, Boston, Massachusetts (2014).

41. Zelik K, Takahashi KZ, **Sawicki GS**, (Talk) "Positively missing: Reassessing work production in human gait and the implications for assistive technology". 7th World Congress of Biomechanics, July 6-11, Boston, Massachusetts (2014).

***40.** Mizrachi S, Riemer R, **Sawicki GS**, (Poster) "Prediction equations for leg kinematics and kinetics during slope walking and running". 7th World Congress of Biomechanics, July 6-11, Boston, Massachusetts (2014).
*2nd place: WCB M.S. Level Student Paper Award

39. Takahashi KZ, Lewek MD, **Sawicki GS**, (Poster) "A user-controlled powered ankle exoskeleton to drive gait modifications post-stroke". 7th World Congress of Biomechanics, July 6-11, Boston, Massachusetts (2014).

38. Robertson BD, **Sawicki GS**, (Poster) "Unconstrained workloops reveal frequency-phase coupling in compliant muscle-tendon unit". 7th World Congress of Biomechanics, July 6-11, Boston, Massachusetts (2014).

37. Wiggin MB, Collins SH, **Sawicki GS**, (Poster) "Neuromechanics and energetics of walking with a simple passive elastic ankle exoskeleton". 7th World Congress of Biomechanics, July 6-11, Boston, Massachusetts (2014).

36. Mahon CE, Farris DJ, **Sawicki GS**, Lewek MD, "Individual limb mechanical analysis of gait following stroke". 37th Annual Meeting of American Society of Biomechanics, September 4-8, Omaha, Nebraska (2013).

***35.** Takahashi KZ, **Sawicki GS**, "A user-controlled powered ankle exoskeleton to assist gait propulsion post-stroke". 37th Annual Meeting of American Society of Biomechanics, September 4-8, Omaha, Nebraska (2013).
*Top ten nomination for Clinical Biomechanics Award.

34. Farris DJ, **Sawicki GS** "The effects of wearing a spring-loaded ankle exoskeleton on soleus muscle mechanics during two-legged hopping in humans". 36th Annual Meeting of American Society of Biomechanics, August 15-18, Gainesville, Florida (2012).

***33.** Wiggin MB, **Sawicki GS** "A passive elastic exoskeleton reduces the metabolic cost of walking using controlled energy storage and release". 36th Annual Meeting of American Society of Biomechanics, August 15-18, Gainesville, Florida (2012).
*Winner of ASB President's Poster Award.

32. Robertson BD, **Sawicki GS** "More is not always better: Consequences of exoskeleton assistance in a compliant muscle-tendon system". 36th Annual Meeting of American Society of Biomechanics, August 15-18, Gainesville, Florida (2012).

31. Richards CR, **Sawicki GS** "Power amplification in water: modeling muscle-tendon dynamics during swimming". Annual Meeting of the Society for Integrative and Comparative Biology, January 3-7, Charleston, South Carolina (2012).

30. Wutzke CJ, **Sawicki GS**, Lewek MD "Influence of a fixed ankle on joint mechanics and metabolic cost of walking". 35th Annual Meeting of the American Society of Biomechanics, August 10-13, Long Beach, California (2011).

29. Hampton A, **Sawicki GS** "Mechanics and energetics of post-stroke walking: Towards a muscle-level understanding". 35th Annual Meeting of the American Society of Biomechanics, August 10-13, Long Beach, California (2011).

28. Robertson BD, **Sawicki GS** "Controlling compliance: Feed-forward stimulation pattern influences elastic tuning during cyclic muscle-tendon contractions". 35th Annual Meeting of the American Society of Biomechanics, August 10-13, Long Beach, California (2011).

27. Matta P, Myers J, **Sawicki GS** "The influence of ball mass on youth baseball injury potential: A simulation study". 35th Annual Meeting of the American Society of Biomechanics, August 10-13, Long Beach, California (2011).

26. Farris DJ, **Sawicki GS** "Force-velocity behaviour of human medial gastrocnemius shifts at the walk to run transition". 35th Annual Meeting of the American Society of Biomechanics, August 10-13, Long Beach, California (2011).

25. Farris DJ, Sawicki GS "The mechanics and energetics of human walking and running: A joint-level perspective". 35th Annual Meeting of the American Society of Biomechanics, August 10-13, Long Beach, California (2011).

24. Sawicki GS, Farris DJ (Talk) "Mechanics and energetics of human hopping with a passive-elastic ankle exoskeleton". 34th Annual Meeting of the American Society of Biomechanics, August 18-21, Providence, Rhode Island (2010).

23. Sawicki GS, Roberts TJ (Talk) "Muscle-tendon architecture shapes conditions for isometric force production". Annual Meeting of the Society for Integrative and Comparative Biology, January 5, Seattle, Washington (2010).

22. Farris DJ, **Sawicki GS** "Spring-loaded ankle exoskeletons reduce metabolic cost and alter gastrocnemius fascicle behaviour in human hopping". 34th Annual Meeting of the American Society of Biomechanics, August 18-21, Providence, Rhode Island (2010).

21. Wiggin MB, Collins SH, **Sawicki GS** "A passive-elastic ankle exoskeleton using controlled energy storage and release". 34th Annual Meeting of the American Society of Biomechanics, August 18-21, Providence, Rhode Island (2010).

20. **Sawicki GS**, Roberts TJ (Talk) “Influence of load on power amplification in a compliant muscle-tendon”. Annual Southeast Regional Meeting of the Society for Integrative and Comparative Biology, September 26, Chapel Hill, North Carolina (2009).

19. &Sheppard P, **Sawicki GS,** Roberts TJ “Power augmentation in a compliant muscle-tendon system”. 33rd Annual Meeting of the American Society of Biomechanics, August 26-29, State College, Pennsylvania (2009).

18. Sawicki GS, Roberts TJ (Poster) “Isometric force production requires asymmetric muscle-tendon length trajectory”. 33rd Annual Meeting of the American Society of Biomechanics, August 26-29, State College, Pennsylvania (2009).

17. Sawicki GS, &Sheppard P, Roberts TJ (Talk) “Mechanical power amplification in a compliant muscle-tendon working on an inertial load in gravity”. Annual Meeting of the Society of Experimental Biology, June 29 - July 1, Glasgow, Scotland (2009).

16. Sawicki GS, Azizi E, Roberts TJ (Talk) “Muscle activation timing influences muscle-tendon mechanical performance during cyclic contractions”. North American Conference of Biomechanics, August 5-9, Ann Arbor, Michigan (2008).

15. Sawicki GS, Azizi E, Roberts, TJ (Poster) “Optimal timing for elastic behavior of a compliant muscle-tendon”. Dynamic Walking IV, May 25-29, Delft, Netherlands (2008).

14. Sawicki GS, Ferris DP, (Talk) “Mechanics and energetics of level walking with powered ankle exoskeletons”. 31st Annual Meeting of the American Society of Biomechanics, August 22-25, Palo Alto, California (2007).

13. Sawicki GS, Ferris DP, (Poster) “Mechanics and energetics of incline walking with powered ankle exoskeletons”. 31st Annual Meeting of the American Society of Biomechanics, August 22-25, Palo Alto, California (2007).

12. Sawicki GS, Ferris DP, (Talk) “Mechanics and energetics of walking with powered ankle exoskeletons”. Dynamic Walking III, June 24-30, Mariehamn, Finland (2007).

11. Sawicki GS, Ferris DP, (Talk) “Mechanics and control of a knee-ankle-foot orthosis (KAFO) powered with artificial pneumatic muscles”. Fifth World Congress of Biomechanics, July 29-August 4, Munich, Germany (2006).

10. Domingo A, **Sawicki GS**, Ferris DP, “Comparison of muscle activity and kinematics during treadmill walking with and without manual assistance in individuals with incomplete spinal cord injury”. Fifth World Congress of Biomechanics, July 29-August 4, Munich, Germany (2006).

9. Gordon KE, **Sawicki GS**, Ferris DP, “Mechanical performance of artificial pneumatic muscles to power an ankle-foot orthosis”. XXth Congress of the International Society of Biomechanics and 29th Annual Meeting of the American Society of Biomechanics, August 1-5, Cleveland, Ohio (2005).

8. Domingo A, **Sawicki GS**, Ferris DP, “Muscle activation during manually assisted treadmill training after incomplete spinal cord injury”. XXth Congress of the International Society of Biomechanics and 29th Annual Meeting of the American Society of Biomechanics, August 1-5, Cleveland, Ohio (2005).

