

Curriculum Vitae

Jonas Rubenson

Department of Kinesiology
The College of Health and Human Development
The Pennsylvania State University
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Personal Information

Citizenship: Canada
Permanent Residency: USA

Education

- 1999 – 2005 University of Western Australia, Perth, Australia.
Ph.D., Biomechanics, School of Human Movement & Exercise
Science.
Awarded with Distinction.
- 1996 – 1998 University of Western Australia, Perth, Australia.
B.Sc.(Hon.) Exercise Physiology, School of Human Movement &
Exercise Science, *1st Class.*
- 1993 – 1996 University of British Columbia, Vancouver, Canada.
B.Sc. coursework, School of Human Kinetics / Department of
Biology.

Academic Positions

- Nov. 2014 - present Associate Professor, Department of Kinesiology;
Faculty Member, Integrative and Biomedical Physiology Graduate
Program, The Pennsylvania State University, University Park.
(Tenured May, 2019).
- Nov. 2014 - present Adjunct Associate Professor, School of Human Sciences,
The University of Western Australia.
- 2012 – 2014 Assistant Professor (tenured), School of Sport Science, Exercise
& Health, The University of Western Australia.
- 2008 – 2012 Assistant Professor (non-tenured), School of Sport Science,
Exercise & Health, The University of Western Australia.

- 2014 – 2017 Adjunct Associate Professor, Department of Kinesiology, The University of Massachusetts, Amherst.
- 2007 – 2008 Post-Doctoral Research Associate, Sports Medicine, Department of Orthopaedic Surgery, Stanford University.
- 2004 – 2007 Post-Doctoral Research Associate, Department of Biology, Northeastern University.

Honors and Awards

- 2018 American Society of Biomechanics, East Coast Regional Meeting; Best Poster Award, Reading, PA, USA. (With M. Salzano, Ph.D. Candidate, S. Cox and S. Piazza).
- 2017 Journal of Biomechanics Award, American Society of Biomechanics, Boulder, CO, USA. (With M. Salzano, Ph.D. Candidate, S. Cox and S. Piazza).
- 2011 Nominated (by Deputy Vice-Chancellor Research, UWA): Eureka Prize for Scientific Research. (*Eureka Prizes reward outstanding achievements in Australian science and science promotion/ communication and are Australia's major national science awards*).
- 2011 Early-Career Researcher “Best Publication of the Year” award (Engineering and Mathematics Category), The University of W. Australia.
- 2010 Heart Foundation Research Award, National Heart Foundation.
- 2006 The Company of Biologists (*Journal of Experimental Biology*) Travelling Fellowship. With Prof. Scott Delp, Stanford University, Bioengineering.
- 2005 The University of Western Australia, Ph.D. Distinction Honors.
- 2005 Valedictorian speaker, graduation ceremony for the Faculty of Architecture, Landscape and Visual Arts, Life and Physical Sciences and Natural and Agricultural Sciences, The University of Western Australia.
- 1999 – 2002 The University of Western Australia Post-Graduate Award.

- 1999 – 2002 The University of Western Australia International Post-Graduate Research Award.
- 1998 The University of Western Australia, B.Sc., Hons. 1st Class Distinction.
- 1996 The University of British Columbia Scholarship (awarded for high academic merit in undergraduate studies).

Research Funding

Role is identified as Principal Investigator, *Co-Principal Investigator, Co-Investigator or Consultant:

* Australian grants identify Principal Investigators using alphabetical designation (e.g. PI-A is the Principal Investigator; PI-B, PI-C, etc. are Co-Principal Investigators).

NOTE: Any amounts awarded in Australia have been converted to USD currency using historical conversion rates.

Awarded External:

Name of Project: Active Growth, Active Life: Eliminating Biomechanical Barriers to Physical Activity through Growth-Period Exercise.

Principal Investigator: Jonas Rubenson (S. Piazza, Multiple-PI).

Source of Funding: National Institutes of Health, R01.

