

# Owen N. Beck, Ph.D.

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Atlanta, GA 30322

## EDUCATION & PROFESSIONAL APPOINTMENTS

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<b>Incoming Assistant Professor, Kinesiology &amp; Health Education</b> University of Texas at Austin	2023 -
<b>McCamish Postdoctoral Fellow, Biomedical Engineering</b> Emory University (PI: Lena H. Ting, Ph.D.)	2021 - 2022
<b>NIH Postdoctoral Fellow, Mechanical Engineering</b> Georgia Institute of Technology (PI: Gregory S. Sawicki, Ph.D.)	2018 - 2021
<b>Ph.D. Integrative Physiology</b> University of Colorado Boulder (PI: Alena M. Grabowski, Ph.D.)	2014 - 2017
<b>B.S. Kinesiology</b> Humboldt State University (PI: Justus D. Ortega, Ph.D.)	2009 - 2013

## PEER-REVIEWED PUBLICATIONS

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Google Scholar h-index: 13

- Beck O.N.**, Shepherd M.K., Rastogi R., Martino G., Ting L.H., Sawicki G.S. (In Review) Exoskeletons Need to React Faster than Physiological Responses to Improve Standing Balance
- Zhang-Lea J.H., Tacca J.R., **Beck O.N.**, Taboga P., Grabowski A.M. (In Review) Prosthetic Legs Run Shorter Than Biological Legs
- Gill P.K., Kipp S., **Beck O.N.**, Kram R. (In Review) More Accurate Method for Estimating Metabolic Energy From Oxygen Uptake Alone
24. Allen S.A., **Beck O.N.**, Grabowski A.M. (2022) Evaluating the “Cost of Generating Force” Hypothesis Across Frequency in Human Running and Hopping. *Journal of Experimental Biology*. 225(18): jeb244755. doi.org/10.1242/jeb.244755.
  23. **Beck O.N.**, Trejo, L.H., Schroeder, J.N., Franz J.R., Sawicki G.S. (2022) Shorter Muscle Fascicle Operating Lengths Increase the Metabolic Cost of Cyclic Force Production. *Journal of Applied Physiology*. 133:3, 524-533. doi.org/10.1152/jappphysiol.00720.2021
  22. Tacca J.R., **Beck O.N.**, Taboga P., Grabowski A.M. (2022) Running-Specific Prosthesis Model, Stiffness, and Height Affect Biomechanics and Asymmetry of Athletes with Unilateral Leg Amputations Across Velocities. *Royal Society Open Science*. **9**: 211691. 211691.
  21. **Beck O.N.**, Taboga P., Grabowski A.M. (2022) Sprinting with Prosthetic versus Biological Legs: Insight from Experimental Evidence. *Royal Society Open Science*. **9**: 211799. 211799
  20. Krupenevich R.L., **Beck O.N.**, Franz J.R., Sawicki G.S. (2021) Reduced Achilles Tendon Stiffness Disrupts Calf Muscle Neuromechanics in Elderly Gait. *The Journals of Gerontology: Series A*. 68:241–251
  19. **Beck O.N.**, Golyski P.R., Sawicki G.S. (2020) Adding Carbon Fiber to Shoe Soles May Not Improve Running Economy: A Muscle-Level Explanation. *Scientific Reports*. 10:17154
  18. **Beck O.N.**, Gosyne J., Franz J.R., Sawicki G.S. (2020). Cyclically Producing the Same Average Muscle-Tendon Force with a Smaller Duty Increases Metabolic Rate. *Proceedings of the Royal Society B: Biological Sciences*. 287:20200431

