Christopher J. Arellano, Ph.D.

Curriculum Vitae – Short Version Last Updated: 11/19/2021

1. CURRENT POSITION

2016- Assistant Professor, Department of Health and Human Performance, University of Houston

2021- Assistant Professor, Joint Appointment, Department of Biomedical Engineering, University of Houston

2. EDUCATION

2008-2012 University of Colorado Boulder, Ph.D. in Integrative Physiology
Thesis: Energetic cost and balance control mechanisms in human locomotion.
A*dvisor:* Rodger Kram, Ph.D.

2005-2007 University of Houston, M.S. in Exercise Science
Thesis: The independent effects of weight, gravity, and inertia on gait stability.
Advisor: Max J. Kurz, Ph.D.

1999-2003 University of Texas at Austin, B.S. in Mechanical Engineering with concentration in Biomedical Engineering

3. PROFESSIONAL APPOINTMENTS

05/13-06/16 **NIH Post-doctoral Associate**, Ecology and Evolutionary Biology Dept., Brown University, *Advisor:* Thomas J. Roberts, Ph.D.
04/12-04/13 **NIH Postdoctoral Fellow**, Integrative Physiology of Aging (T32), University of Colorado Boulder, *Advisor*: Roger M. Enoka, Ph.D.
01/12-04/12 **Research Assistant**, Integrative Physiology, University of Colorado Boulder
08/11-12/11 **Biomechanics Teaching Assistant**, Integrative Physiology, University of Colorado Boulder
08/08-08/11 **Fellow**, NASA-Harriett G. Jenkins Pre-Doctoral Fellowship Program
01/07-08/08 **Biomechanics Teaching Assistant**, Health and Human Performance, University of Houston
09/06-01/07 **Research Assistant**, Laboratory of Integrated Physiology, University of Houston
05/06-08/06 **Intern**, National Space Biomedical Research Institute (NSBRI), Anthropometrics and Biomechanics Facility, NASA Johnson Space Center
01/05-05/06 **Teaching Fellow**, Health and Human Performance, University of Houston
10/04-01/05 **Research Staff**, Health and Human Performance, University of Houston
08/99-08/04 **Laboratory Technical Supervisor I**, Physics Department Laboratory, University of Texas at Austin

4. CURRENT AND PENDING RESEARCH GRANTS

2021 **National Science Foundation CAREER.** *Understanding the stabilizing role of muscle-tendon in vivo.* (Arellano serving as Principal Investigator – funds used to carry out experiments, support research stipends for 2 PhD students, and support outreach activities with MECA, a non-profit organization in Houston)
Funding Amount: $785,012
Award Period: Aug 2021 – Aug 2026

2021 **AIKYNETIX, LLC.** *Understanding the effects of elevation change, weight, and changes in center of mass on running biomechanics.* (Arellano serving as co-Principal Investigator – funds used to support Daisey Vega, PhD Student in HHP, to carry out and complete experimental data collection and analyses.
Research Gift: $6500
Award Period: Jan 2021 – Dec 2021

2021 **Japan's Fund for the Promotion of Joint International Research**
Nihon University (Namba as PI and Arellano as International Collaborator)
Funding Amount Requested: $107,400 (~$20,000 allocated to Arellano)
Full-proposal submitted Aug 2021 – awaiting reviews and final decision

2021 **Grants to Enhance and Advance Research (GEAR)**
University of Houston **(**Arellano as Principal Investigator; Sayenko as Co-Principal Investigator)
Funding Amount Requested: $39,883.15
Submitted Nov 2021 – Preproposal under review

5. PUBLICATIONS

a. Peer-Reviewed Articles (*n* = 22)

Rose VL & **Arellano CJ** (2021). Simple models highlight differences in the walking biomechanics of young children and adults. ***Featured in the November 2021 issue of "Inside JEB": https://doi.org/10.1242/jeb.243739***

Vega D & **Arellano CJ** (2021). Using a simple rope-pulley system that mechanically couples the arms, legs, and treadmill reduces the metabolic cost of walking. *Journal of NeuroEngineering and Rehabilitation*. Epub June 07 2021.

Thomas SA, Vega D & **Arellano CJ** (2021). Do humans exploit the metabolic and mechanical benefits of arm swing across slow to fast walking speeds? *Journal of Biomechanics*.

Arellano CJ, McReynolds OB, & Thomas SA (2020)**.** A low-cost method for carrying loads during human walking. *Journal of Experimental Biology*. 223 (23).