Total Awarded:	Start Date:	End Date:
\$ 3,082,829	April 2022	April 2027

Name of Project: Set for life: Long-term effects of inactivity during growth on musculoskeletal form and locomotor function.

Principal Investigator: Jonas Rubenson (S. Piazza, Multiple-PI).

Source of Funding: National Institutes of Health, R21.

Total Awarded:	Start Date:	End Date:
\$365,312	May 2018	April 2021

Awarded (declined by PI Stover, postdoctoral applicant)

Name of Project: Avian ossified tendons, a source of functional information for understanding musculoskeletal biomechanics.

Principal Investigator: Kristin Stover (Rubenson is Co-I).

Source of Funding: National Science Foundation; NSF Post-Doctoral Fellowship in Biology FY 2017.

Total Awarded:	Start Date:	End Date:
\$142,000	Sept. 2017	Sept. 2020

Name of Project: Neurodevelopmental consequences of mechanical ventilation and postnatal steroids in preterm lambs.

Principal Investigator: Jane Pillow (Rubenson is Co-PI, PI-G*).

Source of Funding: National Health and Medical Research Council (Australia).

Total Awarded:	Start Date:	End Date:
\$1,562,353	Jan. 2014	Jan. 2018

Name of Project: Postnatal steroids and antenatal chorioamnionitis: between the Scylla and Charybdis of inflammation and apoptosis after preterm birth.

Principal Investigator: Jane Pillow (Rubenson is Co-I).

Source of Funding: Western Australia Department of Health; Telethon-Perth

Children's Hospital Research Fund (Australia).

Total Awarded:	Start Date:	End Date:
\$206,091	Jan. 2012	Dec. 2013

Name of Project: Tissue engineered muscle actuators as evocative cultural objects.

Principal Investigator: Ionat Zurr (Rubenson is Co-I).

Source of Funding: Australian Research Council (DECRA).

Total Awarded:	Start Date:	End Date:
\$397,114	Nov. 2011	Oct. 2014

Name of Project: Bioengineered bioscaffolds for Achilles tendinopathy treatment.

Principal Investigator: David Lloyd (Rubenson is Co-PI, PI-F*).

Source of Funding: Australian Research Council; Linkage Projects

Total Awarded:	Start Date:	End Date:
\$1,603,170 (incl. industry)	June 2011	July 2015

Name of Project: Optimising exercise and functional capacity in heart failure: A focus on enhancing skeletal muscle mechanics.

Principal Investigator: Jonas Rubenson (D. Green PI-B*, A. Maiorana PI-C*, L. Naylor PI-D*; Co-PIs).

Source of Funding: National Heart Foundation (Australia).

Total Awarded:	Start Date:	End Date:
\$126,856	Nov. 2010	Oct. 2012

Name of Project: Integrating musculoskeletal modelling and experimental measurement in testing the mechanical determinants of the metabolic cost of limb swing in bipedal gait.

Principal Investigator: Jonas Rubenson.

Source of Funding: Company of Biologists Travelling Fellowship.

Total Awarded:	Start Date:	End Date:
\$4,000	Jan. 2006	Jan. 2007

Awarded Internal

Name of Project: Embodied Synthetic Muscles for Adaptive Preservation of Locomotor Function in Aging.

Principal Investigator: Jonas Rubenson (Co-I, B. Cheng; L. Cheng; M. Aynardi, PSU; G. Sawicki, Georgia Tech)

Source of Funding: Penn State / Huck Institutes of Life Sciences.

Total	Start Date:	End Date:
AwardedRequested:	March 2022	March. 2024
\$160,000		

Name of Project: HHD Bridge Funding.

Principal Investigator: Jonas Rubenson (M-PI, S. Piazza)

Source of Funding: Penn State / College of Health and Human Development.

Total Requested:	Start Date:	End Date:
\$17,042	March 2022	-

Name of Project: A platform for advancing computational neuromuscular modelling of human and animal movement.

Principal Investigator: Jonas Rubenson (Co-PI, T. Besier, Univ. Auckland)

Source of Funding: Penn State / University of Auckland Collaboration Grant.