7. Sawicki GS, Domingo A, Ferris DP (Talk), “Therapist controlled powered lower limb orthoses to assist locomotor training”. XXth Congress of the International Society of Biomechanics and 29th Annual Meeting of the American Society of Biomechanics, August 1-5, Cleveland, Ohio (2005).

6. **Sawicki GS**, Gordon, KE, Ferris DP (Poster), “Powered lower limb orthoses: Applications in Motor Adaptation and Rehabilitation”. IEEE 9th International Conference on Rehabilitation Robotics: Frontiers of the Human-Machine Interface, June 28-July 1, Chicago, Illinois (2005).

5. **Sawicki GS**, Domingo A, Ferris DP (Poster), “Powered lower limb orthoses to assist gait rehabilitation after spinal cord injury”. The Society for the Neural Control of Movement Annual Meeting, April 12-17, Key Biscayne, Florida (2005).

4. **Sawicki GS**, Benkoe G, Wantia J, Erb, P, “Coupled motivations for power, affiliation, and achievement: Modeling resource allocation dynamics in social organizations”. XXth Proceedings of the Santa Fe Institute Complex Systems Summer School, (2004).

3. **Sawicki GS**, “Do we walk at the ‘edge of chaos’?: Complexity in neuromechanical systems”. XXth Proceedings of the Santa Fe Institute Complex Systems Summer School, (2004).

2. **Sawicki GS**, Peethambaran, A, Ferris DP (Poster), “Powered lower limb orthoses to assist locomotor training”. Christopher Reeve Paralysis Foundation Spinal Cord Symposium, March 21-23, Oak Brook, Illinois, USA (2004).

1. **Sawicki GS** (Talk) “A knee-ankle-foot orthosis (KAFO) powered by artificial pneumatic muscles”. XIXth Congress of the International Society of Biomechanics, July 6-11, Dunedin, New Zealand, (2003).

Teaching Experience

Georgia Institute of Technology (GaTech), School of Mechanical Engineering[3/4] and Biological Sciences[1/4] (2017-present)

Fall 2022, ME 8843 (-->ME6409) - Biomechatronics of Wearable Robotic Systems (33)
Spring 2022, APPH 6232 - Locomotion Neuromechanics - (21 students)
Spring 2022, ROB 8750/51 - Multidisciplinary Robotics Research (27 students)
Fall 2021, ROB 8750/51 - Multidisciplinary Robotics Research (21 students)
Spring 2021, ME 4182 - Capstone Design - (32 students)
Spring 2021, ME 8843 - Biomechatronics of Wearable Robotic Systems (28 students)
Fall 2020, ME 4182 - Capstone Design - (30 students)
Spring 2020, ME 4182 - Capstone Design - (16 students)
Spring 2020, ME 8843 - Biomechatronics of Wearable Robotic Systems (11 students)
Fall 2019, ME 4182 - Capstone Design - (24 students)
Fall 2019, APPH 6232 - Locomotion Neuromechanics - (17 students)
Spring 2019, ROB 8750/51 - Multidisciplinary Robotics Research (20 students)
Fall 2018, ME 8843 - Biomechatronics of Wearable Robotic Systems (29 students)
Spring 2018, APPH 8012 – Capstone Research in Prosthetics and Orthotics (14 students)

as Guest Lecturer, Project Mentor in Guided Research
Spring 2021, Project Advisor – QBioS Lab Rotation - (Leo Wood)
Spring 2021, Project Advisor – BioSci Lab Rotation - (Melody Modarressi)
Spring 2021, Project Advisor - GaTech ME 8750 - Multidisciplinary Robotics Research (Alison Jenkins)
Fall 2020, Guest Lecture: GaTech APPH 8000 – Physio Research Seminar (Instructor: Mino Shinohara)
Fall 2020, Project Advisor - GaTech ME 8750 - Multidisciplinary Robotics Research (Pooja Moolchandani)
Spring 2019, Guest Lecture: GaTech ME 3141 - Cutting Edge Technologies (Instructor: David Ku)

Spring 2019, Project Advisor - GaTech ME 8843 - Special Problems in Mechanical Engineering - Mukul Bhatt
Spring 2019, Project Advisor - GaTech ME 8750 - Multidisciplinary Robotics Research (Elizabeth Fox, Visak Chadaladava, Laksh Punith, Luis Rosa)
Fall 2018, Guest Lecture: GaTech CS 3630 - Intro to Robotics and Perception (Instructor: Seth Hutchinson)
Spring 2018, Project Advisor - GaTech ME 8750 - Multidisciplinary Robotics Research (Jonathan Leyva Camargo)
Spring 2018, Project Advisor - GaTech BIOL 8901 - Special Topics in Quantitative Biosciences (Kelimar Diaz-Cruz)

North Carolina State University and University of North Carolina Chapel Hill, Joint Dept. of Biomedical Engineering (2009-2017)
Fall 2016, BME 590/ISE 589 -Introduction to Rehabilitation Engineering (24 students)
Fall 2015, BME 201 -Computer Methods in Biomedical Engineering (53 students)
Spring 2015, BME 590/ISE 589 -Introduction to Rehabilitation Engineering (16 students)
Fall 2014, BME 201 -Computer Methods in Biomedical Engineering (62 students)
Spring 2014, BME 590/ISE 589 -Introduction to Rehabilitation Engineering (12 students)
Fall 2013, BME 201 -Computer Methods in Biomedical Engineering (54 students)
Spring 2013, BME 590/ISE 589 -Introduction to Rehabilitation Engineering I (10 students)
Fall 2012, BME 201 -Computer Methods in Biomedical Engineering (50 students)
Spring 2012, BME 201 -Computer Methods in Biomedical Engineering (19 students)
Spring 2011, BME 201 -Computer Methods in Biomedical Engineering (25 students)

as Guest Lecturer, Project Mentor in Guided Research
Spring 2017, Fall 2015, Guest Lecture: NCSU MAE 589, “Human Movement Energetics” (Instructor: K. Saul)
Spring 2017, 2015, Guest Lecture: UNC-CH HMSC 710, “Muscle-tendon Mechanics” (Instructor: M. Lewek)
Spring 2014, Project Advisor (w/ Jesse Jur et al.) - ASSIST senior design team: A Textiles and ECE collaboration. “A wireless, wearable ankle sensor for estimating locomotion speed, step frequency, step length and step width in the real-world”.
Spring 2017, 2014, Guest Lecture: Duke University, Dept. of Biology, Comparative Physiology, “Muscle-tendon Mechanics” (Instructor: S. Patek)
Fall 2010, North Carolina State University Educational Training Funds (ETF); “Bio-robotics in the classroom: An EMG controlled pneumatic muscle-tendon system”. Obtained 22,000$ to develop a demonstration of proportional myoelectric controlled pneumatic muscles for classroom and public lectures.
Spring 2010, Guest Lecture: UNC-CH Physical Therapy Seminar (Instructor: M. Lewek)
Fall 2009, Guest Lecture: BME 400 Graduate Seminar (Instructor: Steve Quint)

University of Michigan-Ann Arbor, Dept. of Movement Science
Winter 2004, Graduate Student Teaching Assistant MVS 330: Movement Science Biomechanics Laboratory (30 students).

UC Davis, Dept. of Mechanical and Aeronautical Engineering
Fall 1999 - Spring 2001, Graduate Student Teaching Assistant Numerical Methods and Engineering Analysis (x 1), Analysis, Simulation and Design of Dynamic Systems (x 1), Machining (x 1), Computer-Aided Design (x 2), Heat Transfer (x 2), Engineering Design (x 1).