Snyder KL, Hoogkamer W, Triska C, Taboga P, **Arellano CJ**, & Kram R (2020). Effects of course design (curves and elevation undulations) on marathon running performance: a comparison of Breaking 2 in Monza and the INEOS 1:59 Challenge in Vienna. *Journal of Sports Sciences.* 39 (7): 754-759.

Arellano CJ, Gidmark NJ, Konow N & Roberts TJ (2019). Tunable tendons: elastic energy storage in aponeuroses varies with transverse strain *in vivo*. *Proceedings of the Royal Society B: Biological Sciences*. 286 (1900)

Hoogkamer W, Snyder KL, & **Arellano CJ** (2018). Modeling the benefits of cooperative drafting: Is there an optimal strategy to facilitate a sub-2-hour marathon performance. *Sports Medicine*. 48 (12): 2859-2867.

Hoogkamer W, Kram R, & **Arellano CJ** (2017). How biomechanical improvements in running economy can break the 2-hour marathon barrier. *Sports Medicine*. 47 (9): 1739-1750. ***Featured in the "New York Times" and other national/international media outlets.***

Arellano CJ, Gidmark NJ, Konow N, Azizi E, & Roberts TJ (2016). Determinants of aponeurosis shape change during muscle contraction. *Journal of Biomechanics*, 10.1016/j.jbiomech.2016.04.022

Arellano CJ, Caha D, Henessey JE, Ioannis, A, Baudry S, & Enoka RM (2016). Fatigue-induced

adjustment in antagonist coactivation by old adults during a steadiness task. *Journal of Applied Physiology, doi*: 10.1152/japplphysiol.00908.2015

Arellano CJ, McDermott WJ, Kram R, & Grabowski AG (2015). Effect of running speed and leg prostheses on mediolateral foot placement and its variability. *PloS One*. doi: 10.1371/journal.pone.0115637

Arellano CJ & Kram R (2014). Partitioning the metabolic cost of human running: A task-by-task approach. *Integrative and Comparative Biology.* 54 (6): 1084-98.

Arellano CJ & Kram R (2014). On the metabolic cost of human running: is swinging the arms worth it? *Journal of Experimental Biology*. 217 (14): 2456-61. ***Featured in the "New York Times" and other national/international media outlets.***

Look NE, **Arellano CJ**, Grabowski A, McDermott B, Kram R, & Bradley E (2013). Nonlinear dynamics of running: Speed, stability, symmetry and the effects of leg amputations. *Chaos*. 23: 043131.

Arellano CJ & Kram R (2012). The energetic cost of maintaining lateral balance during human running. *Journal of Applied Physiology*. 112: 427-434.

Kram R, **Arellano CJ**, & Franz JR (2011). The metabolic cost of locomotion: muscle by muscle. *Exercise and Sports Science Reviews*. 39(2): 57-58.

Arellano CJ & Kram R (2011). The effects of step width and arm swing on energetic cost and lateral balance during running. *Journal of Biomechanics*. 44(7): 1291-95.

Arellano CJ, Layne CS, O'Connor DP, & Kurz MJ (2009). The independent effect of added mass on the stability of the sagittal plane leg kinematics during steady-state human walking. *Journal of Experimental Biology*. 212(12): 1965-70.

Arellano CJ, Layne CS, O'Connor DP, Scott-Pandorf M, & Kurz MJ (2009). Does load carrying influence sagittal plane locomotive stability? *Medicine and Science in Sports and Exercise*. 41(3): 620-27.

Kurz MJ, Scott-Pandorf M, **Arellano CJ**, Olsen D, & Whittaker G (2008). The penguin waddling gait pattern has a more consistent step width than step length. *Journal of Theoretical Biology*. 252(2): 272-76.

Kurz MJ, Judkins TN, **Arellano CJ**, & Scott-Pandorf M (2008). A passive dynamic walking robot that has a deterministic nonlinear gait. *Journal of Biomechanics*. 41(6): 1310-16.