17. Alcantara R.S., **Beck O.N.**, Grabowski A.M. (2020) Lower Limb Mass Does Not Affect Biomechanical Asymmetry But Increases Metabolic Power In Runners With A Unilateral Transtibial Amputation. *European Journal of Applied Physiology*. 120, 1449-56
16. Nuckols R.W., Dick T.J.M., **Beck O.N.**, Sawicki G.S. (2020) Ultrasound Imaging Links Soleus Muscle Neuromechanics and Energetics during Human Walking with Elastic Ankle Exoskeletons. *Scientific Reports*. 10:3604
15. Taboga P., **Beck O.N.**, Grabowski A.M. (2020) Prosthetic Shape, but not Stiffness or Height, Affects the Maximum Speed of Sprinters with Bilateral Transtibial Amputations. *Plos One*. 15(2): e0229035
14. Sawicki G.S., **Beck O.N.**, Kang I., Young A.J. (2020) The Exoskeleton Expansion: Improving Walking and Running Economy. *Journal of NeuroEngineering and Rehabilitation*. 17(25)
13. Taboga P.T., Drees E.K., **Beck O.N.**, Grabowski A.M. (2020) Prosthetic Model, but not Stiffness or Height, Affects Maximum Running Velocity in Athletes with Unilateral Transtibial Amputations. *Scientific Reports*. 10, 1763
12. **Beck O.N.**, Punith L.K., Nuckols R.W., Sawicki G.S. (2019) Exoskeletons Improve Locomotion Economy by Reducing Active Muscle Volume. *Exercise and Sport Sciences Reviews*. 47(4):237-45
11. **Beck O.N.**, Grabowski A.M. (2019) Athletes With vs. Without Leg Amputations: Different Biomechanics, Similar Running Economy. *Exercise and Sport Sciences Reviews*. 47(1):15-21
10. **Beck O.N.**, Azua E.A., Grabowski A.M. (2018) Step time asymmetry increases metabolic energy expenditure during running. *European Journal of Applied Physiology*. 118(10):2147-54
9. **Beck O.N.**, Grabowski A.M., Ortega J.D. (2018) Neither Total Muscle Activation nor Co-activation Explains How Older Runners Retain Youthful Walking Economy. *Gait and Posture*. 65:163-8
8. **Beck O.N.**, Kipp S., Byrnes W.C., Kram R. (2018) Viewpoint: Use Aerobic Energy Expenditure Instead of Oxygen Uptake to Quantify Exercise Intensity and Predict Endurance Performance. *Journal of Applied Physiology*. 125(2):672-4
7. **Beck O.N.**, Grabowski A.M. (2017) Case Studies in Physiology: The Biomechanics of the Fastest Sprinter with a Unilateral Transtibial Amputation. *Journal of Applied Physiology*. 124(3):641-5
6. **Beck O.N.**, Taboga P., Grabowski A.M. (2017) How do Prosthetic Stiffness, Height, and Running Speed Affect the Biomechanics of Athletes with Bilateral Transtibial Amputations? *Royal Society Interface*. 14(131)
5. **Beck O.N.**, Taboga P., Grabowski A.M. (2017) Prosthetic Model, but not Stiffness or Height, Affects the Metabolic Cost of Running for Athletes with Unilateral Transtibial Amputations. *Journal of Applied Physiology*. 123(1):38-48
4. **Beck O.N.**, Taboga P., Grabowski A.M. (2017) Reduced Prosthetic Stiffness Lowers the Metabolic Cost of Running for Athletes with Bilateral Transtibial Amputations. *Journal of Applied Physiology*. 122(4):976-84
3. **Beck O.N.**, Taboga P., Grabowski A.M. (2016) Characterizing the Mechanical Properties of Running-Specific Prostheses. *Plos One*. 11(12):e0168298
2. **Beck O.N.**, Kipp S., Roby J.M., Grabowski A.M., Kram R., Ortega J.D. (2016) Older Runners Retain Youthful Running Economy Despite Biomechanical Differences. *Medicine and Science in Sports and Exercise*. Apr;48(4):697-704
1. Ortega J.D., **Beck O.N.**, Roby J.M., Turney A.L., Kram R. (2014) Running for Exercise Mitigates the Age-Related Deterioration of Walking Economy. *Plos One*. 10.1371/journal.pone.0113471

*Non-Peer Reviewed Publications*

**Beck O.N., & Kipp S.** (2021) Comment on Viewpoint: World Class Cyclists Must Risk it All- Including their Bone Health. *Journal of Applied Physiology*. 131:1, 29-33

**GRANTS**

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*Funded*

McCamish Parkinson's Disease Innovation Program Training Fellowship \$120,000  
PI: Owen N. Beck, Ph.D.

