

# RYAN ALCANTARA

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## EDUCATION

### University of Colorado Boulder

*Defend in March 2021*

PhD candidate in Integrative Physiology – Applied Biomechanics Lab

Advisor: Dr. Alena Grabowski

### University of Colorado Boulder

*2019*

MSc in Integrative Physiology – Applied Biomechanics Lab

Advisor: Dr. Alena Grabowski

### Seattle Pacific University

*2015*

BSc Applied Human Biology, Kinesiology Minor

Advisor: Dr. Cara Wall-Scheffler

## RESEARCH EXPERIENCE

### Graduate Research Assistant

*2017 – Present*

Applied Biomechanics Lab, University of Colorado Boulder

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

### Research Technician

*2016*

Footwear Biomechanics Laboratory, Brooks Running

Performed 3D motion capture data collections, developed custom MATLAB scripts for data analysis, reported findings to Footwear R&D

### Research Intern

*2015*

Footwear Biomechanics Laboratory, Brooks Running

Assisted with mechanical footwear testing, subject recruitment, and data processing

### Undergraduate Research Assistant

*2014*

Seattle Pacific University

Investigated the biomechanical and physiological effects of running with a stroller

## TEACHING EXPERIENCE

### Graduate Teaching Assistant

*2017*

Human Anatomy Laboratory, University of Colorado Boulder

### Undergraduate Teaching Assistant

*2014*

Introductory Physics I & II, Seattle Pacific University

## HONORS & AWARDS

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

*2020*

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

*2019*

<b>Diversity Travel Award</b> , American Society of Biomechanics (ASB)	2018
<b>Best Masters Student Poster Presentation</b> , Rocky Mountain ASB Regional Meeting	2018
<b>Graduate Student Travel Grant</b> , University of Colorado Boulder	2018
<b>Graduate Dean's Fellowship</b> , University of Colorado Boulder	2017
<b>Oregon Latino Scholarship</b> , Hispanic Metropolitan Chamber of Commerce	2012
<b>President's Scholar Award</b> , Seattle Pacific University	2011 – 2015

## PEER-REVIEWED PUBLICATIONS

- Alcantara R.**, Day E., Hahn M., Grabowski A. (under review) Sacral acceleration can predict whole-body kinetics and stride kinematics across running speeds.
- Day E., **Alcantara R.**, McGeehan M., Grabowski A., Hahn M. (under review) Low-pass filter cutoff frequency affects sacral-mounted inertial measurement unit estimations of peak vertical ground reaction forces and contact time during treadmill running.
- Alcantara R.** (2020) Prosthetic leg design, force production, and curve sprint performance: A pilot study. *International Society of Biomechanics in Sports Proceedings Archive*: 38(1), Article 230
- Alcantara R.**, Beck O., Grabowski A. (2020) 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.
- Alcantara R.** (2019) 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>.
- Alcantara R.**, Trudeau M., Rohr E. (2018) Calcaneus range of motion underestimated by markers on running shoe heel. *Gait & Posture* 63: 68-72.
- Alcantara, R.** & Wall-Scheffler, C. (2017) Stroller Running: Energetic and kinematic changes across pushing methods. *PLoS One* 12(7): e0180575.

## PREPRINTS

- Alcantara R.**, Beck O., Grabowski A. (2019) Added lower limb mass does not affect biomechanical asymmetry but increases metabolic power in runners with a unilateral transtibial amputation. Preprint. *SportRxiv* <https://doi.org/10.31236/osf.io/xcus7>.

## CONFERENCE PRESENTATIONS

- Alcantara R.** (2020) Prosthetic Leg Design, Force Production, and Curve Sprint Performance: A Pilot Study\*. International Society of Biomechanics in Sports. (virtual presentation)  
\*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. (virtual presentation)
- Alcantara R.** (2020) Curve Sprinting With a Split-Toe Running Specific Prosthesis: A Pilot Study. American Society of Biomechanics. (virtual presentation)
- 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. (podium)
- Alcantara R.**, Day E., Hahn M., Grabowski A. (2019) Sacral Accelerations Predict Whole Body Kinetics and Stride Kinematics During Running. Rocky Mountain ASB Meeting. (podium)

- Alcantara R.**, Beck O., Grabowski A. (2018) Mass added to a running-specific prosthesis increases metabolic power during running. American Society of Biomechanics. (thematic)
- Alcantara R.**, Beck O., Grabowski A. (2018) Mass added to a running-specific prosthesis increases metabolic power during running\*. Rocky Mountain ASB Meeting. (poster)  
*\*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. (poster)
- Alcantara R.** & Wall-Scheffler C. (2016) Running With A Stroller: Kinematic and Energetic Changes Across Different Stroller Pushing Techniques. American College of Sports Medicine. (poster)
- 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. (poster)
- 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. (podium)

## INVITED PRESENTATIONS

- "Version Control for Researchers" Workshop**, University of Wisconsin-Milwaukee 2020
- "Version Control for Researchers" Workshop**, American Society of Biomechanics 2020  
 Annual Meeting
- Panel Member**, Biology Cornerstone Seminar, Seattle Pacific University 2020
- Panel Member**, Student Academic Success Center, University of Colorado Boulder 2020
- "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**, Introductory Biomechanics, Colorado School of Mines 2018
- Panel Member**, Capstone Seminar, George Fox, University 2018
- Guest Lecturer**, Disciplinary Research and Writing, Seattle Pacific University 2016
- Panel Member**, Biology Cornerstone Seminar, Seattle Pacific University 2016

## MENTORSHIP & OUTREACH

- Mentor**, Graduate Student Peer Mentoring Program, University of Colorado Boulder 2019 – Present
- Mentor**, "L2k" Legacy High School STEM Internship Program, Boulder, CO 2019
- Volunteer**, Colorado Advantage Program, University of Colorado Boulder 2019
- Organizer**, National Biomechanics Day, University of Colorado Boulder 2018 – 2019
- Undergraduate Researcher Supervisor**, Applied Biomechanics Lab 2017 – 2020

## 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
- Reviewer**, Journal of Open Source Software 2019 – Present
- Co-Chair**, Running Performance Session – *Footwear Biomechanics Symposium* 2019 – Present

<b>Co-Chair</b> , PhD Competition Session – <i>American Society of Biomechanics Meeting</i>	2018
<b>Co-Chair</b> , Sports Session – <i>Rocky Mountain ASB Regional Meeting</i>	2018
<b>Member</b> , 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 (LSTM), 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](#)

Society Magazine (Paris, France), by Emmanuelle Andreani

**Personal Interview - SPU etc. Magazine:**

<https://voices.spu.edu/articles/dream-career-reality-college-etc>