Kurz MJ, Pothakos K, Jamaluddin S, Scott-Pandorf M, **Arellano CJ**, & Lau YS (2007). A chronic mouse model of Parkinson's disease has a reduced gait pattern certainty. *Neuroscience Letters*. 429(1): 39-42.

b. Books

Tellez T and **Arellano CJ** (2020). The Science of Speed and Art of the Sprint. Forward by Carl Lewis and Edited by Kerry B. Sprick. Publisher: Winning Dimensions Sports, LLC (publication date Nov 30, 2020; Print Length 140 pages.

c. Other Published Reports

Hoogkamer W, Kram R, & **Arellano CJ** (2017). Author's Reply to Candau et al.: Comment on: "How biomechanical improvements in running economy could break the 2-hour marathon barrier". *Sports Medicine*. 47 (11): 2405-2407 (reviewed by Editor)

Hoogkamer W, Snyder KL, & **Arellano CJ** (2019). Reflecting on Eliud Kipchoge's Marathon World Record: An update to our model of cooperative drafting and its potential for a sub-2-hour performance. *Sports Medicine*. 49 (2): 167-170 (Commentary)

d. Articles Under Review/In Progress

Vega D, Huang HJ, & **Arellano CJ**. Step-to-step variability indicates minimal disruption to balance when linking the arms and legs during treadmill walking. (submitted to the *PLOS One* on Sept 26 2021, currently in revision after receiving reviews on Nov 01, 2021; this work serves as the Candidacy Project for Daisey Vega - PhD Student).

Adeyeri B†, Thomas SA & **Arellano CJ**. Objective method for identifying steady-rate metabolism reveals minimum time required to quantify net cost of transport when walking across slow to fast speeds (submitted to *Journal of Experimental Biology* on Sept 09 2021, currently in revision after receiving reviews on Oct 28 2021; this work was supported by UH SURF award to Bolatito Adeyeri – Undergraduate Student†).

Arellano CJ, Beale MT, & Kram R. Arm swing during human walking: Active and passive contributions to a hybrid system (in revision, to be resubmitted to *Proceedings of the Royal Society B: Biological Sciences*).

e. Selected Abstracts

Vega D, Huang HJ, & Arellano CJ. Stepping kinematics indicate minimal disruption to balance control when linking the arms and legs during walking. presented at *American Society of Biomechanics,* Virtual Event in August 2021 (Podium presentation) and at *XXVIII Congress of the International Society of Biomechanics,* Virtual Event in July 2021 (Poster presentation).

Vega D & **Arellano CJ**. Reducing the metabolic cost of walking by using the arms to drive the legs? presented at *Dynamic Walking* held virtually May 2020 (Poster Presentation); presented at *American Society of Biomechanics* held virtually August 2020 (Oral Presentation).

Daisey Vega selected and advanced to final round of 3-min Master's Thesis competition

Rose VL & **Arellano CJ**. The cost and spring-like behavior of walking: Are children scaled down versions of adults? presented at *Dynamic Walking* held virtually May 2020 (Poster Presentation); *American Society of Biomechanics* held virtually August 2020 (Poster Presentation).

Thomas, SA, Vega D, & **Arellano CJ**. Do humans exploit arm-swinging dynamics to reduce the metabolic cost of walking across slow and fast speeds? Joint meeting between *International Society of Biomechanics* and *American Society of Biomechanics*, Calgary, Canada, August 2019 (Oral Presentation).

Snyder KL, Hoogkamer WH, & **Arellano CJ**. Atalantas Assemble: Can the women's marathon world record be broken under an optimal cooperative drafting strategy? Joint meeting between *International Society of Biomechanics* and *American Society of Biomechanics*, Calgary, Canada, August 2019 (Oral Presentation).

Vega D, Thomas SA, & **Arellano CJ**. Reducing metabolic cost of walking by using the arms to drive the legs. *Undergraduate Research Day*, Houston, Texas, October 2018 (Poster Presentation).

Daisey Vega supported by UH Summer Undergraduate Research Fellowship program.

McReynolds OB & **Arellano CJ.** Exploiting arm-swinging dynamics to reduce the metabolic cost of walking while carrying loads. *Texas American College of Sports Medicine,* Austin, Texas, March 2018 (Poster Presentation).

Obioma McReynolds selected as "Finalist" for Undergraduate category.

Arellano CJ, Gidmark NJ, Konow N, Roberts TJ. Elastic shape change and mechanical behavior in the aponeurosis of jumping and landing turkeys. *American Society of Biomechanics*, Boulder, Colorado, August 2017 (Poster Presentation).

Arellano CJ, Hoogkamer W. Coasting to a sub-2-hour marathon using an optimal drafting approach. *American Society of Biomechanics*, Boulder, Colorado, August 2017 (Podium Presentation).