Total Awarded:	Start Date:	End Date:
\$20,000 NZD	July 2020	Dec. 2021

Name of Project: Teaching release for grant writing, Kinesiology.

Principal Investigator: Jonas Rubenson

Source of Funding: Department of Kinesiology Penn State.

Total Awarded:	Start Date:	End Date:
Teaching Release	Aug. 2020	Dec. 2020

Name of Project: The brain as regulator of skeletal growth: relationship between life history and skeletal phenotypic variation.

Principal Investigator: Jonas Rubenson (T. Ryan Co-PI).

Source of Funding: HUCK Institutes of the Life Sciences; Center for Human Evolution and Diversity, Penn State.

Total Awarded:	Start Date:	End Date:
\$24,757	Aug. 2019	July. 2020

Name of Project: College of Health and Human Development teaching release to support grant writing.

Principal Investigator: Jonas Rubenson.

Source of Funding: College of Health and Human Development, Penn State.

Total Awarded:	Start Date:	End Date:
\$7,500	Jan. 2019	May 2019

Name of Project: College of Health and Human Development teaching release to support grant writing.

Principal Investigator: Jonas Rubenson.

Source of Funding: College of Health and Human Development, Penn State.

Total Awarded:	Start Date:	End Date:
\$7,500	Aug. 2017	Dec. 2017

Name of Project: Exercise-induced developmental plasticity of musculoskeletal form and function.

Principal Investigator: Jonas Rubenson (S. Piazza, T. Ryan, R. Schilder, P. Reno, Co-PIs).

Source of Funding: HUCK Institutes of the Life Sciences; Center for Human Evolution and Diversity, Penn State.

Total Awarded:	Start Date:	End Date:
\$19,942	Jan. 2016	Dec. 2016

Name of Project: The effect of load stimulus during growth on musculoskeletal architecture and locomotor biomechanics in an avian bipedal model (*Numida Meleagris*).

Principal Investigator: Jonas Rubenson.

Source of Funding: HUCK Institutes of the Life Sciences; College of Health and Human Development Mini-Grant Program, Penn State.

Total Awarded:	Start Date:	End Date:
\$5,000	Dec. 2015	Dec. 2016

Name of Project: Diffusion tensor imaging of rabbit Achilles tendon to characterize tendon fiber architecture.

Principal Investigator: David Lloyd (Rubenson is Co-I).

Source of Funding: Griffith Health Institute (Australia).

Total Awarded:	Start Date:	End Date:
\$11,542	Jan. 2013	Jan. 2014

Name of Project: Validation of a freehand 3D ultrasound system for morphological measures of the calf muscle in young children with cerebral palsy.

Principal Investigator: Lee Barber (Rubenson is Co-I).

Source of Funding: U. of Queensland Bilateral Research Collaboration Awards.

Total Awarded:	Start Date:	End Date:
\$7,268	Jan. 2013	Jan. 2014

Name of Project: Creating human subject-specific neuromuscular skeletal models.

Principal Investigator: David Lloyd (Rubenson is Co-PI, PI-B*).

Source of Funding: The University of Western Australia.

Total Awarded:	Start Date:	End Date:
\$16,293	Jan. 2011	Jan. 2012

Name of Project: Development and validation of a data rich neuromuscular-skeletal computational modelling framework to study muscular-skeletal disorders in humans and animals.

Principal Investigator: David Lloyd (Rubenson is Co-PI, PI-B*).

Source of Funding: The University of Western Australia.

Total Awarded:	Start Date:	End Date:
\$7,278	Jan. 2010	Jan. 2011

Name of Project: Animating semi-living: Muscle actuators as cultural evocative objects.

Principal Investigator: Ionat Zurr, (Rubenson is Co-PI, PI-B*).

Source of Funding: The University of Western Australia.

Total Awarded:	Start Date:	End Date:
\$22,609	Jan. 2010	Jan. 2011

Name of Project: Understanding the link between muscle mechanics and energetics in vivo: Integrating empirical data and musculoskeletal modeling.