Honors/Awards/Fellowships

2022 Student Recognition of Excellence in Teaching - Honor Roll - APPH 6232, Spring 2002 - Georgia Institute of Technology - College of Sciences
2022 American Society of Biomechanics - Pre-doctoral Achievement Award – Pawel Golyski - [Journal # 62,63; Conf. #113]
2021 Mercator Fellow - DFG Sponsored Visiting Professor (2 wks in Sum '22,'23,'24) - TU Darmstadt
2021 Selected as a George W. Woodruff School Academic Leadership Fellow
2021 American Society of Biomechanics - Journal of Biomechanics Best Paper Award [Conf. #106]
2016 American Society of Biomechanics - Journal of Biomechanics Best Paper Award [Journal #39]
2013 Elected to NC State University Faculty Scholars (=$10,000/yr for 5 years for research endeavors)
2013-2017 NIH Clinical Loan Repayment Program (LRP) Award
2013 NIH TIGRR (Training in Grant Writing in Rehabilitation Research) Fellow
2012 American Society of Biomechanics - President's Award for Best Student Poster [Conf., #33]
2011 North Carolina State University Nominee for David and Lucille Packard Foundation Fellowship in Science and Engineering
2008-2011 National Institutes of Health (NIH) National Research Service Award for Postdoctoral Training *terminated in 2009 to take faculty position
2007 Runner-up for American Society of Biomechanics Pre-Doctoral Promising Young Scientist Award
2007 University of Michigan Kinesiology Shirley Cooper International Travel Award
2006 Hunsicker Memorial Award for Outstanding Graduate Student in Kinesiology
2005-2006 University of Michigan Rackham Graduate School Pre-Doctoral Fellowship (12-month stipend)
2003, 2004, 2006, 2007 University of Michigan Kinesiology Travel Award
2003 University of Michigan Harold and Vivian Shapiro Award for Academic Achievement
2003, 2006, 2007 University of Michigan Rackham Graduate School International Travel Award
2003 International Society of Biomechanics Travel Award - XIXth Congress of the International Society of Biomechanics, Dunedin, NZ
2003 University of Michigan Kinesiology Summer Fellowship
1999-2001 University of California, Davis Mechanical and Aeronautical Engineering Departmental Fellowship
1996-1999 Cornell University Mu Sigma Tau Engineering Co-op Member
1994 Eagle Scout - Boy Scouts of America

News and Publicity

PoWeR Lab:

07/31/2022 Dr. Sawicki and Pawel Golyski featured in Georgia Tech's Research News highlighting new work on human balance and Pawel's ASB Pre-doctoral Achievement Award Article Link
08/18/2021 Dr. Sawicki interviewed in '*The New York Times'* Phys Ed section "Is an exoskeleton suit in your future?" Article Link
03/17/2021 Research on the neuromechanics of recovering from falls covered in '*New Scientist'* "Your leg muscles automatically act to stop you falling when you trip" Article Link
08/21/2019 Dr. Sawicki featured for Tech Week on NPR's *'A Closer Look with Rose Scott'* Audio Link
08/15/2019 Dr. Sawicki interviewed for *'Triathlete Magazine'* re: elastic running exos Article Link
11/1/2018 Dr. Sawicki featured in the book "*How to Walk on Water and Climb up Walls: Animal Movement and Robots of the Future*" by David Hu. Princeton Press.
09/1/2017 Dr. Sawicki featured in the book "Balance: A Dizzying Journey through the Science of Our Most Delicate Sense" by Carol Svec, Chicago Review Press.
10/06/2015 CBS News North Carolina (WNCN) Video Link.
09/19/2015 Xploration Station 'Earth 2050'; Video Link. See the 2nd segment, minute 5+.

05/10/2015 Raleigh/Charlotte News and Observer Article Link.
01/15/2013 NC State Engineering Alumni Magazine. "Rising Stars"
10/15/2012 NC State Engineering Results Magazine.
08/30/2012 NC State Football Halftime National TV Advertisement.
08/30/2012 Featured in ASEE Video on NCSU Engineering.
04/30/2012 Raleigh News and Observer/ Charlotte Observer Science&Technology Section.
04/15/2012 NC State Engineering Alumni Magazine.
10/17/2011 WRAL News 14, Local, Raleigh-Durham-Chapel Hill North Carolina.
07/12/2011 ABCNews11 Local, Raleigh-Durham-Chapel Hill North Carolina.

Journal Publications: **Number-Date** indicates relevant publication from above.

56. Dick TJM, Clemente CJ, Punith LK, **Sawicki GS**, *Proc Biol Sci.* (**2021**).
New Scientist

30. Collins SH, Wiggin MB, Sawicki GS, *Nature* (**2015**).
New York Times, Washington Post, CBC, The Daily Telegraph (UK), The Guardian (UK), BBC, NPR Science Friday, Discovery, Outside Magazine, Popular Mechanics, Scientific American, Popular Science, Science Magazine, Der Spiegel (German), AFP Paris (French), The Australian, De Volkskrant (Dutch), Correio Braziliense, Medicine Today (Swedish), El Pais (Spanish), Japan Today, and many others. Video Link.

14. Farris DJ, Sawicki GS, *PNAS* (**2012**).
NC State Homepage; Men's Health Magazine and many others

13. Farris DJ, Sawicki GS, *J Roy Soc Interface* (**2011**).
NC State Homepage; NC State Technician, NC State Alumni Magazine, O&P.com, Fitness Magazine and others

8. Sawicki GS, Ferris DP, *J Exp Biol* (**2008**).
University of Michigan Press; MSNBC; Science Daily and others

1. Sawicki GS, Hubbard M, Stronge WJ, *Am J Phys* (**2003**).
Discovery Channel Canada; National Public Radio; Science Magazine; UC Davis Magazine; USA Today; American Museum of Natural History and others

Professional Society Memberships (past 5 years)

(ASB) American Society of Biomechanics
(ASME) American Society of Mechanical Engineers
(ISB) International Society of Biomechanics
(SEB) Society of Experimental Biology
(SfN) Society for Neuroscience
(SICB) Society for Integrative and Comparative Biology
(WeaRA) Wearable Robotics Association
Sigma Xi
(IEEE) Institute of Electrical and Electronics Engineers
(IEEE EMBC) Engineering in Medicine and Biology

Academic Service/Outreach

Institutional/School Service:

GaTech Schools of Mech. Eng. and BioSci:

2022-pres. co-Chair George W. Woodruff School of Mechanical Engineering DEI Council (w/Clint Rinehart)

2021, 2022, 2023 Panelist - FDMC: NIH Grant Writing for ME/BME Faculty (Organizer: Costas Arvanitis)

2021+ Committee Member – GTMI-Callaway Building- Space Committee – Robotics Faculty Representative

2020, 2021 Woodruff School RPT Area Committee – Ad Hoc Member for 3rd Year Review of Robotics RAG Faculty

2021 Committee Member - Mechanical Engineering Faculty Search in Robotics/Controls

2020-21 Committee co-Chair - Woodruff School of Mechanical Engineering PhD Qualifying Exam Transition to new format (w/Brandon Dixon)

2020+, 2018 Committee Member - Woodruff School of Mechanical Engineering Faculty Development and Mentoring Committee (FDMC) (Mentees: Aaron Young and Ye Zhao)

2019 Committee Member - Georgia Center for Medical Robotics (GCMR) Seminar Series

2019-20 Committee Member - Woodruff School of Mechanical Engineering Steering on PhD Qualifying Exam

2019-20 Committee Member - Woodruff School of Mechanical Engineering Graduate Program

2019+ Program Faculty Member - Parker H. Petit Institute for Bioengineering and Bioscience (IBB)

2019 Committee Member - Mechanical Engineering Faculty Search in Dynamics and Control/Bioengineering (Pursued: Tyler Clites)

2019 Committee Member - Woodruff School of Mechanical Engineering Faculty Research Council (FRC)

2018+ Organizer - Atlanta Neuromechanics Working Group (ATL NM)

2018 Committee Member - Executive Director of IRIM Search (Hired: Seth Hutchinson)

2018+ Program Faculty Member - GaTech Center for Biological Inspired Design (CBID)

2018+ Program Faculty Member - GaTech/Emory Dept. of Biomedical Engineering

2018-19 Committee Member - MSPO Program and Curriculum (Re)Development

2017 Committee Member - Mechanical Engineering Faculty Search in Mobile Robotics (Hired: Ye Zhao)

2017 Committee Member - MSPO Program Faculty Search (Hired Gerald Stark and Kinsey Herrin)

2017+ Program Faculty Member - GaTech Institute for Robotics and Intelligent Machines (IRIM),

2017+ Program Faculty Member - GaTech Graduate Program in BioEngineering (BioE)

2017+ Program Faculty Member - GaTech Graduate Program in Quantitative Biosciences (QBios)

2017-2021 Program Faculty Member - GaTech Traineeship Program in Human Centered Robotics – Accessibility, Rehabilitation, Movement Science (ARMS)

2017+ Program Faculty Member - Georgia Center for Medical Robotics (GCMR)

NC State/UNC-CH Joint Dept. Biomed. Eng.:

2016 Review Committee Member - NCSU Faculty Scholars

2015-2017 Associate Director - Rehabilitation Engineering Core

2015-2017 Board Member - Park Scholarship Advisory Committee

2015-2017 Faculty Liaison- BME Club - Raleigh Group

2015 Chair- BME Departmental Research Retreat

2015 Committee Member- BME Undergraduate Program Strategic Planning

2014-2015 Committee Member- BME Undergraduate Affairs

2013 Initiated bi-weekly Joint Lab Research Meetings with Sawicki, Huang, Cole, Saul, Loboa and Fisher Groups

2013, 2014 Committee Member - BME Departmental Research Retreat

2012 Organizer - BME 'Fall IN' Networking Event

2012, 2013, 2014, 2015 Committee Member- Rehabilitation Engineering Center Junior Faculty Search
2012-2015 Chair - Abrams Scholarship Program
2012-2015 Committee Member- Graduate Admissions Steering/Improvements
2012, 2013, 2014, 2015 Committee Member- 'Engineering a World Class Rehabilitation Center' Symposium Planning
2012 Organizer- BME Departmental Research Retreat- Rehabilitation Engineering Breakout Session
2011 Proposal Developer- Chancellors Faculty Excellence Program (with David Lalush)
2011-2015 Committee Member- Rehabilitation Engineering Core Steering (with Helen Huang, Mike Lewek, Rick Wysk; formerly Rick Segal and Rick Wysk); included Bi-Monthly Seminar organizing; REC Pilot Grant Proposal reviews; Affiliated Faculty Database development
2009-2015 Committee Member- Rehabilitation Center Director Search
2009-2012 Committee Member- BME Graduate Admissions

Brown University Dept. Ecol. Evol. Biol.:
2008-2009 Coordinator- Brown Morphology Group Seminar Series

University of Michigan-Ann Arbor Center for the Study of Complex Systems:
2005-2006 Coordinator- Complex Systems Advanced Academic Workshop (CSAAW)

Professional/Academic Society Service:
2023 Co-Organizer (w/ Jonas Rubenson - Penn State), Symposium on Comparative Neuromechanics; 9 invited speakers + curated posters in a ¾ day program at XXIX Congress of the International Society of Biomechanics (ISB).
2022 Panelist - National Academies of Sciences, Engineering and Medicine Ad Hoc Committee to Assess Army Research Laboratory (ARL) R&D related to Humans in Complex Systems (HCxS) – Aberdeen, MD, November 2-4 2022.
2022-2023 Guest Editor (w/ He Huang at UNC/NCSU) - Current Opinion in Biomedical Engineering - Special Issue on Neural Motor Control of Robotics - May 2023.
2021 Participant - National Science Foundation (NSF) Convergence Accelerator Workshop – LIBERATE – on defining problems at the interface of rehabilitation, industrial design and mobility. Resulted in Convergence Accelerator solicitation in 2022: Track H: Enhancing Opportunities for Persons with Disabilities
2021 Editorial Advisory Board Member – Journal of Applied Physiology – provide x5 manuscript review per year in the area of wearable robotics and human machine interaction
2021 Scientific Advisory Board Member - Motek Inc. – provide feedback on development of motion capture laboratory equipment (e.g., Computer Assisted Rehabilitation Environment (CAREN) system).
2021 Co-Chair/Host (w/ YH Chang - GaTech BioSci), 45th Annual Meeting of the American Society of Biomechanics (ASB); Downtown Atlanta, GA, August, 2021.
Note: Sawicki awarded NIH R13 (~$13,000) to fund DEI Programs + Awards at this meeting
2021 Co-Organizer (w/Christian Hubicki – Florida State University), Dynamic Walking 15th Annual Meeting, x3 on-line Episodes; ~200 attendees per episode, @ http://dynamicwalking2021.org
2020 Co-Organizer (w/ Maziar Sharbafi and Andre Seyfarth – TU Darmstadt), Special Session in International Symposium on Wearable Robotics (WeRob) "What should we expect from passive exoskeletons?"; x2 90 min sessions - 8 talks
2020 Co-Organizer (w/ Monica Daley - UC Irvine), ASB-ISB Muscle Workshop; 65 attendees online. ¾ day program of talks and brainstorming sessions.
2020 Co-Chair/Host (w/ YH Chang – GaTech BioSci), Virtual 44th Annual Meeting of the American Society of Biomechanics (ASB); Downtown Atlanta, GA, August 4-7, 2020.
2019-pres. Executive Board Member; Elected position of International Society of Biomechanics (ISB) Working Group on Comparative Neuromechanics (CNM); Membership Officer (2021-pres.)

2018 Co-Organizer; Dynamic Walking 13th Annual Meeting, May 21-25, Pensacola, FL; ~200 attendees, single track of talks/posters, hardware demos and tutorials @ http://dynamicwalking.org/dw2018/
2017 Program Committee Member (under Steve Piazza- Penn State), 41th Annual Meeting of the American Society of Biomechanics (ASB); Boulder, CO, August 8-11, 2017.
2016-2017 Opportunities Committee Member, Wearable Robotics Association (WeaRA)
2016 Co-Chair/Host (w Kate Saul - MAE), 40th Annual Meeting of the American Society of Biomechanics (ASB); Downtown Raleigh, NC, August 2-5, 2016. Helped obtain NIH R13 grant funding (~20k$) to run Outreach Expo (~200 attendees at Hunt Library) and organized campus tours on August 2nd to open the meeting.
2015 Session Chair, Rehabilitation Engineering, 25th Annual Meeting of Biomedical Engineering Society (BMES);
2015 Session Organizer and Chair, Thematic Posters on Exoskeleton and Orthosis Prescription, 39th Annual Meeting of American Society of Biomechanics (ASB);
2015 Abstract Reviewer, 39th Annual Meeting of American Society of Biomechanics (ASB);
2014 Invited Attendee; Roundtable Discussions on Human Augmentation Technology; US Army Natick Soldier RD&E Center; Lowell, MA; Dec. 10-12 2014
2014-2017 Co-Chair (w Sheila Patek, Duke Biology and William Kier, UNC Biology), Physical Biology of Organisms (PBO) Research Network; gathers Triangle area researchers interested in the intersection of Biology and Physics with a focus on locomotion systems.
2014 Abstract Reviewer, 7th World Congress of Biomechanics (WCB);
2014 Panel Organizer/Chair (Lower-limb Exoskeletons); 7th World Congress of Biomechanics (WCB); Coordinated 9 invited speakers.
2013 Session co-Chair (Energetics); American Society of Biomechanics (ASB) Annual Meeting
2012-2013 Invited Attendee; Principal Investigators Quarterly Meetings; DARPA WarriorWeb Program
2012 Session Chair (Gait Methods); American Society of Biomechanics (ASB) Annual Meeting
2012 Co-Organizer; Dynamic Walking 7th Annual Meeting, May 20-24, Pensacola, FL; ~150 attendees, single track of talks/posters, hardware demos and tutorials @ http://dynamicwalking.org/dw2012/
2011 Proceedings Manuscript Reviewer; International Conference on Rehabilitation Robotics (ICORR)
2010 Abstract Reviewer, Session Chair (Muscle); American Society of Biomechanics (ASB) Annual Meeting
2010 Session Chair (Muscle Mechanics); Society of Integrative and Comparative Biology (SICB) Annual Meeting
2009 Judge for Best Student Presentation Award; Society of Integrative and Comparative Biology (SICB) Annual Meeting

Tenure Case Reviewer
2022 University of Houston
2022 University of Delaware
2021 Queens University
2021 University of Michigan-Ann Arbor
2021 Northern Arizona University
2019 Northwestern University
2018 Massachusetts Institute of Technology
2017 University of Michigan-Ann Arbor
2017 Wichita State University
2016 Ben Gurion University of the Negev, Israel
2015 Medical University of South Carolina

Ad hoc Journal Reviewer (46 Journals)*:*

Annals of Biomedical Engineering
Applied Bionics and Biomechanics
ASME Journal of Biomechanical Engineering
Bionics and Biomechanics
Bioinspiration and Biomimetics
Clinical Biomechanics
Computer Methods in Biomechanics and Biomedical Engineering
eLife
Exercise and Sport Sciences Reviews
Experimental Brain Research
Expert Review of Medical Devices
Frontiers in Biotechnology and Bioengineering
Frontiers in Physiology
Frontiers in Robotics and Artificial Intelligence
Gait and Posture
Human Movement Science
Mechatronics
IEEE Transactions on Biomedical Engineering
IEEE Transactions on Human-Machine Systems
IEEE Transactions on Mechatronics
IEEE Transactions on Neural Systems and Rehabilitation Engineering
IEEE Transactions on Robotics
Integrative and Comparative Biology
International Journal of Robotics and Automation
Journal of Applied Biomechanics
Journal of Applied Physiology
Journal of Experimental Biology
Journal of Biomechanics
Journal of Neurophysiology
Journal of Neuroengineering and Rehabilitation
Journal of Spinal Cord Medicine
Journal of Theoretical Biology
Nature Biomedical Engineering
Nature Scientific Reports
Nature Medicine
PeerJ
PLoS Computational Biology
PLoS One
Proceedings of the National Academy of Sciences
Proceedings of the Royal Society - Biological Sciences
Proceedings of the Royal Society Interface
Robotica
Science
Science Robotics
Science Translational Medicine
Spinal Cord Medicine