Arellano CJ, Hoogkamer W, Kram R. How biomechanical improvements in running economy can break the 2-hour marathon barrier. *International Society of Biomechanics in Sports*, Tsukuba, Japan, July 2016 (Podium Presentation).

Arellano CJ, Gidmark NJ, Konow N, Roberts TJ. Determinants of aponeurosis shape change during a muscle contraction. *American Society of Biomechanics*, Columbus, Ohio, August 2015 (Poster presentation).

Arellano CJ, Gidmark NJ, Konow N, Roberts TJ. Capturing dynamic shape changes in muscle and aponeurosis. *Northeast Joint DVM/DCB-SICB*, Dartmouth, Massachusetts, November 2014 (Podium Presentation).

Arellano CJ & Kram R. Partitioning the metabolic cost of human running: A task-by-task approach. *Society for Integrative and Comparative Biology*, Austin, Texas, January 2014 (Podium Presentation).

Gidmark NJ, Konow N, **Arellano CJ**, Roberts TJ. Determinants of muscle shape change during lengthening and shortening contractions. *Society for Integrative and Comparative Biology*, Austin, Texas, January 2014 (Poster Presentation).

Arellano CJ, Beale MT, & Kram R. Arm swing during human walking: Active and passive contributions to a hybrid system. *Dynamic Walking Conference*, Pensacola, Florida, May 2012 (Podium Presentation).

Arellano CJ & Kram R. How do step width and arm swing affect energetic cost and lateral balance during running? *American Society of Biomechanics*, Providence, Rhode Island, August 2010 (Podium Presentation). ***Voted runner-up for "Best Paper Award"***

f. Invited Talks

Bertec, Inc., ***Title:*** *"Coupling the arms and legs during treadmill walking: Cost, Benefits, and Tradeoffs", Bertec Knowledge Series. Sept 2021.*

University of Florida, ***Title:*** *"Using the arms and legs during walking: Implications for gait rehabilitation", College of Medicine Neuromechanics Seminar Series. Sept 2021*

University of Massachusetts Amherst, ***Title:*** *"The multi-functional roles of the arms during human walking", Department of Kinesiology Graduate Seminar Speaker Series. March 2021*

University of North Texas Health Sciences Center, **Title**: "Is there a fundamental link between the mechanics and metabolic cost of human walking", Center for Anatomical Sciences Seminar Speaker Series. March 2018

International Society of Biomechanics in Sport, **Title**: "How biomechanical improvements in running economy can break the 2-hour marathon barrier", Applied Session on Running Economy. University of Tsukuba, Japan. July 2016

Harvard University, **Title:** "Dynamic shape change in the aponeurosis: evidence for a soft and hard biological spring", Concord Field Station. April 2016

Brown University, **Title:** "Muscle-tendon mechanics and function." Department of Engineering, Instrumentation Design (Undergraduate course). Nov 2015

Brown University, **Title:** "Spring-mass mechanics and the design of running-specific prostheses." Department of Ecology and Evolutionary Biology, Biological Design: Structural Architecture of Organisms (Undergraduate course). Sept 2015

Future Research Leaders Conference, **Title:** "Muscle- tendon function in the context of locomotion." National Institutes of Health, Sept 2015

University of Massachusetts Amherst. **Title: "**Balance, metabolic cost, and muscle-tendon function during locomotion." Department of Kinesiology. Mar 2015

Massachusetts Institute of Technology Lincoln Laboratory. **Title:** "Explaining the metabolic of human running: The cost of generating force and task-by-task approach." Mar 2014

Society for Integrative and Comparative Biology. **Title:** "Partitioning the Metabolic Cost of Human Running: A task-by-task approach." Terrestrial Locomotion Symposium. Jan 2014

Colloquium for the Department of Integrative Physiology. **Title:** "Lateral balance in sprinters with and without transtibial amputations." University of Colorado Boulder. Apr 2012

6. COMPLETED RESEARCH AND OUTREACH GRANTS

2020 Summer Undergraduate Research Fellowship (SURF). (Arellano served as Principal Investigator - funds used to support Bolatito Adeyeri, an HHP undergraduate student in my lab group, to conduct research in the CNBR during Summer 2020).
Funding Amount: $4,000

