# RYAN ALCANTARA

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## EDUCATION

**University of Colorado Boulder** *Graduate Spring 2021*
PhD candidate in Integrative Physiology

**University of Colorado Boulder** *2019*
MSc in Integrative Physiology

**Seattle Pacific University** *2015*
BSc Applied Human Biology, Kinesiology Minor

## RESEARCH EXPERIENCE

**Graduate Research Assistant** *2017 – Present*
Applied Biomechanics Lab, University of Colorado Boulder
Advisor: Dr. Alena Grabowski
Funded by the PAC-12 Student-Athlete Health & Well-Being Grant Program

**Research Technician** *2016*
Footwear Biomechanics Laboratory, Brooks Running

**Research Intern** *2015*
Footwear Biomechanics Laboratory, Brooks Running

**Undergraduate Research Assistant** *2014*
Seattle Pacific University
Advisor: Dr. Cara Wall-Scheffler

## 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

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