National Institute of Health (NIA F32) - PI: Owen N. Beck, Ph.D. \$152,000  
Title: Linking Muscle-Tendon Dynamics and Energetics to Inform Exoskeleton Design for Improved Locomotor Economy of Aging

*Not Funded*

National Institute of Health (NIA K99/R00) – PI: Owen N. Beck, Ph.D. \$964,435  
Title: The Role of Neuromechanical Stiffness on Balance Capacity & Neural Strategies in Older Adults  
Impact Score: 26

**TEACHING & MENTORING**

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- Lead Teaching Assistant 2016  
University of Colorado Boulder - Biomechanics (IPHY 4540)

*Guest Lectures*

- Georgia Institute of Technology - Neuromechanics (APPH 6232) 2019-2022
- University of Colorado Boulder - Locomotion Seminar (IPHY 6660) 2018

*Mentees*

- Jordyn Schroeder (Ph.D. Student, Georgia Institute of Technology) 2021-Present
- Zachary Mercer (Ph.D. Student, Florida State University) 2021
  - Current: Engineer at Stryker
- Jennifer K. Leestma (Ph.D. Student, Georgia Institute of Technology) 2020-Present
- William Flanagan (Undergraduate Student, Georgia Institute of Technology) 2019-2020
  - Current: Mechanical Engineering Graduate Student at UCLA
- Annkathrin Dassler (Master Student, Chemnitz University, Germany) 2017
- Eric Azua (Undergraduate Student, Honors, University of Colorado Boulder) 2016-2017
  - Current: Medical Student at Rush University
- Valarie Daniels (Undergraduate Student, University of Colorado Boulder) 2016-2017
  - Current: Medical Student at University of Virginia

**PROFESSIONAL SERVICE**

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*Expert Testimony for International Court Hearing*

- Blake Leeper vs. World Athletics. 2020 & 2021
  - Testified as scientific expert along with Drs. Alena Grabowski & Hugh Herr

*Conference Organizing Committee Member*

- Annual Meeting of the American Society of Biomechanics 2020
- Dynamic Walking Conference 2018 & 2021

*Journal Reviewer:* elife, Science Robotics, Journal of Applied Physiology, Journal of Biomechanics, IEEE:

Transactions on Neural Systems and Rehabilitation Engineering, Scientific Reports, Medicine and Science in Sports and Exercise, Bioinspiration & Biomimetics, PLoS One, Prosthetics and Orthotics International, Sports Biomechanics, European Journal of Applied Physiology, International Journal of Sports Physiology and Performance, Journal of Applied Biomechanics, Sports Medicine, Footwear Science, & Journal of Experimental Biology, Proceedings of the Royal Society B

*Conference Abstract Reviewer:* North American Congress on Biomechanics, American Society of Biomechanics Annual Conference, Dynamic Walking Conference, & International Conference for Biomedical Robotics and Biomechatronics

## HONORS AND AWARDS

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- |   |              |
|---|--------------|
| • Atlanta Science Communication Fellowship (\$600)  | 2018         |
| • Best Graduate Student Podium Presentation Award (\$100)<br>Rocky Mountain American Society of Biomechanics Conference | 2017         |
| • Beverly Sears Graduate Student Research Grant (\$1,000)   | 2017         |
| • University of Colorado Graduate Assistance Travel Award (3x\$300)   | 2014, 15, 16 |
| • American Society of Biomechanics Student Travel Award (\$300)   | 2014         |
| • Professional Service Award<br>Humboldt State University – Department of Kinesiology                                   | 2013         |
| • Presidential Scholar Award – Humboldt State University  | 2012 & 2013  |
| • NCAA Student Athlete All-Academic Award   | 2011         |

## PRESENTATIONS

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### *Conference Podium Presentations*