Grant Reviewer (11 Panels since 2010)*:*

Spring 2022 - National Science Foundation (NSF); Disability and Rehabilitation Engineering (DARE) Ad Hoc Reviewer Panel (Program Officer: Grace Hwang)
Winter 2021 - National Institutes of Health (NIH); Musculoskeletal Rehabilitation Sciences (MRS) R01/03/21/43 Study Section (Program Officer: Maria Nurminskaya)
Spring 2020 - National Institutes of Health (NIH); Fellowships: Musculoskeletal, Rehabilitation and Skin Sciences R01/R15 and F31/32 Study Section (Program Officer: Chi-Wing Chow)
Winter 2020 - National Institutes of Health (NIH); Musculoskeletal Rehabilitation Sciences (MRS) R01/03/21/43 Study Section (Program Officer: Maria Nurminskaya)
Spring 2014 - National Science Foundation (NSF); National Robotics Initiative (NRI) Review Panel (Program Officer: Ted Conway)
Winter 2014 - National Institutes of Health (NIH); Musculoskeletal Rehabilitation Sciences (MRS) R01/03/21/43 Study Section - Mail Reviewer (Program Officer: Jo Pelham)
Summer 2012 - National Institutes of Health (NIH); Musculoskeletal Rehabilitation Sciences (MRS) R01/03/21/43 Study Section (Program Officer: Jo Pelham)
Spring 2011 - Joint Agency (NIH/NSF); Robotics SBIR Study Section (Program Officer: James Li)
Spring 2011 - National Institutes of Health (NIH); Musculoskeletal Rehabilitation Sciences (MRS) R43 Study Section (Program Officer: Jo Pelham)
Spring 2010 - National Science Foundation (NSF), RAPD II Study Section (Program Officer: Ted Conway)
Spring 2010 - National Institutes of Health (NIH); MTE Study Section (Program Officer: Jean Sipe)

Outreach (37 events since 2010)

3/2022 National Biomechanics Day (NBD) Event – Organized by PoWeR Lab trainees Jennifer Leestma, Max Shepherd, and Jonathan Gosyne and sponsored by awards from NBD (The Biomechanics Initiative LLC) and the Black Biomechanists affinity group of ASB, and Novel Electronics Inc., 37 students from Midtown High School's Engineering and Design Pathways attended a day full of demos, student panels, and even a build-your-own prosthesis competition**!**. The spotlight news article from the George W. Woodruff School of Mechanical Engineering is [here]. March 30, 2022.

3/2022 Atlanta Science Festival; Participated as an official event site representing GaTech ME PoWeR Lab research and showcasing "Biomechanics Basics". Learn how scientists research human motion for innovations in robotics, prosthetics and exoskeletons [here]. >50 families attended the 4 hour event. March 19, 2022.

8/2021 American Society of Biomechanics (ASB) Diversity Outreach Events – Wrote and received an NIH R13 grant to obtain funds to support Invited Panelists and Spotlight Lectures on the topic of Diversity, Equity and Inclusion in academia at the virtual annual meeting of ASB. Also established the 'Up and Comer' Awards for x3 underrepresented biomechanists to visit the institution of an academic mentor, deliver a talk and tour the facilities. August 10-13 2021.

7/2019 Georgia Tech Robotics Summer Scholars; Participated with EPIC and DART Lab members to host high school students (the scholars) from all over Atlanta and help them design, code, and test their autonomous rovers leading up to a competition. July 8-12, 2019.

3/2019 Atlanta Science Festival; Participated as an official event site representing GaTech ME PoWeR Lab research and showcasing "How Humans Move: Physiology & Biomechanics". >100 families attended the 4 hour event. March 10, 2019.

4/2018 National Robotics Week; Participated as a guest speaker at GaTech IRIM's Industry Showcase event, outlining 'the next' in wearable robotics research. Also participated at a brown

bag lunch Q&A session on the future of robotics for ~150 middle school students. April 11+12, 2018.

3/2018 Atlanta CoreNet Global Luncheon; Participated as a panelist representing GaTech IRIM to provide a perspective on how 'smart' wearable robotic systems could influence the future of commercial real estate. ~200 attendees that included a who's who in ATL real estate and venture capital sector. March 22, 2018.

9/2017 Polsinelli Technology Summit; Participated as a guest speaker representing GaTech IRIM to provide a perspective on the future of intellectual property as it relates to autonomous robots, with emphasis on wearables. ~40 attendees that included a who's who in ATL IP law and venture capital sector. September 26, 2017.

4/2017 National Biomechanics Day; Participated as a laboratory demonstration site for the 2nd annual National Biomechanics Day. 50+ middle schoolers participated in demos including hi-speed motion capture, ultrasound imaging and ankle exoskeleton locomotion. April 6, 2017.

2/2017 Stroke Support Group at Sanford, NC Community Enrichment Center- Presented with colleague Derek Kamper, PhD on lower and upper limb robotics for improving movement post-stroke to an audience of ~15 stroke survivors. February 9, 2017.

10/2016 Science Friday - "Better, Stronger, Faster" - The Six Million Dollar Man; Participated as a guest speaker and presented a laboratory demonstration of a EMG controlled pneumatic exoskeleton along with students at the North Carolina Museum of Natural Sciences. ~100+ people attended the talk, demo and movie showing. Link October 28, 2017.

4/2016 National Biomechanics Day; Participated as a laboratory demonstration site for the first ever National Biomechanics Day. About 40 middle schoolers participated in demos including hi-speed motion capture, ultrasound imaging and a controlling an artificial pneumatic muscle. April 7, 2016.

3/2016 Atlanta Science Festival, Science of the Circus; Participated as a 'science clown' alongside acrobats from the local Imperial Opa circus to explain and demonstrate simple physics/biomechanics principles like balance, angular momentum, conservation of energy, centrifugal/centripetal force, and torque. March 20, 2016.

12/2015 'Cracking the Code'- Masters in Mechanics: The Science of Speed !; Filmed a segment for the monthly series focused on understanding the fundamental biomechanics behind world-class speed guitar technique. Video Link. December 7, 2015.

9/2015 Xploration Station 'Earth 2050'; Filmed a segment focusing on our exoskeleton work for this STEM focused 'E/I' ('Education/Information') show that appears nationally on the Fox Network in 80% of households on Saturday mornings. Video Link. See the 2nd segment, minute 5+. First aired on September 19, 2015.

7/2015 North Carolina State University High School Summer Camp Program/ NSF REU Lab Demonstrations; Organized a 1 hour laboratory experience for ~15 talented local high school and college students. Exercises included building artificial muscles, acquiring electromyography and programming a real-time proportional myoelectric robot arm. July 9 & July 16, 2015.

4/2015 NC State Office of Postdoctoral Affairs Professional Development Workshop; Invited Panelist - Provided advice and feedback on academic life including job search , running a lab, work-life balance and other topics to ~30 NCU post docs. NC State University, Raleigh, NC; March 31, 2015.

4/2015 NC BME Annual Symposium; Invited Panelist - Provided advice and feedback on biomechanics research in academia and industry to ~50 undergraduate and graduate students from North Carolina. Duke University, Durham, NC; March 28, 2015.

10/2014 Classical Conversations Homeschool Co-op Group of Durham, NC; Organized a ½ day 'field-trip' laboratory experience for ~10 elementary/middle school students (third-eight graders) to design a prototype of a prosthetic limb and use their scientific understandings to write about their work. Exercises included building artificial muscles, acquiring electromyography and programming a real-time proportional myoelectric robot arm to provide students with a real-world context for their learning and a better understanding of how science can be used to help others and make the world a better place. October 10, 2014.

7/2014 North Carolina State University High School Summer Camp Program/ NSF REU Lab Demonstrations; Organized a 1/2 day laboratory experience for ~15 talented local high school and college students. Exercises included building artificial muscles, acquiring electromyography and programming a real-time proportional myoelectric robot arm. June 25 & July 23, 2014.

