Owen N. Beck, Ph.D.

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Updated: August 2023

EDUCATION & PROFESSIONAL APPOINTMENTS

Assistant Professor, Kinesiology & Health Education 2023 -
University of Texas at Austin
Director: Human Locomotion Lab

McCamish Postdoctoral Fellow, Biomedical Engineering 2021 - 2022
Emory University (PI: Lena H. Ting, Ph.D.)

NIH Postdoctoral Fellow, Mechanical Engineering 2018 - 2021
Georgia Institute of Technology (PI: Gregory S. Sawicki, Ph.D.)

Ph.D. Integrative Physiology 2014 - 2017
University of Colorado Boulder (PI: Alena M. Grabowski, Ph.D.)

B.S. Kinesiology 2009 - 2013
Humboldt State University (PI: Justus D. Ortega, Ph.D.)

PROFESSIONAL APPOINTMENTS (CONTINUED)

Adjoint Professor, Translation Science Graduate Program 2023 -
University of Texas at San Antonio

PEER-REVIEWED PUBLICATIONS

Google Scholar h-index: 15

28. Martino G., **Beck O.N.,** Ting L.H. (2023) Voluntary muscle coactivation in quiet standing elicits reciprocal rather than coactive agonist-antagonist control of reactive balance in young adults. *Journal of Neurophysiology*
27. Zhang-Lea J.H., Tacca J.R., **Beck O.N.,** Taboga P., Grabowski A.M. (2023) Prosthetic Legs Run Shorter Than Biological Legs. *Scientific Reports*
26. Gill P.K., Kipp S., **Beck O.N.,** Kram R. (2023) It is Time to Abandon Single-Value Oxygen Uptake Energy Equivalents. *Journal of Applied Physiology.* 134(4), 887-890. doi.org/10.1152/japplphysiol.00353.2022
25. **Beck O.N.,*** Shepherd M.K.*, Rastogi R., Martino G., Ting L.H., Sawicki G.S. (2023) Exoskeletons Need to React Faster than Physiological Responses to Improve Standing Balance. *Science Robotics*. 8, eadf1080, doi:10.1126/scirobotics.adf1080
    - Featured Cover Article
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/japplphysiol.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.,** Sawicki G.S., Franz J.R. (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
    - Invited article discussion at Katholieke Universiteit Leuven International Journal Club (2022)
    - Invited article discussion at University of Nebraska Omaha Journal Club (2021)
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)
    - Editor's pick: https://jneuroengrehab.biomedcentral.com/editors-picks
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
    - Featured Cover Article
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 & FELLOWSHIPS

Pending

National Institute of Health (NIA R21) – PI: Owen N. Beck
Visual versus Peripheral Feedback to Restore Walking Ability in Older Adults

Department of Defense – PI: Owen N. Beck
Congressionally Directed Medical Research Program (OPORP Level 1)
Revealing Salient Aspects of Rehabilitation to Enable Economical Walking Post Limb-Loss

National Institute of Health (NIA R21) - PI: Owen N. Beck
Wearables to Structurally Remodel User Muscles and Improve Walking Ability across the Lifespan
Impact Score: 51/Resub TBD Percentile: 39th /Resub TBD

Completed

McCamish Parkinson's Disease Innovation Program Training Fellowship $120,000
PI: Owen N. Beck (12/2021 – 12/2022)

National Institute of Health (NIA F32) - PI: Owen N. Beck $152,000
Linking Muscle-Tendon Dynamics and Energetics to Inform Exoskeleton Design for Improved Locomotor Economy of Aging (09/2019 – 11/2022)

Not Funded

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

HONORS AND AWARDS

- Atlanta Science Communication Fellowship ($600) 2018
- Best Graduate Student Podium Presentation Award ($100) 2017
  Rocky Mountain American Society of Biomechanics Conference
- 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 2013
  Humboldt State University – Department of Kinesiology
- Presidential Scholar Award – Humboldt State University 2012 & 2013
- NCAA Student Athlete All-Academic Award 2011

TEACHING

University of Texas at Austin

Graduate Course:

KIN395 (Clinical Biomechanics)

- Fall '23

Undergraduate Courses:

KIN320 (Applied Biomechanics of Human Movement)

- Spring '23, Fall '23

University of Colorado Boulder

Spring 2016, IPHY 4540 (Biomechanics – Lead Teaching Assistant**)**

Invited Guest Lectures

Spring 2023, University of Texas at Austin, KIN 395 (Running with Prostheses)
Spring 2023, University of Texas at Austin, KIN 397C (Locomotion Performance)
Spring 2023, University of Texas at Austin, KIN 397C (Selecting an Academic Journal)
Fall 2022, Sacramento State University (Running with Prostheses)
Fall 2018, University of Colorado Boulder (Co-activation & Aging)

TRAINEES

University of Texas at Austin - Human Locomotion Lab

Ph.D. Students

2023 - Wenxi Zhang
2023- Hui Tang
- Texas New Scholar Fellowship – $15,000 2023

2023 - Ningzhen Zhao (co-advised by Dr. Griffin)

Master's Students

2023- Brooke Measeles
2023 - Negin Fallah
- Dept. Travel Award - $1,000 2023

Non-Lab Trainees

Master's Student Thesis Reader

2023 Ningzhen Zhao, University of Texas at Austin

PROFESSIONAL SERVICE

Expert Testimony for International Court Hearing

Blake Leeper vs. World Athletics. 2020 & 2021
Testified as scientific expert at the Court of Arbitration for Sport.