2020 Research, Innovation and Scholarly Engagement (RISE). *Understanding the stabilizing role of muscle-tendon units in vivo*. (Arellano serving as Principal Investigator – funds are being used to advance my research efforts in the area of muscle-tendon mechanics and my resubmission of the NSF CAREER proposal in August 2020 and 2021).
Funding Amount: $10,000

2019 Provost 50-in-5 Award for faculty. *The mechanics and energetics of walking by using the arms to drive the legs*. (Arellano serving as Principal Investigator – funds are being used to support my mentee Daisey Vega, an M.S. student in College of Technology, as a Research Assistant in my lab group for the Spring 2020 semester.)
Funding amount: $5,000

2019 Provost Undergraduate Research Scholarship (PURS). *Understanding the mechanics and energetics of walking in children*. (Arellano served as Principal Investigator – funds used to support Danny Guevara, a Mechanical Engineering undergraduate student in my lab group, to conduct research in the CNBR during the Fall 2019 semester).
Funding Amount: $1,000

2019 American Physiological Society, *Hearst Undergraduate Summer Research Fellow*. (Arellano served as faculty mentor to Gemma Malagón, a visiting Biomedical Engineering undergraduate student from Tecnológico de Monterrey, to conduct research in CNBR during Summer 2019).
Funding amount: $4,000 + $500 Faculty Expenditure Allocation

2019 United Way Inc., *MECA's Arts+STEM summer camp.* (Arellano served as faculty sponsor and mentor to two HHP undergraduate students to develop a biomechanics curriculum specifically taught to students from K-9thth grades).
Funding Amount: $40,000 (awarded to MECA)

2019 The Brown Foundation, Inc., *MECA's Arts+STEM summer camp.* (Arellano served as faculty sponsor and mentor to two HHP undergraduate students to develop a biomechanics curriculum specifically taught to students from K-9thth grades).
Funding Amount: $30,000 (awarded to MECA)

2019 Texas Commission on the Arts, *MECA's Arts+STEM summer camp.* (Arellano served as faculty sponsor and mentor to two HHP undergraduate students to develop a biomechanics curriculum specifically taught to students from K-9thth grades).

Funding Amount: $6,000 (awarded to MECA)

2019 Cougar Initiative to Engage (CITE), *Pilot program: Engaging undergraduates in a three-track (research, professional, or community) summer internship program*. (Arellano served as STEM Faculty Partner/Research Track Co-Lead – funds used to support undergraduate members of the Urban Experience Program in a 10-week internship during Summer 2019).
Funding Amount: $42,000

2019 Research Progress Grant, *AlterG running to promote exercise tolerance in young and old adults.* (Arellano served as Principal Investigator – funds used to support Shernice A. Thomas, HHP PhD student in my lab group, to conduct research in the CNBR during Summer 2019).
Funding Amount: $4,000.

2019 Provost Undergraduate Research Scholarship (PURS). A*lterG Running*. (Arellano served as Principal Investigator – funds used to support Anna Larrson, a HHP undergraduate student in my lab group, to conduct research in the CNBR during Spring 2019 semester).
Funding Amount: $1,000

2018 Summer Undergraduate Research Fellowship (SURF). *Using Arm Swing to Drive Leg Swing during Walking* (Arellano served as Principal Investigator - funds used to support Daisey Vega, an HHP undergraduate student in my lab group, to conduct research in the CNBR during Summer 2018).
Funding Amount: $4,000 + $300 Faculty Expenditure Allocation.

2016-2017 Research Progress Grant, *Muscle and aponeurosis mechanics in landing and jumping turkeys*, (Arellano served as Principal Investigator at University of Houston).
Funding Amount: $4,000.

2013-2016 National Institutes of Health's Diversity Supplement, *Elastic Mechanisms in Locomotion*, (Arellano served as postdoctoral trainee at Brown under Thomas J. Roberts, PhD).
Funding Amount: $251,177.

2012-2013 "Integrative Physiology of Aging" Training Grant (T32), *Control strategies in young and older adults*, (Arellano served as postdoctoral trainee at CU Boulder under Roger M. Enoka, PhD).
Funding Amount: $44,496.

2008-2011 NASA-Harriett G. Jenkins Pre-doctoral Fellowship, *Energetic cost and balance control mechanisms in human locomotion*, (Arellano served as Principal Investigator).
Funding Amount: $97,500.