3/2014 North Carolina Academy of Science (NCAS) Annual Meeting Special Session - Our lab will present a talk and demonstration called: "Physiology of Wearable Robots" to an audience of >100 scientists and students. Link. March 29, 2014.

3/2014 Open Minds: Teen Science Cafe - Held monthly (First Fridays) at the North Carolina Museum of Natural Sciences; Our lab presented a talk and demonstration called: "Bio-inspired Wearable Robots" to an audience of teen scientists. Link. March 7, 2014.

7/2013 North Carolina State University High School Summer Camp Program/ NSF REU Lab Demonstrations; Organized a 1/2 day laboratory experience for ~15 talented local high school and college students. Exercises included building artificial muscles, acquiring electromyography and programming a real-time proportional myoelectric robot arm. July 9, 2013.

6/2013 'Live at Nine'; Appeared with lab members on a 1 hr. local cable television show in Sanford , NC. Demonstrated a myoelectrically controlled robotic ankle exoskeleton and clutch- based elastic ankle exoskeletons and discussed rehabilitation applications. June 4, 2013.

4/2013 'UNC Science Expo; Demonstrated a myoelectrically controlled robotic ankle exoskeleton to a general audience of students and their parents on Franklin St. in Chapel Hill. April 13, 2013.

4/2013 'BEST Fest (Biotechnology, Engineering, Science and Technology) - Sponsored by NC Museum of Natural Sciences; Demonstrated a myoelectrically controlled robotic ankle exoskeleton to a general audience of students and their parents. April 6, 2013.

1/2013 The Daily Planet Science Cafe – Held weekly at the North Carolina Museum of Natural Sciences; Presented a talk and demonstration called: "Wearable Robotics" to a general audience ~150 attendees. January 10, 2013. Video Link.

9/2012 'Heroes and Villains and Special Effects' - Sponsored by Durham Museum of Life and Sciences; Demonstrated a myoelectrically controlled robotic ankle exoskeleton to a general audience of students and their parents along with a talk about special effects in the movie 'Iron Man'. September 22, 2012.

8/2012 Raleigh/Durham FIRST LEGO League (FLL) - Demonstrated a myoelectrically controlled robotic ankle exoskeleton to a group of local middle school students and their parents who were participating in FIRST robotics healthcare competition. August 27, 2012.

8/2012 Stroke Support Group at Sanford, NC Community Enrichment Center- Presented a talk "Biologically Inspired Wearable Robotics for Improving Mobility Post-Stroke" to an audience of stroke survivors and staff therapists (~25 attendees). August 9, 2012.

4/2012 Robot Rumble- Sponsored by Durham Museum of Life and Sciences; Demonstrated a myoelectrically controlled robotic ankle exoskeleton to a general audience of students and their parents. April 14, 2012.

4/2012 Periodic Tables, Durham's Science Cafe-Sponsored by Durham Museum of Life and Sciences and held monthly at the Broad St. Cafe; Presented a talk and demonstration called: "Human PoWeR: Physiology of Wearable Robotics" to a general audience (~75 attendees). April 10, 2012.

10/2011 Stroke Support Group at UNC Meadowmont- Presented a talk "Biologically Inspired Wearable Robotics for Improving Mobility Post-Stroke" to an audience of stroke survivors and staff therapists (~20 attendees). October 12, 2011.

10/2011 Science Saturday Lecture Series- Sponsored by a North Carolina Space Grant and held weekly at the North Carolina Museum of Natural Sciences; Presented a talk and demonstration called: "Human PoWeR: Physiology of Wearable Robotics" to a general audience of students and their parents (~40 attendees). October 1, 2011.

6/2011 North Carolina State University High School Summer Camp Program; Organized two1/2 day laboratory experiences for ~120 talented local high school students. Exercises included building artificial muscles, acquiring electromyography and programming a real-time proportional myoelectric robot arm (~20 attendees per session). June 12 and 26, 2011.

4/2011 FIRST Robotics Open House; Participated in laboratory open house for local FIRST Robotics students and their parents. Demos included the ZeroG bodyweight support system and a myoelectrically controlled robotic ankle exoskeleton (~15 attendees). April 8, 2011.

6/2010-6/2013 NSF Innovative Technology Experiences for Students (ITEST) "Scaling up STEM"; Aided high school math instructors from Greene County, NC in planning locomotion biomechanics, robotics and prosthetics related case studies for classroom lessons.

Mentoring Experience

Junior Faculty

Mark Lyle (Spring 2019-pres.); Emory Univ. - NIH K01 Mentee
Ye Zhao (Spring 2019-pres.); GaTech - GaTech FDMC Mentee
Dustin Crouch (Spring 2018-pres.); Univ. of Tennessee – Knoxville - NIH IREK K12 Mentee
Aaron Young (Fall 2017-pres.); GaTech - GaTech FDMC Mentee

Postdoctoral Scholars (5 mentees in academic faculty positions, 1 mentee in research scientist position; 1 mentee in industry; *1 mentee currently in lab)

***Kristen Jakubowski** (Fall 2022-present); Ph.D. 2022, Northwestern University; NSF ASEE eFellow
Max Shepherd (Fall 2020-Fall 2021); Ph.D. 2019, Northwestern University; currently Assistant Professor in Mechanical Engineering and Physical Therapy at Northeastern University
Owen Beck (Spring 2018-Fall 2021) Ph.D. 2017, University of Colorado, Boulder; NIH Fellow; McCamish Fellow; starting as Assistant Professor in Kinesiology at University of Texas, Austin in January 2022
Emily Abbott (Fall 2017-Summer 2020); Ph.D. 2017, University of California, Irvine; currently Research Scientist at Duke University

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Taylor Dick (Fall 2016-Winter 2017); Ph.D. 2016, Simon Fraser University; currently Lecturer (i.e., Assistant Professor) at University of Queensland, AUS

Tracy Norman Giest (Fall 2015-Winter 2016); Ph.D. 2015, Georgia Institute of Technology; currently Director of Biomechanics Research at Google/Fitbit Inc. in San Francisco, CA

Kota Takahashi (Fall 2012-Summer 2015); Ph.D. 2012, University of Delaware; Winner 2013 NCSU Postdoctoral Professional Development; Assistant Professor in the Center for Research in Human Movement Variability at the University of Nebraska-Omaha (2015-2022); currently Associate Professor in the Department of Health and Kinesiology at University of Utah

Dominic J. Farris (Winter 2010-Fall 2012); Ph.D. 2009, University of Bath, UK; Visiting Scholar at Stanford University National Center for Simulation in Rehabilitation Research (NCSRR) Summer 2012; Research Officer at University of Queensland, Brisbane, Australia and scientific advisor to the Australian Institute of Sport from 2012-2017, currently Senior Lecturer (i.e., Associate Professor) at University of Exeter, UK

Doctoral Students (8 mentees graduated, *9 mentees currently in lab)

[#] ***Melody Modaressi** (Summer 2022-pres.); BioSci, GaTech, GAANN Fellow; [#] co-advised with YH Chang in BioSci

***Amro Alshareef** (Fall 2021-pres.); ME - Robotics, GaTech,

***Felicia Davenport** (Fall 2020-pres.); ME - BioE, GaTech, GEM Fellow; Herbert P. Haley Fellow 2022

[#]***Jennifer Leestma** (Fall 2019-pres.); ME - Robotics, GaTech, ARMS Fellow; NSF Fellow 2021
[#]co-advised w/ A. Young

[#]***Luis Rosa** (Fall 2018-pres.); ME - Robotics, GaTech, ARMS Fellow; Goizueta Fellow 2019-20; RISE Scholar 2021;
[#]co-advised with O. Inan

Jonathan Gosyne (Fall 2018-Fall 2022) ME, GaTech, GaTech Institute Leadership Fellow 2021; GaTech College of Engineering Outstanding Teaching Assistant 2021-2022; GaTech 3MinThesis Finalist 2022; George P. Burdell Fellow 2022;

[#]***Thendral Govindaraj** (Fall 2018-pres.); ME, GaTech,
[#] co-advised w/ R. Nichols in BioSci

[#]***Benjamin Shafer** (Fall 2018-pres.); ME - Robotics, GaTech, ARMS Fellow
[#] co-advised w/ A. Young

***Lindsey Trejo** (Fall 2018-pres.); ME - BioE, GaTech, Sloan Fellow 2020, Goizueta Fellow 2020-21

***Jordyn Schroeder** (Fall 2017-pres.); ME, GaTech, FLAMEL Fellow, NSF Honorable Mention 2019, Sloan Fellow 2019, NIH Diversity Fellow 2020

Pawel Golyski (Fall 2017-Summer 2022) ME - BioE, GaTech, NSF Fellow 2019, ASB Pre-Doctoral Achievement Award 2022; currently Senior Research Engineer, Walter Reed National Military Medical Center, Washington, DC.