- **Beck O.N.**, Shepherd M.K., Rastogi R., Ting L.H., Sawicki G.S. Exoskeletons need to react faster than reflexes to improve standing balance. North American Congress on Biomechanics. Ottawa, Canada. 2022.
- Martino G., **Beck O.N.**, Rastogi R., Ting L.H. Shear wave tensiometry of the Achilles tendon to estimate muscle force and coactivation during balance perturbations. International Society for Posture and Gait Research World Congress. Montreal, Canada. 2022.
- Rastogi, R., Shepherd, M.K., Sawicki, G.S., Ting, L.H., **Beck, O.N.** Ankle exoskeleton torque improves reactive standing balance capacity if delivered before physiological response. International Society for Posture and Gait Research World Congress. July 3-7, Montreal, Canada. 2022.
- **Beck O.N.**, Taboga P., Grabowski A.M. Sprinting with Prosthetic versus Biological Legs: An Unfair Advantage? Annual Meeting of the American Society of Biomechanics, 2021.
- **Beck O.N.**, Schroeder, J.N., Trejo, L.H., Franz J.R., Sawicki G.S. Relatively Shorter Muscle Lengths Increase the Metabolic Rate of Cyclic Force Production. Congress of the International Society of Biomechanics, 2021.
- Allen S.P., **Beck O.N.**, Grabowski A.M. Biomechanics Predict Changes in Metabolic Cost during Running and Hopping at Different Frequencies. Congress of the International Society of Biomechanics, Calgary, CAN. 2019.
- **Beck O.N.** & Sawicki G.S. Exoskeletons Improve Locomotion Economy by Steering Muscle Dynamics. American Society of Mechanical Engineers Dynamics Systems and Controls Conference. Atlanta, GA. 2018.
- Southern E.K., **Beck O.N.**, Taboga P.T., Grabowski A.M. Running-Specific Prosthetic Model Affects Top Sprinting Speed in Athletes with Unilateral Transtibial Amputations. Annual Meeting of the American Society of Biomechanics, Rochester, MN. 2018.

- **Beck O.N.**, Taboga P.T., Grabowski A.M. How do Prosthetic Stiffness, Height, and Running Speed Affect the Biomechanics of Running for Athletes with Bilateral Transtibial Amputations? Rocky Mountain Regional Conference of the American Society of Biomechanics, Estes Park, CO. 2017; Annual Meeting of the American Society of Biomechanics, Boulder, CO. 2017.
- Azua E., **Beck O.N.**, Grabowski A.M. Asymmetric Step Frequencies Increase the Metabolic Cost of Running. Rocky Mountain Regional Conference of the American Society of Biomechanics, Estes Park, CO. 2017.
- Dassler A., **Beck O.N.**, Grabowski A.M. How do Asymmetric Biomechanics Affect the Metabolic Cost of Running for Athletes with a Unilateral Transtibial Amputation? Rocky Mountain Regional Conference of the American Society of Biomechanics, Estes Park, CO. 2017.
- **Beck O.N.**, Taboga P.T., Grabowski A.M. Characterizing the Stiffness of Running-Specific Prostheses. Annual Meeting of the American Society of Biomechanics, Raleigh, NC. 2016; & National Assembly of the American Orthotic Prosthetic Association, Boston, MA. 2016.
- **Beck O.N.**, Taboga P.T., Grabowski A.M. Characterizing the Stiffness of Running-Specific Prostheses.
- Jeffers, J.R., **Beck O.N.**, Taboga P.T., Grabowski A.M. Optimizing leg prostheses for walking and running: Can we augment performance? Annual Meeting of the American Society of Biomechanics, Columbus, OH. 2015.
- Roby J.M., **Beck O.N.**, Turney A.L., Grabowski A.M., Kram R., Ortega J.D. Walking Energetics and Biomechanics of Older Runners. Rocky Mountain Regional Conference of the American Society of Biomechanics, Estes Park, CO. 2014.
- **Beck O.N.**, Roby J.M., Turney A.L., Grabowski A.M., Kram R., Ortega J.D. Do Older Runners Lose the Spring in Their Step? Rocky Mountain Regional Meeting of the American Society of Biomechanics, Estes Park, CO. 2014.

#### *Conference Poster Presentations – Thematic*

- **Beck O.N.**, Schroeder, J.N., Trejo, L.H., Franz J.R., Sawicki G.S. Relatively Shorter Muscle Lengths Increase the Metabolic Rate of Cyclic Force Production. Annual Meeting of the American Society of Biomechanics, Virtual. 2021.
- Alcantara R.S., **Beck O.N.**, Grabowski A.M. Mass Added to a Running-Specific Leg Prosthesis Increases Metabolic Power During Running. Annual Meeting of the American Society of Biomechanics, Rochester, MN. 2018.
- **Beck O.N.**, Sawicki G.S. Tuning Shoe Stiffness for More Economical Muscle Force Production During Running. Dynamic Walking. Pensacola, FL. 2018.
- **Beck O.N.**, Grabowski A.M. Is the Metabolic Cost of Running Different for Athletes with Unilateral versus Bilateral Transtibial Amputations? Annual Meeting of the American College of Sports Medicine. Denver, CO. 2017.
- **Beck O.N.**, Taboga P.T., Grabowski A.M. Lower Prosthetic Stiffness Minimizes the Metabolic Cost of Running for Individuals with Bilateral Leg Amputations. Annual Meeting of the American Society of Biomechanics, Columbus, OH. 2015.
- **Beck O.N.**, Taboga P.T., Grabowski A.M. Asymmetric Forces Increase the Metabolic Cost for Individuals with a Unilateral Leg Amputation. Annual Meeting of the American Society of Biomechanics, Columbus, OH. 2015.