Principal Investigator: Jonas Rubenson.

Source of Funding: The University of Western Australia.

Total Awarded:	Start Date:	End Date:
\$15,692	Jan. 2009	Jan. 2010

Publications (Submitted / Pre-print)

Rubenson's students underlined; undergraduate, graduate

*Rubenson is senior/corresponding author

51. McDonald, K.A., Cusumano, J.P., Hieronymi, A., and ***Rubenson, J.** Humans trade-off energetic cost with fatigue avoidance while walking *bioRxiv* 2022.03.16.484670; doi: <https://doi.org/10.1101/2022.03.16.484670>.

Publications (Peer Reviewed)

Rubenson's students underlined; undergraduate, graduate

*Rubenson is senior/corresponding author

2022

50. ***Rubenson J**, Sawicki GS. (2022). Running birds reveal secrets for legged robot design. *Science Robotics*. Mar 16;7(64):eabo2147. doi: 10.1126/scirobotics.abo2147. Epub 2022 Mar 16. PMID: 35294221.

2021

49. Cox S.M, De Boef, A., Salzano, M.Q., Katugam, K., Piazza, S.J., ***Rubenson, J.** (2021). Plasticity of the gastrocnemius elastic system in response to decreased work and power demand during growth. *J. Exp. Biol.* 1;224(21):jeb242694. doi: 10.1242/jeb.242694. PMID: 34522962.

2020

48. Katugam, K., Cox S.M, Salzano, M.Q., De Boef, A., Neuberger, T., Ryan, T.R., Piazza, S.J., ***Rubenson, J.** (2020). Altering the mechanical load environment during growth does not affect adult Achilles tendon properties in an avian bipedal model. *Front. Bioeng. Biotechnol.* 8:994.
47. Cox, S.M., Salzano, M.Q., Piazza, S.J., ***Rubenson, J.** Eliminating high-intensity activity during growth reduces mechanical power capacity but not sub-maximal metabolic cost in a bipedal animal model. (2020). *J. Appl. Physiol.* 128 (1): 50-8.

2019

46. McDonald, K.A., Devaprakash, D., ***Rubenson, J.** Is conservation of center of mass a priority in human walking? Insights from leg length asymmetry experiments. (2019). *J. Exp. Biol.* 222: doi: 10.1242/jeb.195172.
45. Cox, S., Easton, K, Cromie, M., Marsh, R., Delp, S., ***Rubenson, J.** (2019). The interaction of compliance and activation on the force-length operating range and force generating capacity of skeletal muscle: a computational study using a guinea fowl musculoskeletal model. *Integrative Organismal Biology*, obz022, <https://doi.org/10.1093/iob/obz022>.
44. McDonald, K.A., Cusumano, J.P., Peeling, P., ***Rubenson, J.** (2019). Multi-objective control in human walking: insights gained through simultaneous degradation of energetic and motor regulation systems. *J. R. Soc. Interface.* 16: doi: 10.1098/rsif.2019.0227.

2018

43. Cox, S.M., ***Rubenson, J.**, *Sawicki, G.S. (2018). A soft-exosuit enables multi-scale analysis of wearable robotics in a bipedal animal model. *IEEE Intelligent Robots and Systems IROS*. [*contributed equally to this work as co-senior authors].

42. Pires, N.J., Lay, B., ***Rubenson, J.** (2018). Modulation of joint and limb mechanical work in walk-to-run transition steps in humans. *J. Exp. Biol.* 221: 1-13.
41. Salzano, M.Q., Cox, S.M., Piazza, S.J., ***Rubenson, J.** (2018). American Society of Biomechanics Journal of Biomechanics Award 2017: High acceleration training during growth increases optimal muscle fascicle lengths in an avian bipedal model. *J. Biomech.* 80: 1-7.
40. Bishop, P.J., Graham, D.F., Lamas, L.P., Hutchinson, J.R., **Rubenson, J.**, Hancock, J., Wilson, R.S., Hocknull, S.A., Barrett, R.S., Lloyd, D.G., Clemente, C.J. (2018). The influence of speed and size on avian terrestrial locomotor biomechanics: Predicting locomotion in extinct theropod dinosaurs *PLoS ONE*. 2018 Feb 21;13(2):e0192172.