2007-2008 NASA-Texas Space Grant Consortium, *Independent effects of weight, gravity, and inertia on gait stability*, (Arellano served as Principal Investigator).
Funding Amount: $5,000.

a. Proposals submitted

National Science Foundation (NSF) CAREER Award
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $785,012
Submitted August 2020 – recommended for funding, start date August 2021

National Aeronautics and Space Administration (NASA)
Human Exploration Research Opportunities 80JSC019N0001-OMNIBUS3
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $150,000 (not awarded)
Step 1 proposal submitted June 2020 – not invited for Step 2 proposal

American Physiological Society (APS) Research Career Enhancement Award
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $10,000 (not awarded)
Submitted May 2020

National Aeronautics and Space Administration (NASA)
Human Exploration Research Opportunities 80JSC019N0001-OMNIBUS2
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $150,000
Submitted Jan 2020 – Under review and awaiting final decision

Grants to Enhance and Advance Research (GEAR)
University of Houston **(**Arellano as Principal Investigator)
Funding Amount Requested: $35,245
Submitted Nov 2019 – Preproposal not selected

National Science Foundation Collaborative Research
University of Houston (Arellano as Co-Investigator)
Funding Amount Requested: $2,391,216
In collaboration with Dr. Zenaida Aguirre-Munoz (PI) – Associate Professor in PHLS at University of Houston
Submitted Nov 2019 – Under review and awaiting final decision

National Science Foundation CAREER Award
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $1,088,156
Submitted July 2019 – Not Awarded

American Physiological Society Research Career Enhancement Award
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $10,000
Submitted May 2019 – Not Awarded

American Society of Biomechanics Junior Faculty Award
University of Houston (Arellano as Principal Investigator)

Funding Amount Requested: $5,000
Submitted Feb 2019 – Not Awarded

CLASS Research Progress Grant
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $4,000
Awarded: January 2019. End Date: August 2019

NASA BRASH 1801
University of Houston (Arellano as Co-Investigator).
Funding Amount Requested: $800,000.
In collaboration with Dr. Pranav Parikh (PI) and Dr. Charles S. Layne (Co-I).
Submitted June 2018 - Not Awarded

American College of Sports Medicine (ACSM) Doctoral Student Research Grant
University of Houston (Arellano as Principal Investigator and mentor to Shernice A. Thomas, HHP PhD student)
Funding Amount Requested: $5000
Submitted Jan 2018 – Not Awarded

National Institutes of Health (NIH) R01
University of Houston (Arellano as Principal Investigator)
Funding Amount Requested: $1,847,148
Submitted: June 2017 – Not Awarded

American College of Sports Medicine (ACSM) Foundation Grant
University of Houston (Arellano as Principal Investigator)
Funding Amount: $10,000.
Awarded: March 2017. End Date: June 2019

National Institutes of Health (NIH) Pathway to Independence Award (Parent K99/R00)
Brown University (Arellano as Principal Investigator; Primary Mentor: TJ Roberts; Co-Mentor: RL Marsh).
Funding Amount Requested: $932,572.22.
Submitted June 2015. Not Awarded.

The Burroughs Wellcome Fund - Postdoctoral Enrichment Program
Brown University (Arellano as Principal Investigator)
Funding Amount Requested: $50,000.
Submitted Jan 2014. Not Awarded May 2014.

7. TEACHING EXPERIENCE

a. University of Houston (Assistant Professor)

PEP 8334 Applied Regression Models for Health Research

Responsibility: Provide graduate students with the skills to integrate study design, statistical methods, analytical modeling, and interpretation using the regression framework. Class is designed to cover theoretical and practical applications using data from actual studies. Spring 2020. Primary Instructor.

Fall 2018. Co-taught with Dr. Craig Johnston (Associate Professor in HHP)

KIN 3309 Biomechanics

Responsibility: Design course materials, lectures, and exam materials for 60-70 students. Class is designed with an active learning approach emphasizing in-class discussion and problem solving.
Spring 2020. Teaching Assistant: Vivian L. Rose, HHP PhD student.
Fall 2019. Teaching Assistant: Daisey Vega, Engineering Technology MS student.
Spring/Fall 2018. Teaching Assistant: Vivian L. Rose, HHP PhD student.
Fall 2017. Teaching Assistant: David Temple, HHP PhD student.

b. Brown University (Postdoc)

Animal Locomotion course taught by Professor Sharon Swartz

Responsibility: Participated in teaching activities, lectures, and grading. Spring 2015.

