

# RYAN ALCANTARA

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## EDUCATION

### University of Colorado Boulder

PhD candidate in Integrative Physiology

*Graduate Spring 2021*

### University of Colorado Boulder

MSc in Integrative Physiology

*2019*

### Seattle Pacific University

BSc Applied Human Biology, Kinesiology Minor

*2015*

## RESEARCH EXPERIENCE

### Graduate Research Assistant

Applied Biomechanics Lab, University of Colorado Boulder

Advisor: Dr. Alena Grabowski

Funded by the PAC-12 Student-Athlete Health & Well-Being Grant Program

*2017 – Present*

### Research Technician

Footwear Biomechanics Laboratory, Brooks Running

*2016*

### Research Intern

Footwear Biomechanics Laboratory, Brooks Running

*2015*

### Undergraduate Research Assistant

Seattle Pacific University

Advisor: Dr. Cara Wall-Scheffler

*2014*

## TEACHING EXPERIENCE

### Graduate Teaching Assistant

Human Anatomy Laboratory, University of Colorado Boulder

*2017*

### Undergraduate Teaching Assistant

Introductory Physics I & II, Seattle Pacific University

*2014*

## HONORS & AWARDS

**Eyes High Postdoctoral Fellowship**, University of Calgary (*awarded, declined*)

*2020*

**Best Presentation – Athletics**, International Society of Biomechanics in Sports

*2020*

**IPHY Fellowship Travel Award**, University of Colorado Boulder

*2019*

**Diversity Travel Award**, American Society of Biomechanics (ASB)

*2018*

**Best Masters Student Poster Presentation**, Rocky Mountain ASB Regional Meeting

*2018*

**Graduate Student Travel Grant**, University of Colorado Boulder

*2018*

**Graduate Dean's Fellowship**, University of Colorado Boulder

*2017*

**Oregon Latino Scholarship**, Hispanic Metropolitan Chamber of Commerce

*2012*

**President's Scholar Award**, Seattle Pacific University

2011 – 2015

## PUBLICATIONS

- Alcantara R.**, Day E., Hahn M., Grabowski A. Sacral acceleration can predict whole-body kinetics and stride kinematics across running speeds (*in press*).
- Alcantara R.**, Edwards B., Millet G., Grabowski A. Predicting continuous ground reaction forces from accelerometers during uphill and downhill running: A recurrent neural network solution. *bioRxiv* 2021.03.17.435901, (2021).
- Day E., **Alcantara R.**, McGeehan M., Grabowski A., Hahn M. Low-pass filter cutoff frequency affects sacral-mounted inertial measurement unit estimations of peak vertical ground reaction forces and contact time during treadmill running. *Journal of Biomechanics* 119, 110323, (2021).
- Alcantara R.** Prosthetic leg design, force production, and curve sprint performance: A pilot study. *International Society of Biomechanics in Sports Proceedings Archive* 38(1), (2020).
- Alcantara R.**, Beck O., Grabowski A. Added 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, 1449-1456, (2020).
- Alcantara R.** Dryft: A Python and MATLAB package to correct drifting ground reaction force signals during treadmill running. *Journal of Open Source Software* 4(44), 1910 <https://doi.org/10.21105/joss.01910>. (2019).
- Alcantara R.**, Trudeau M., Rohr E. Calcaneus range of motion underestimated by markers on running shoe heel. *Gait & Posture* 63: 68-72, (2018).
- Alcantara, R.** & Wall-Scheffler, C. Stroller Running: Energetic and kinematic changes across pushing methods. *PLoS One* 12(7): e0180575, (2017).

## CONFERENCE PRESENTATIONS

- Alcantara R.** & Grabowski A. (2021) Biomechanics of the Inside and Outside Leg When Sprinting Along Flat Curves. Rocky Mountain ASB Meeting.
- Diaz G., **Alcantara R.**, Grabowski A. (2021) Effects of Curve Radii on Maximum Curve Sprinting Velocity in Athletes With a Leg Amputation. Rocky Mountain ASB Meeting.
- Alcantara R.** (2020) Prosthetic Leg Design, Force Production, and Curve Sprint Performance: A Pilot Study\*. International Society of Biomechanics in Sports.  
\*Awarded Best Presentation (Topic: Athletics)
- Alcantara R.** & Grabowski A. (2020) Loading Asymmetry Before and After Metatarsal Stress Fracture: A Case Study. American Society of Biomechanics.
- Alcantara R.** (2020) Curve Sprinting With a Split-Toe Running Specific Prosthesis: A Pilot Study. American Society of Biomechanics.
- Alcantara R.** & Grabowski A. (2020) Curve Sprinting with a Split-Toe Running Specific Prosthesis: A Pilot Study. Rocky Mountain ASB Meeting. (accepted – conference cancelled)
- Alcantara R.**, Day E., Hahn M., Grabowski A. (2019) Sacral Accelerations Predict Whole Body Kinetics and Stride Kinematics During Running. International Society of Biomechanics.
- Alcantara R.**, Day E., Hahn M., Grabowski A. (2019) Sacral Accelerations Predict Whole Body Kinetics and Stride Kinematics During Running. Rocky Mountain ASB Meeting.
- Alcantara R.**, Beck O., Grabowski A. (2018) Mass added to a running-specific prosthesis increases metabolic power during running. American Society of Biomechanics.
- Alcantara R.**, Beck O., Grabowski A. (2018) Mass added to a running-specific prosthesis increases metabolic power during running\*. Rocky Mountain ASB Meeting.  
\*Awarded Best Poster Presentation by M.Sc. Student