2017

39. Bishop, P.J., Clemente, C.J., Weems, R.E., Graham, D.F., Lamas, L.P., Hutchinson, J.R., **Rubenson, J.**, Wilson, R.S., Hocknull, S.A., Barrett, R.S., Lloyd, D.G. (2017). Using step width to compare locomotor biomechanics between extinct, non-avian theropod dinosaurs and modern obligate bipeds. *J. R. Soc. Interface.* Jul;14(132).
38. Sartori, M., **Rubenson, J.**, Lloyd, D. G. & Panizzolo, F.A. (2017). Subject-specificity via 3D ultrasound and personalized musculoskeletal modeling. In *Converging Clinical and Engineering Research on Neurorehabilitation II*. Springer International Publishing, Heidelberg, pp.639-642.
37. Xin Pang, Jian Ping Wu, Garry T Allison, Jiake Xu, David Smith, **Rubenson, J.**, Ming-Hao Zheng, David G Lloyd, Bruce Gardiner, Allan Wang, Thomas Brett Kirk. (2017). The three dimensional microstructural network of elastin, collagen and cells in Achilles tendons. *J. Orthop. Res.* 35:1203-1214.

2016

36. Panizzolo, F.A., Maiorana, A.J., Naylor, L., Dembo, L.G., Lloyd, D.G., Green, D.J. and ***Rubenson, J.** (2016) Muscle size explains low passive skeletal muscle force in heart failure patients. *PeerJ*, 1-11. ISBN/ISSN #/Case #/DOI #: 10.7717/peerj.2447.
35. Young, S, Mehdizadeh, A., Gardiner, B., Umberger, B.A., **Rubenson, J.**, Smith, D. (2016). Adaptive remodeling of Achilles tendon: A multi-scale computational model. *PLoS Computational Biology*, 2(9):e1005106, 1-30.

34. Waldcock, C., Donnely, C.J., **Rubenson, J.**, N. Milne (2016). The use of geometric morphometric techniques to identify sexual dimorphism in gait. *J. Appl. Biomech.* 32: 441 - 448.
33. Stearne, S.M., McDonald, K.A., North, I, Oxnard, C.E., Alderson, J.A., and ***Rubenson, J.** (2016). The foot's arch and the energetics of human locomotion. *Scientific Reports.* 6: 19403, 1-10.
32. McDonald, K.A., Stearne, S.M., Pires, N.J., North, I, Alderson, J.A., and ***Rubenson, J.** (2016). The role of arch compression and metatarsophalangeal joint dynamics in modulating plantar fascia strain in running. *PLoS ONE.* Apr 7;11(4):e0152602.
31. Rankin, J.W., **Rubenson, J.** and Hutchinson, J.R. (2016). Inferring muscle functional roles of the ostrich pelvic limb during walking and running using computer optimization. *J. R. Soc. Interface.* 13(118). 20160035. <http://doi.org/10.1098/rsif.2016.0035>.
30. Green, D.J., Panizzolo, F.A., Lloyd, D.G, ***Rubenson, J.** and Maiorana, A.J. (2016). Soleus muscle as surrogate for health status in human heart failure. *Exerc. Sport Sci. Rev.* 44: 45-50.
29. Caulfield S., McDonald K.A., Dawson B., Stearne S.M., Green B.A., **Rubenson J.**, Clemons T.D., Peeling P. (2016). A comparison of haemolytic responses in fore-foot and rear-foot distance runners. *J Sports Sci.* 34: 1485-1490.