#### *Conference Poster Presentations*

- **Beck O.N.**, Martino G., Ting L.H. Background muscle activity decouples muscle fascicle excursion from joint rotation and drives long latency feedback response during support surface translations. International Society for Posture and Gait Research World Congress. Montreal, Canada. 2022.
- **Beck O.N.**, Taboga P., Grabowski A.M. Sprinting with Prosthetic versus Biological Legs: An Unfair Advantage? Congress of the International Society of Biomechanics, Virtual. 2021.

- **Beck O.N.**, Gosyne J., Franz J.R., Sawicki G.S. Cyclically Producing the Same Average Muscle-Tendon Force with a Smaller Duty Increases Metabolic Rate. Annual Meeting of the American Society of Biomechanics, Virtual, 2020.
- **Beck O.N.**, Punith L.K., Nuckols R.W., Sawicki G.S. Exoskeletons Improve Locomotion Economy by Reducing Active Muscle Volume. Congress of the International Society of Biomechanics, Calgary, CAN, 2019.
- \*Alcantara R.S., **Beck O.N.**, Grabowski A.M. Mass Added to a Running-Specific Leg Prosthesis Increases Metabolic Power During Running. Rocky Mountain Regional Conference of the American Society of Biomechanics, Estes Park, CO. 2018. \**Best Student Poster*.
- Taboga P.T., **Beck O.N.**, Grabowski A.M. Sprint Biomechanics of Athletes with Bilateral Transtibial Amputations using Different Prosthetic Configuration. International Research Forum on Biomechanics of Running-Specific Prostheses. Tokyo, Japan. 2018.
- **Beck O.N.**, Grabowski A.M. How do Prosthetic Stiffness, Height, and Running Speed Affect the Biomechanics of Running for Athletes with Bilateral Transtibial Amputations? Military Health System Research Symposium, Kissimmee, FL. 2017.
- Azua E., **Beck O.N.**, Grabowski A.M. Asymmetric Step Frequencies Increase the Metabolic Cost of Running. Annual Meeting of the American Society of Biomechanics, Boulder, CO. 2017.
- Taboga P.T., **Beck O.N.**, Grabowski A.M. Top Sprinting Speed is Influenced by Prosthetic Model, but not Stiffness or Height, for Athletes with Bilateral Transtibial Amputations. Annual Meeting of the American Society of Biomechanics, Boulder, CO. 2017.
- Taboga T., **Beck O.N.**, Grabowski A.M. Optimal Running Prostheses for Sprinters with Unilateral Leg Amputations. Annual Meeting of the American Society of Biomechanics, Columbus, OH. 2015.
- Taboga T., **Beck O.N.**, Grabowski A.M. Optimal Running Prostheses for Sprinters with Bilateral Leg Amputations. Annual Meeting of the American Society of Biomechanics, Columbus, OH. 2015.
- **Beck O.N.**, Taboga T., Grabowski A.M. Lower Prosthetic Stiffness Minimizes the Metabolic Cost of Running for Individuals with Bilateral Leg Amputations. Rocky Mountain Regional Conference of the American Society of Biomechanics, Estes Park, CO. 2015.
- **Beck O.N.**, Taboga T., Grabowski A.M. Asymmetric Forces Increase the Metabolic Cost for Individuals with a Unilateral Leg Amputation. Rocky Mountain Regional Meeting of the American Society of Biomechanics, Estes Park, CO. 2015.
- Taboga T., **Beck O.N.**, Grabowski A.M. Optimal Running Prostheses for Sprinters with Unilateral Leg Amputations. Rocky Mountain Regional Meeting of the American Society of Biomechanics, Estes Park, CO. 2015.
- Taboga T., **Beck O.N.**, Grabowski A.M. Optimal Running Prostheses for Sprinters with Bilateral Leg Amputations. Rocky Mountain Regional Meeting of the American Society of Biomechanics, Estes Park, CO. 2015.
- **Beck O.N.**, Roby J.M., Turney A.L., Grabowski A.M., Kram R., Ortega J.D. Do Older Runners Lose the Spring in Their Step? World Congress of Biomechanics, Boston, MA. 2014.
- **Beck O.N.**, Roby J.M., Turney A.L., Grabowski A.M., Kram R., Ortega J.D. Running Improves the Economy of Walking Among Older Adults. Annual Meeting of the American College of Sports Medicine, Orlando, FL. 2014.