- Alcantara R.**, Trudeau M., Brüggemann G., Hamill J., Rohr E. (2016) Running Shoe Forefoot Bending Stiffness Affects Calf Muscle EMG. Northwest ASB Meeting.
- Alcantara R.** & Wall-Scheffler C. (2016) Running With A Stroller: Kinematic and Energetic Changes Across Different Stroller Pushing Techniques. American College of Sports Medicine.
- Alcantara R.** & Wall-Scheffler C. (2015) Push it, Push it Real Good: The energetic cost of running with a stroller. Murdock College Science Research Program.
- Alcantara R.** & Wall-Scheffler C. (2015) Push it, Push it Real Good: The energetic cost of running with a stroller. Seattle Pacific University Summer Research Symposium.

## INVITED PRESENTATIONS

- Using Accelerometers to Measure a Runner's Biomechanics and Monitor Injury Risk** 2021  
LIBM Seminar, Université Jean Monnet Saint-Etienne
- Improving Running Performance and Monitoring Injury Risk with Wearable Devices** 2021  
Neuromuscular Biomechanics Lab, Stanford University
- Version Control for Researchers Workshop** 2020  
University of Wisconsin-Milwaukee
- Version Control for Researchers Workshop** 2020  
American Society of Biomechanics Annual Meeting
- Panel Member** 2020  
Biology Cornerstone Seminar, Seattle Pacific University
- Panel Member** 2020  
Student Academic Success Center, University of Colorado Boulder
- Using inertial measurement units to predict running kinetics and kinematics** 2019  
LEOMO Inc., Boulder, CO
- Wearable devices estimate biomechanical risk factors for stress fractures** 2019  
Integrative Physiology Department Colloquium, University of Colorado Boulder
- Guest Lecturer** 2018  
Introductory Biomechanics, Colorado School of Mines
- Panel Member** 2018  
Capstone Seminar, George Fox, University
- Guest Lecturer** 2016  
Disciplinary Research and Writing, Seattle Pacific University
- Panel Member** 2016  
Biology Cornerstone Seminar, Seattle Pacific University

## MENTORSHIP & OUTREACH

- Mentor** 2019 – Present  
Graduate Student Peer Mentoring Program, University of Colorado Boulder
- Mentor** 2019  
"L2k" Legacy High School STEM Internship Program, Boulder, CO
- Volunteer** 2019  
Colorado Advantage Program, University of Colorado Boulder

**Volunteer Organizer**

2018 – 2019

National Biomechanics Day, University of Colorado Boulder

**Undergraduate Researcher Supervisor**

2017 – 2020

Applied Biomechanics Lab, University of Colorado Boulder

**ACADEMIC SERVICE****Moderator**, Biomch-L Weekly Literature Updates

2021 – Present

**Co-Chair**, Locomotion Session – *American Society of Biomechanics Meeting*

2020

**Reviewer**, British Journal of Sports Medicine

2020 – Present

**Reviewer**, Journal of Open Source Software

2019 – Present

**Co-Chair**, Running Performance Session – *Footwear Biomechanics Symposium*

2019

**Co-Chair**, PhD Competition Session – *American Society of Biomechanics Meeting*

2018

**Co-Chair**, Sports Session – *Rocky Mountain ASB Regional Meeting*

2018

**Member**, ASB Student Advisory Committee for Biomechanics Advocacy

2017 – 2018

**SPECIALIZED SKILLS****Laboratory:** Vicon Nexus, Motion Analysis Cortex, Visual3D, Novel Pedar, Instron Material Testing, Delsys sEMG, Noraxon sEMG, IMeasureU, Parvo Medics, Oxycon Mobile, Biodex**Computer:** MATLAB, Python (numpy, pandas, tensorflow, keras, scikit-learn), R (ggplot, caret, nlme, dplyr, R shiny), Git, LaTeX, Slurm Workload Manager, Tableau**Analysis:** Mixed-Effects Models, Linear Regression, Recurrent Neural Networks, Feed-Forward Neural Networks, Random Forests, Transfer Learning**REFERENCES**

Dr. Alena Grabowski – Associate Professor, University of Colorado Boulder

Dr. Rodger Kram – Associate Professor Emeritus, University of Colorado Boulder

**MEDIA & PRESS****Selected Press for *Energetic Cost of Stroller Running*:**[New York Times](#)[Inside Science](#)**Personal Interview - SPU etc. Magazine:**<https://voices.spu.edu/articles/dream-career-reality-college-etc>