2015

28. Hutchinson, J.R., Rankin, J.W., **Rubenson, J.**, Rosenbluth, K.H., Siston R.A., and Delp, S.L. (2015). Musculoskeletal modeling of an ostrich (*Struthio camelus*) pelvic limb: Influence of limb orientation on muscular capacity during locomotion. *PeerJ* 3:e1001 <https://dx.doi.org/10.7717/peerj.1001>.
27. Wang, T., Ni, M., Day, R.E., Gardiner, B.S., Landao-Bassonga, E., **Rubenson, J.**, Kirk, T.B., Smith, D.W., Wang, A., Lloyd, D.G., Hardisty, G., Wang, Y., Zheng, Q., Zheng, M.H. and Lin, Z. (2015). Cyclical mechanical stimulation rescues rabbit Achilles tendon from degeneration in a bioreactor system. *Journal Orthop. Res* 33:1888-96.
26. Nathan, D., Huynh, D., **Rubenson, J.**, Rosenberg, M. (2015). Estimating physical activity energy expenditure with the Kinect sensor in an exergaming environment. *PLoS ONE* 10(5): 1-22.

25. ***Rubenson, J.** (2015). More than meat and a motor: the diverse biomechanical roles of skeletal muscle and their role in semi-living machines. Invited paper for *Leonardo Journal / the International Society for the Arts, Sciences and Technology*, MIT Press. 48: 176-7.
24. Panizzolo, F.A., Maiorana, A.J., Naylor, L., Lichtwark, G.A., Dembo, L.G., Lloyd, D.G., Green, D.J. and ***Rubenson, J.** (2015). Is the soleus a sentinel muscle for impaired aerobic capacity in Heart Failure? *Med. Sci. Sports Exerc.* 47: 498-508.

2014

23. Panizzolo, F.A., Maiorana, A.J., Naylor, L., Lloyd, D.G., Dembo, L.G., Green, D.J. and ***Rubenson, J.** (2014). Gait analysis in chronic heart failure: the calf as a locus of impaired walking capacity. *J. Biomech.* 47: 3719-25.
22. Pires, N.J., Lay, B. and ***Rubenson, J.** (2014). Joint-level mechanics of the walk-to-run transition in humans. *J. Exp. Biol.* 217: 3519-3527.
21. Stearne, S.M., Alderson, J.A., Green, B., Donnely, C.J. and ***Rubenson, J.** (2014). Joint kinetics in rearfoot vs. forefoot running: implications of switching technique. *Med. Sci. Sports Exerc.* 46:1578-87.

2013:

20. Panizzolo, F.A., Green, D.J., Lloyd, D.G., Maiorana, A.J. and ***Rubenson, J.** (2013). Soleus fascicle length changes are conserved between young and old adults at their preferred walking speed. *Gait and Posture.* 38: 764 - 769.
19. Smith, D.W., **Rubenson, J.**, Lloyd, D.G., Zheng, M., Besier, T.F., Xu, J. and Gardiner, B.S. (2013). A conceptual framework for computational models of Achilles tendon homeostasis. *Wiley Interdisciplinary Reviews: System Biology and Medicine.* 5: 523 – 538.
18. Wang, T., Lin, Z., Day, R., Gardner, B., **Rubenson, J.**, Kirk, T.B., Smith, D.W., Lloyd, D.G., Hardisty, G., Wang, A. and Zheng, M.H. (2013). Programmable mechanical stimulation influences tendon homeostasis in a bioreactor system. *Biotechnol Bioeng.* 110: 1495-507.
17. Wang, T., Gardner, B., Lin, Z., Kirk, T.B., **Rubenson, J.**, Wang, A., Hunter, P., Anderson, P., Xu, J., Daish, K., Smith, D.W., Lloyd, D.G., and Zheng, M.H. (2013). Bioreactor design for tendon/ligament engineering. *Tissue Eng. Part B. Rev.* 19: 133-46.

16. Haughton, L., Dawson, B., ***Rubenson, J.** (2013). Achilles tendon mechanical properties after both prolonged continuous running and prolonged intermittent shuttle running in cricket batting. *J. Appl. Biomech.* 29: 453 - 462.
15. Haughton, L., Dawson, B., ***Rubenson, J.** (2013). Effects of plyometric training on Achilles tendon properties and shuttle running during a simulated cricket batting innings, *J. Strength Cond. Res.* 27: 1036 – 1046.