Teaching Certificate #1, Sheridan Center for Teaching and Learning

Responsibility: Completed 5 core modules covering fundamental reflective teaching components. Completed in April 2015.

c. University of Colorado Boulder (PhD student)

Biomechanics course taught by Professor Rodger Kram,

Responsibility: Teaching Assistant (class of 64 students) and direct a lab section (16 students). Student Evaluation: 5.7/6.0

8. SERVICE TO THE:

a. University

STEM Panel Discussant, *STEM for All: Broadening Participation in STEM Education & Careers*, Brown University, February 2016

Keynote Speaker, *Colorado Advantage Graduate Preview*, "My Experience as a Graduate Student at CU Boulder", November 2012

Graduate Student Panel, *Colorado Advantage Graduate Preview*, "Graduate Student Life at CU Boulder", November, 2012

Graduate Mentor, *Summer Multicultural Access to Research Training (SMART) program*, University of Colorado Boulder, 2009-2012

Graduate Mentor, *Alliance for Graduate Education and the Professoriate (AGEP) program*, University of Houston, 2007-2008

b. Profession

Scientific Review Board: International Society of Biomechanics in Sport

Journal Reviewer: Annals of Biomedical Engineering, Human Movement Sciences, Journal of Biomechanics, Journal of Neurophysiology, PLoS One, Royal Society Interface, Medicine & Science in Sports & Exercise, Journal of Applied Physiology, Gait & Posture

c. Community

Biomechanics Workshop, *Breakthrough Providence Arts and Sciences Exploration Day,* Wheeler School. Taught $7^{th}/8^{th}$ graders principles of projectile and rotational motion to understand throwing mechanics. July 18, 2014.

Mentor, *CasaMESA Robotics at Casa de la Esperanza Community Center*, Taught middle and high school students engineering principles, basic computer programming skills, and use of technology through the *FIRST* Robotics program. Nov 1, 2011-May 1, 2012

Guest Speaker, *STEMsation Mentoring Program*, University of Colorado Boulder, April 6, 2012

Volunteer, *Science Discovery*, University of Colorado Boulder, June 28, 2009

9. ACADEMIC HONORS, FELLOWSHIPS, AND PROFESSIONAL MEMBERSHIPS

a. Honors/Awards

Brown University, Division of Biology and Medicine's Postdoc Travel Award to attend the *American Society of Biomechanics Annual Meeting*, 2015
Student Travel Grant, *Dynamic Walking Conference*, 2012
APS/NIDDK Minority Travel Fellowship, *Experimental Biology Conference*, 2012
Teaching and Mentoring Award (Science Category), 23rd Annual Multicultural Event, *Community Action Programs*, Boulder, Colorado, 2011
Volunteer Service Award, *CU Boulder's Volunteer Resource Center*, 2011
Runner-up, *Journal of Biomechanics Best Paper Award*, American Society of Biomechanics Annual Meeting, 2010
University of Houston AGEP Summer Research Program, 2007
Outstanding Member, Community Service, American Society of Mechanical Engineers, 2000

b. Fellowships/Scholarships

Awarded, *NIH Postdoctoral Fellow*, Integrative Physiology of Aging (T32), 2012
Awarded, *NASA-Harriett G. Jenkins Pre-Doctoral Fellowship Program*, 2008
Awarded, *University of Houston College of Education Alumni Scholarship*, 2008
Awarded, *NASA-Texas Space Grant Consortium Fellow*, 2008
Semifinalist, *NASA-Harriett G. Jenkins Pre-doctoral Fellowship Program*, 2007
Awarded, *NASA-Texas Space Grant Consortium Fellow*, 2007
Awarded, Summer Internship, *National Space Biomedical Research Institute,* 2006
Awarded, *Congressional Hispanic Caucus Institute* (CHCI) Scholarship, 2005
Awarded, *League of United Latin American Citizens* (LULAC) Scholarship, 1999

c. Memberships

Society for the Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS), Brown University, 2014-2016
Sigma Xi, 2014-Present
Society for Integrative and Comparative Biology, 2013-Present
The American Physiological Society, 2011-Present
American College of Sports Medicine, 2011-Present
Alliance for Graduate Education and the Professoriate, 2007-2012
American Society of Biomechanics, 2006-Present
American Society of Mechanical Engineers, 1999-2000
Society of Hispanic Professional Engineers, 1999-2001
Emerging Scholars Program, University of Texas at Austin, 1999-2000