Laksh Punith (Fall 2016-Fall 2022) BME, NC State; ME - Robotics, GaTech,

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Emily McCain (Fall 2016-Summer 2021); Mechanical Engineering, NCSU
[#] co-advised w/ K. Saul in ME and M. Lewek, UNC-PT; NIH Kirchstein Fellow (F31); Winner NCSU Doctoral Scholar of the Year (2021); Research Engineer at Center for the Intrepid, San Antonio, TX (2021-22); currently Postdoctoral Fellow at University of Virginia

Jonathan Doering, PhD (Fall 2014-Fall 2018); BME, NC State;
[#] co-advised w/ J. Cole in BME; currently a Research Consultant at Lumanity in RTP, NC

Richard Nuckols, PhD (Fall 2013 - Summer 2017); BME, NC State; currently Postdoctoral Research Associate at Wyss Institute, Harvard University, Boston, MA; currently Assistant Professor of Engineering at University of Waterloo

Michael Bruce Wiggin, PhD (Fall 2009-Summer 2014); BME, NC State; ASB President's Best Poster Award Winner 2012; currently a Senior Product Development Engineer at Asensus Surgical in Raleigh, NC and Associate Professor of Design in Dept. of Biomedical Engineering at UNC-NC State

Benjamin Robertson, PhD (Winter 2011-Summer 2014); BME, NC State; Postdoctoral Research Associate at Temple University with Dr. Andrew Spence (Fall 2014 - Summer 2016); was a Senior Research Scientist at Edgewise Inc., a muscle physiology start-up in Boulder, CO; currently a Senior Associate at Exponent Inc. in Philadelphia, PA.

Master's Students (9 mentees graduated, *1 mentee currently in lab &1 mentee unfinished,)

*__Qingyi Lou__ (Summer 2022- present) ME-BioE, GaTech;

#__Jacob Stephens__ (Summer 2021- Summer 2022) BME, GaTech; #co-advised w/ L. Ting and T. Cope

Max Anderton (Fall 2020- Spring 2022) ME, GaTech; currently a Mechanical Engineer at Sandia National Laboratories

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&__Sasha Philius__ (Fall 2015-Fall 2017); BME, NC State; currently a Mechanical Engineer at a telecommunications contractor in Research Triangle Park, NC.

James McCall (Fall 2016- Summer 2017) BME, NC State; currently a PhD student at NC State with Derek Kamper

Michael Browne, MS (Fall 2013- Spring 2016) BME, NC State; earned a PhD at UNC Chapel Hill with Jason Franz; currently a post-doc at Johns Hopkins with Ryan Roemmich

Audrey Westbrook, MS (Fall 2013- Fall 2014) BME, NC State; currently Lead Research Engineer for Motion Analysis Lab at High Point University, NC

Nabil Khan, MS (Fall 2011- Summer 2013) BME, UNC Chapel Hill; currently a software engineer at start up company in Research Triangle Park, NC

Caitlin Mahon, MS (Spring 2012- Spring 2013); BME, UNC Chapel Hill; co-Chair with Mike Lewek UNC Physical Therapy; currently a Research Engineer at Walter Reed National Military Medical Center, Washington, DC

Austin Hampton, MS (Fall 2010-Summer 2012); BME, NC State; currently a Senior Biomedical Engineer at Department of Veterans Affairs in Pittsburgh, PA

Phil Matta, MS (Fall 2010-Spring 2012); BME, UNC Chapel Hill; NCSU Initiative for Maximizing Student Diversity (IMSD) Fellow; currently a financial analyst at Goldman Sachs in Salt Lake City, UT and the Starling Fellow in Entrepreneurship, UNC Kenan-Flagler School of Business

Undergraduate Students (76 of 113 total at GaTech; 26 of 113 total at NCSU)

@GaTech [1]PURA, [2]Petit, [3]SURE (Summer Undergrad Research Experience),

Aryan Tadwalker (Sp23); BME; GaTech. Mentor: Jenny Leestma

Haritaa Mourougassamy (Sp23); CS; GaTech. Mentor: Jenny Leestma

Minho Lee (Sp23); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder

Colton Yee (Sp23); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder

Lauren Harris (Sp23); BME; GaTech. Mentor: Amro Alshareef

[3]**Zachary White** (Su22); BME; GaTech. Mentor: Jordyn Schroeder; ASB B-SURE Scholar

Massimiliano Iashci (Sp23); ME; GaTech. Mentor: Amro Alshareef

[1]**Olivia Moore** (Fa22-pres); BME; GaTech. Mentor: Amro Alshareef

Adriana Staten (Sp22); CS; GaTech. Mentors: Jenny Leestma & Felicia Davenport

[1]**Christopher Meier** (Sp22-pres); BME; GaTech. Mentor: Jenny Leestma

Ashima Taneja (Sp22); CS; GaTech. Mentor: Jenny Leestma

Zoe Centeno Sanz (Sp22); CS; GaTech. Mentor: Jenny Leestma

Vibha Iyer (Sp22-pres); CS; GaTech. Mentor: Jenny Leestma

Oliver Stephan (Sp22); CS; GaTech. Mentor: Jenny Leestma

Snehil Mathur (Sp22-pres); CS; GaTech. Mentor: Jenny Leestma

Kartik Narang (Sp22); CS; GaTech. Mentor: Jenny Leestma
Massimiliano Iashci (Sp22); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Jacques Singham (Sp22-pres); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Andrew Gay (Sp22); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Victoria Zheng (Sp22); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Nyah Ebanks (Sp22); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Shom Chandra (Sp22-pres.); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Megan Ramaswami (Sp22-pres.); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Ben Rahimitabar (Sp22-pres.); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Emma Snyder (Sp22); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Michael Arrington (Sp22); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Nicole Sen (Sp22-pres.); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Wesley Ho (Sp22); BME; GaTech. Mentors: Lindsey Trejo & Jordyn Schroeder
Ibrahim Abutair (Sp22); BME; GaTech. Mentors: Lindsey Trejo + Jordyn Schroeder
William Pleasant (Fa21); BME; GaTech. Mentor: Pawel Golyski
Jackson Matray (Fa21); BME; GaTech. Mentor: Pawel Golyski
Harini Mohan (Fa21); BME; GaTech. Mentor: Pawel Golyski
Alexis Wilmot (Fa21); BME; GaTech. Mentor: Pawel Golyski
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Nil Patel (Sp21) MechE; GaTech. Mentor: Jonathan Gosyne
-John Kerr (Fa21); MechE; GaTech. Mentor: Pawel Golyski
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Matias Teixiera-Prates (Sp20); BME; GaTech. Mentor: Ben Shafer
Simon Yang (Sp20); MechE; GaTech. Mentor: Ben Shafer
Reagan Cook (Sp20); MechE; GaTech. Mentor: Ben Shafer
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Kasia Fadeeva (Sp20-Sp21); MechE; GaTech. Mentor: Lindsey Trejo
Adrien Zhu (Sp20); MechE; GaTech. Mentor: Lindsey Trejo
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[1]**Jake Peloquin** (Fa19-Sp20) MechE; GaTech. Mentor: Jordyn Schroeder
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Andrew Brooks (Fa19); MechE; GaTech. Mentor: Lindsey Trejo
-David Zink (Fa19) MechE; GaTech. Mentor: Pawel Golyski
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-Nicholas Swaich (Sp19 - Fa21); MechE; GaTech. Mentor: Pawel Golyski
-James de Klerk (Sp19 - Su21) MechE; GaTech. Mentor: Pawel Golyski
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***Mark Bartel** (Fall 2015- Spring 2016); BME, NC State
***Samuel Parker** (Fall 2015- Spring 2016); BME/MechE, NC State
Charlotte DeVol (Fall 2015- pres.); BME, NC State
[*]**Heather Stokes** (Spring 2015- Fall 2015); BME, NC State
Seth Steele-Pardue (Fall 2015- Spring 2016); BME, NC State. Currently Sales Engineer at Intuitive Surgical Inc.
Sarah Blau (Summer 2014); Vet School, NC State
William Pfitzner (Fall 2013- Summer 2014); BME, NC State
[*]**Leighanne Davis** (Fall 2013- Spring 2016); BME, NC State. Currently Research Engineer at Duke University.
William Watts (Fall 2013- Spring 2014); BME, NC State
[*]**Siddharth Vadakkeveedu** (Fall 2013- Summer 2015); BME, NC State
[*]**Daniel Harrison** (Fall 2012- Spring 2013) BME, NC State
[*]**Samuel Ray** (Fall 2012- Summer 2014); BME, NC State. Earned MS at University of Nebraska-Omaha.
[*]**Kyle Vey** (Fall 2012- Summer 2013); BME, NC State
[&*]**Arianna Nasser** (Fall 2012- Spring 2016); BME, NC State
[*]**Lexis Schmit** (Summer 2012- Spring 2013); ME, NC State
[*]**Audrey Westbrook** (Summer 2012- Spring 2013); BME/ME, NC State; Enrolled in MS Program in BME at NCSU Fall 2013
Whitney Barnette (Fall 2011- Spring 2012); BME, NC State
[*]**Michael Browne** (Summer 2011-Spring 2012); BME, NC State; Intern at Precor Strength Inc.; Enrolled in MS Program in BME at NCSU Fall 2013, Currently PhD Student at UNC-CH.
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Peter Wellings (Spring/Summer 2009); ME, MIT
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$**Kate Havens** (Fall 2003); BME, Michigan
$**Annie Zuzelski** (Spring/Summer 2003); BME, Michigan
$**John Green** (Fall 2002); MovSci, Michigan
$**Sam Liang** (Fall 2002); EE, Michigan