2012:

14. ***Rubenson, J.**, Pires, N.J., Loi, H.O., Pinniger, G.J., and Shannon, D. (2012). On the ascent: the soleus operating length is conserved to the ascending limb of the force-length curve across gait mechanics in humans. *J. Exp. Biol.* 215: 3539 - 3551.

2011:

13. ***Rubenson, J.**, Heliamis, B.D., Besier, T.F., Lloyd, D.A., and Fournier, P.A. (2011). Adaptations for economical bipedal running: the effect of limb structure on three-dimensional joint mechanics. *J. R Soc., Interface.* 8: 740-755.
12. Umberger, B.R. and **Rubenson, J.** (2011). Understanding muscle energetics in locomotion: New modeling and experimental approaches *Exerc. Sport Sci. Rev.* 39: 59-67.
11. Park, D, **Rubenson, J.**, Carr, A, Mattson, J, Besier, T.F., and Chou, L. (2011). The Influence of stretching and warm-up on Achilles tendon material properties. *Foot and Ankle Int.* 32: 407-413.
10. Carr, J.A., Ellerby, D.J., **Rubenson, J.**, and Marsh, R.L. (2011). Mechanisms producing coordinated function across the breadth of a large biarticular thigh muscle. *J. Exp. Biol.* 114: 3396 - 3404.
9. Watson, R.R., **Rubenson, J.**, Coder, L., Hoyt, D.F., Propert, M.W.G., and Marsh, R.L. (2011). Gait specific energetics contribute to economical walking and running in emus and ostriches. *Proc. R. Soc. Lond. B.* 278: 2040-2046.
8. Haughton, L., Dawson, B., **Rubenson, J.**, Tobin, M. (2011). Movement patterns and physiological strain during a novel, simulated cricket batting innings (BATEX), *J. Sport. Sci.* 29: 801-809.
7. Haughton, L., Dawson, B., ***Rubenson, J.** (2011). Performance in a simulated cricket batting innings (BATEX): Reliability and discrimination between playing standards. *J. Sport. Sci.* 29: 1097-103.

2009 & Earlier:

6. ***Rubenson, J.** and Marsh, R.L. (2009). Mechanical efficiency of limb swing during walking and running in guinea fowl (*Numida meleagris*). *J. Appl. Physiol.* 106: 1618 – 1630.
5. ***Rubenson, J.**, Heliams, B.D., Lloyd, D.A., Maloney, S.K., Withers, P.C. and Fournier, P.A. (2007). Reappraisal of the comparative cost of human locomotion using gait-specific allometric analyses. *J. Exp. Biol.* 210: 3513-3524.
4. ***Rubenson, J.**, Lloyd, D.A., Besier, T.F., Heliams, B.D., and Fournier, P.A. (2007). Running in ostriches (*Struthio camelus*): three-dimensional joint axes alignment and joint kinematics. *J. Exp. Biol.* 210: 2548-2562.
3. Marsh, R.L., Ellerby, D.J., Henry, H.T. and **Rubenson, J.** (2006). The energetic cost of trunk and distal limb loading during walking and running in guinea fowl *Numida meleagris*. I. Organismal metabolism and biomechanics. *J. Exp. Biol.* 209: 2050-63.
2. **Rubenson, J.**, Henry, H.T., Dimoulas, P.M. and Marsh, R.L. (2006). The cost of running uphill: linking organismal and muscle energy use in guinea fowl *Numida meleagris*. *J. Exp. Biol.* 209: 2395-2408.
1. **Rubenson, J.**, Heliams, B.D., Lloyd, D.A., and Fournier, P.A. (2004). Gait selection in the ostrich: mechanical and metabolic characteristics of walking and running with and without an aerial phase. *Proc. R. Soc. Lond. B.* 271: 1091– 1099.