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 & Biomemetics, 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

Biomechanics Society Service

Abstract Reviewer

North American Congress on Biomechanics, American Society of Biomechanics Annual Conference ('21, '22, '23), Dynamic Walking Conference, & International Conference for Biomedical Robotics and Biomechatronics

Awards Committee

- Best podium presentation committee, South Central American Society of Biomechanical Annual Meeting, 2023
- Junior faculty research award committee, American Society of Biomechanics Annual Meeting, 2023

Trainee Programs

- Trainee Round Table Host, Preparing Materials for Faculty Applications. Annual Meeting of the American Society of Biomechanics. Knoxville, Tenn. 2023
- Mentor-Mentee Program, Annual Meeting of the American Society of Biomechanics. Knoxville, Tenn. 2023
- Mentor-Mentee Program, South Central American Society of Biomechanics Meeting, Fort Worth, TX. 2023

PRESENTIONS

Invited Research Presentations

- **Beck O.N.,** Running with Prostheses. Depts. of Physical Therapy & Mechanical Engineering Northeastern University, July. 2023
- **Beck O.N.,** Faster Grandparents: Maintaining Mobility into Advanced-Age. Center for Non-Linear Dynamics Seminar. University of Texas at Austin, Feb. 2023.

Conference Podium Presentations

- **Beck O.N.,** Schroeder J.S., Sawicki G.S. Wearing High Heels Remodels Leg Muscle-Tendons and Improves Walking Economy. Annual Meeting of the American Society of Biomechanics. Knoxville, Tenn. 2023.
- Jakubowski K.L., Martino G., **Beck O.N.,** Sawicki G.S, Ting L.H. The Intrinsic and Neurally-Mediated Contributions to the Balance-Correcting Torque Response Differ Between the Ankle and Hip. International Society of Biomechanics. Fukuoka, Japan 2023.
- Rastogi R., Jakubowski K.L., Martino G., **Beck O.N.,** Shepherd M.K., Sawicki G.S, Ting L.H. Too Much Exoskeleton "Assistance" Can Disrupt User Balance Correction. Annual Meeting of the American Society of Biomechanics. Knoxville, Tenn. 2023.
- Schroeder J.S., **Beck O.N.,** Sawicki G.S. Impact of Triceps-Surae Operating Lengths on Whole Body Metabolic Cost. Annual Meeting of the American Society of Biomechanics. Knoxville, Tenn. 2023.

- **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. 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., 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., 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., 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., 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., 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., 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

- Fallah N., **Beck O.N.** Does the Distal-to-Proximal Redistribution of Joint Mechanics Affect Walking Economy? Annual Meeting of the American Society of Biomechanics. Knoxville, Tenn. 2023.
- Schroeder J.S., **Beck O.N.,** Sawicki G.S. Relatively Small Changes in Foot-Ankle Mechanics Over Months Alter Musculoskeletal Structure. Annual Meeting of the American Society of Biomechanics. Knoxville, Tenn. 2023.
- **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., **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., **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 P., **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 P., **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 P., 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 P., 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 P., **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 P., **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

- 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

Exoskeletons

- The Conversation. "Faster-than-reflexes robo-boots boost balance" 2023 https://theconversation.com/faster-than-reflexes-robo-boots-boost-balance-199485
- UT Austin, College of Education. "Exoskeletons Must Act Faster Than Human Reaction Times to Improve Balance" https://education.utexas.edu/news/2023/02/17/exoskeletons-must-act-faster-human-reaction-times-improve balance?utm_campaign=https%3A%2F%2Feducation.utexas.edu%2F%3Futm_source%3Deducation.utexas.edu%26utm_medium%3Dweb%26utm_campaign%3Dwebsite-feature_social-sharing%26utm_con

Prostheses

- Runners World "New Study Shows Blade Runners Do Not Have a Competitive Advantage" 2023 https://www.runnersworld.com/news/a44521586/blade-runners-do-not-have-competitive-advantage/
- 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. "Leep of Faith: CU Scientists Testing World's Fastest Blade Runner" 2018 https://www.colorado.edu/today/2018/08/24/leep-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-1lXYyU1tU
- 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
- 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=onsiteshar