High School Students
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***Esmeralda Vasquez** (Summer 2019, Fall 2019, Spring 2020); South Atlanta High School, Mentor: Pawel Golyski
***Wendy Nevarez-Sanchez** (Summer 2019, Fall 2019, Spring 2020); South Atlanta High School, Mentor: Ben Shafer
***Zachary White** (Summer 2019, Fall 2019, Spring 2020); South Atlanta High School, Mentor: Jordyn Schroeder
***Jeremiah Newman** (Summer 2019); South Atlanta High School, Mentor: Luis Rosa

Graduate Student Committees (not Chair)

Doctoral Students
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Alexander Ambrose (Spring 2023-pres.) Mechanical Engineering, (Chair: F. Hammond)
Keaton Scherpereel (Fall 2022-pres.); Mechanical Engineering, GaTech (Chair: A. Young)
Wannes Swinnen (Summer 2022); External Examiner; KU Leuven, (Chair: Benedicte Vanwanseele)
Dawit Lee (Spring 2022-pres.) Mechanical Engineering, (Chair: A. Young)
Goktug Ozmen (Spring 2022) Electrical and Computer Engineering, (Chair: O. Inan)
Elizabeth Fox (Spring 2022-pres.) Mechanical Engineering, (Chair: F. Hammond)
Ning Yang (Spring 2022-Fall 2022 Mechanical Engineering, (Chair: G. Weinberg)
Ethan Wold (Fall 2021-pres.) Physics - QBioS, (Chair: S. Sponberg)
Megnan Wu (Fall 2021-pres.) Biomedical Engineering, (Chair: L. Ting)
Yingxin Qui (Fall 2021-Fall 2022); Mechanical Engineering, GaTech (Chair: J. Ueda)
Dean Molinaro (Fall 2021-pres.); Mechanical Engineering, GaTech (Chair: A. Young)

Chase Rock (Fall 2021-pres.); Biological Sciences/App. Phys., GaTech (Chair: Y.H. Chang)
Visak Chadalavada Kumar (Fall 2021); Electrical and Computer Engineering, GaTech (Chair: K. Liu)
Andrew Schulz (Fall 2020-Summer 2022); Mechanical Engineering, GaTech (Chair: D. Hu)
Phillip Tran (Fall 2019-Fall2022); Biomedical Engineering, GaTech (Chair: J. Desai)
Joshua Lee (Fall 2019-pres.); Mechanical Engineering, GaTech (Chair: F. Hammond)
Gwen Bryan (Summer 2021); External Examiner; Stanford University (Chair: Steve Collins)
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Jessica Lanini (Summer 2019); External Examiner; EPFL, Ecole Polytechnique Fédérale de Lausanne (Chair: Auje Ijspeert)
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Nicholas Bolus (Fall 2017-Spring 2020) Mechanical Engineering, GaTech (Chair: Omer Inan);

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Jean Sanders (Fall 2016-Spring 2017) Electrical and Computer Engineering, NCSU (Chair: Omer Oralkan);
Michael Browne, PhD (Fall 2016-Spring 2019); Biomedical Engineering, UNC Chapel Hill (Chair: Jason Franz);
Stephanie Cone, PhD (Spring 2016-Spring 2019); Biomedical Engineering, NC State (Chair: Matthew Fisher);
Nicolas Hanne (Summer 2015-Fall 2019) Biomedical Engineering, NC State (Chair: Jacque Cole);
Ryan Schroeder (Summer 2015-Spring 2020); Biomed. Eng., U. of Calgary (Chair: John Bertram);
Michael Rosario, PhD (Fall 2014-Fall 2015.); Biology, Duke U. (Chair: Sheila Patek);
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Kamran Shamaei, PhD (Spring 2013-Summer 2014); Mechanical Engineering, Yale University, (Chair: Aaron Dollar); Post Doc at Stanford University with Alison Okamura
Lauren Putvin, PhD (Spring 2013-Summer 2017); Biomedical Engineering, NC State (Chair: C.S. Nam);
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Ian Cullen, MS (Summer 2022) Mechanical Engineering, GaTech (Chair: Aaron Young);
Christopher Nichols, MS (Summer 2022) Electrical and Computer Engineering, GaTech (Chair: Omer Inan);
Emily Upton, MS (Spring 2022) Mechanical Engineering, GaTech (Chair: Aaron Young);
Reese Peterson, MS (Spring 2022) Mechanical Engineering, GaTech (Chair: Aaron Young);
Pooja Moolchandani, MS (Spring 2021) Mechanical Engineering, GaTech (Chair: Aaron Young);
Jared Li, MS (Fall 2020) Mechanical Engineering, GaTech (Chair: Aaron Young);
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William Boatwright, **MS** (Fall 2014-Fall 2015); Biomedical Engineering, NC State (Chair: Helen Huang);
Xiatong Li, MS (Spring 2014-Spring 2015); Mechanical Engineering, NC State (Chair: Kate Saul);
Theodore Waltz, MS (Spring 2014-Fall 2016); Biomedical Engineering, Western Carolina University (Chair: Martin Tanaka);
Camille Joy Thompson, MS (Fall 2014-Spring 2016); Biomedical Engineering, NC State (Chair: Ola Harryson);
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Some Recent Collaborators (last ~5 years on grant or paper, not as advisor/advisee)

Manny Azizi (Ecology and Evolutionary Biology, UC Irvine)
Steven Collins (Mechanical Engineering, Carnegie Mellon University)
Timothy Cope (Applied Physiology, Georgia Institute of Technology)
Nicole Danos (Biology, San Diego University)
Jesse C. Dean (Physical Therapy, Medical University of South Carolina)
Scott Delp (Mechanical Engineering, Stanford U.)
Aaron Dollar (Mechanical Engineering, Yale University)
Jason Franz (BME, NCSU)
Michael Gross (Physical Therapy, UNC Chapel Hill)
Helen Huang (BME, NCSU)
Hugh Herr (Mechanical Engineering, Massachusetts Institute of Technology)
Natalie Holt (Biological Sciences, UC Riverside)
Omer Inan (ECE, GaTech)
Michael Lewek (Physical Therapy, UNC Chapel Hill)
Craig McGowan (Biological Sciences, University of Idaho)
Natasha Olby (Vet School, NCSU)
Omer Oralkan (ECE, NCSU)
Sheila Patek (Biology, Duke University)
Stephen Piazza (Kinesiology, Penn State University)
Chris Richards (Royal Veterinary College, UK)
Raziel Riemer (Industrial Engineering, Ben-Gurion University of the Negev, Israel)
Jonas Rubenson (Kinesiology, Penn State University)
Kate Saul (MAE, NCSU)
Massimo Sartori (Biomechanical Engineering, University of Twente, NL)
Andrew Spence (Bioengineering, Temple University)
Gregory Sutton (University of Cambridge, UK)
Kat Steele (Mechanical Engineering, University of Washington)
Conor Walsh (Wyss Institute, Harvard University)
Aaron Young (Mechanical Engineering, GaTech)
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References

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