## PROFESSIONAL AFFILIATIONS

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- |   |              |
|---|--------------|
| • American College of Sports Medicine (ACSM)  | 2022-Present |
| • International Society of Biomechanics (ISB) | 2021-Present |
| • American Society of Biomechanics (ASB)      | 2014-Present |

- CITI Training Certified

2012-Present

## SELECT MEDIA

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### *Prostheses*

- University of Colorado Boulder Today. “World’s Fastest Blade Runner Gets No Competitive Advantage From Prostheses, Study Shows” 2022  
<https://www.colorado.edu/today/2022/01/05/worlds-fastest-blade-runner-gets-no-competitive-advantage-prostheses-study-shows>
- University of Colorado Boulder Today. “Leap of Faith: CU Scientists Testing World’s Fastest Blade Runner” 2018  
<https://www.colorado.edu/today/2018/08/24/leap-faith-cu-scientists-testing-worlds-fastest-blade-runner>
- ABC News, Denver “CU-Boulder Lab Pushes Athletes and Their Prosthetics to be Stronger and Go Faster” 2015  
<https://www.youtube.com/watch?v=N-1IXYyU1tU>
- CCTV America “Helping Amputees: New Technologies in Prosthetics” 2014  
<https://www.youtube.com/watch?v=eAFAOyzVWJc>

### *Aging*

- New York Times “Run to Stay Young” 2014  
[http://well.blogs.nytimes.com/2014/12/03/run-to-stay-young/?\\_r=0](http://well.blogs.nytimes.com/2014/12/03/run-to-stay-young/?_r=0)
- NPR “To Stay Energy Efficient As You Age, Keep On Running” 2014  
<http://www.npr.org/blogs/health/2014/11/21/365692427/to-stay-energy-efficient-as-you-age-keep-on-running>
- Runner’s Word “Older Runners Walk like People Decades Younger” 2014  
<http://www.runnersworld.com/newswire/older-runners-walk-like-people-decades-younger>

### *Cycling*

- Outside “How Cyclists Can Avoid Low Bone Density” 2021  
[https://www.outsideonline.com/health/training-performance/cyclists-low-bone-density/?utm\\_medium=social&utm\\_source=twitter&utm\\_campaign=onsiteshare](https://www.outsideonline.com/health/training-performance/cyclists-low-bone-density/?utm_medium=social&utm_source=twitter&utm_campaign=onsiteshare)

## REFERENCES

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### **Lena H. Ting, Ph.D.** (*Postdoc Advisor*)

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 Director, Neuromechanics Lab  
 Depts. of Biomedical Engineering & Rehabilitation  
 Medicine  
 Emory University & Georgia Institute of Technology  
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### **Gregory S. Sawicki, Ph.D.** (*Postdoc Advisor*)

Associate Professor  
 Director, Physiology of Wearable Robotics Lab  
 Schools of Biological Sciences & Mechanical  
 Engineering  
 Georgia Institute of Technology  
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### **Alena M. Grabowski, Ph.D.** (*Ph.D. Advisor*)

Associate Professor  
 Director, Applied Biomechanics Lab  
 Dept. of Integrative Physiology  
 University of Colorado Boulder  
 Office: (303) 492-5208  
 Email: alena.grabowski@colorado.edu

### **Justus D. Ortega, Ph.D.** (*Undergraduate Advisor*)

Professor  
 Director, Biomechanics Lab  
 Dept. of Kinesiology and Recreation Administration  
 Humboldt State University  
 Office: (707) 826-4274  
 Email: jdo1@humboldt.edu

**Rodger Kram, Ph.D.** (*Ph.D. Committee Member*)

Associate Professor *Emeritus*

Director, Locomotion Lab

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