Refereed Conference Proceedings

64. Katugam, K., Johnson, T., Dechene, I., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Adaptations in mechanical limb power and metabolic energy cost after chronic growth-period limb loading. International Society of Biomechanics Annual Meeting, 2021, Stockholm, Sweden (Online).
63. Johnson, T., Katugam, K., Dechene, I., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Developmental Plasticity of Locomotor Economy in an Avian Bipedal Model. International Society of Biomechanics Annual Meeting, 2021, Stockholm, Sweden (Online). *Finalist, Young-investigator poster category.*
62. Johnson, T., Katugam, K., Dechene, I., Cox, S.M., ***Rubenson, J.** Chronic limb loading results in a remarkable economy of walking with added limb mass. Dynamic Walking 2021 Annual Meeting, Online.

61. Johnson, T., Katugam, K., Dechene, I., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Developmental Plasticity of Locomotor Economy in guinea fowl. Society for Integrative and Comparative Biology, 2021, Washington, DC, USA; online.
60. Cox, S.M., Salzano, M.Q., Katugam, K., Piazza, S.J., ***Rubenson, J.** Restricting jumping during growth does not alter energy storage capacity. Society for Integrative and Comparative Biology, 2021, Washington, DC, USA; online.
59. Katugam, K., Johnson, T., Dechene, I., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Developmental Plasticity of walking energetics and swing-phase mechanics in chronically limb-loaded fowl. Society for Integrative and Comparative Biology, 2021, Washington, DC, USA; online.
58. Katugam, K., Cox S.M, Salzano, M.Q., De Boef, A., Neuberger, T., Ryan, T.R., Piazza, S.J., ***Rubenson, J.** Achilles Tendon Material Properties are Resilient to Variations in Load During Growth. American Society of Biomechanics Annual Meeting, 2020, Atlanta, GA, USA; online. *Finalist, ASB 3-minute thesis competition- Masters category.*
57. Johnson, T., Katugam, K., Dechene, I., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Developmental Plasticity of Locomotor Economy in an Avian Bipedal Model. American Society of Biomechanics Annual Meeting, 2020, Atlanta, GA, USA; online. *Winner, ASB 3-minute thesis competition- Masters category.*
56. Salzano, M.Q., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Moment Arm Plasticity in Response to Loading History during Growth. American Society of Biomechanics Annual Meeting, 2020, Atlanta, GA, USA; online.
55. McDonald, K.A., Cusumano, J.P., Hieronymi, A., and ***Rubenson, J.** Decoupling the Metabolic and Neuromuscular Control of Human Walking. Dynamic Walking 2020 Annual Meeting, Online.
54. Cox, S., Easton, K, Cromie, M., Marsh, R., Delp, S., ***Rubenson, J.** Probing the interaction of compliance and activation on the force-length operating range and force capacity of skeletal muscle using comparative musculoskeletal modelling. American Society of Biomechanics / International Society of Biomechanics Annual Meeting, 2019, Calgary, AB, Canada.
53. Salzano, M.Q., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Effects of exercise during growth on bone strength and morphology. American Society of Biomechanics / International Society of Biomechanics Annual Meeting, 2019, Calgary, AB, Canada.

52. Katugam, K., Salzano, M.Q., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Material properties of the achilles tendon are unaltered by botulinum toxin across growth in an avian bipedal model. American Society of Biomechanics / International Society of Biomechanics Annual Meeting, 2019, Calgary, AB, Canada.
51. Salzano, M.Q., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Impaired jumping performance arising from sedentary growth is recovered through exercise in adulthood. American Society of Biomechanics 42nd Annual Meeting, 2018, Rochester, MN, USA.
50. Cox, SM, Sawicki, G, ***Rubenson, J.** RoboBird: A passive exo-tendon for guinea fowl. 2018 Neural Control of Movement, 2018, Santa Fe, NM, 1-F-60.
49. Salzano, M.Q., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Impaired jumping performance arising from sedentary growth is recovered through exercise in adulthood. American Society of Biomechanics East Coast Regional Meeting, 2018, Reading, PA, USA. *Meeting best poster award.*
48. Salzano, M.Q., Ryan, T., Cox, S.M., Piazza, S.J., ***Rubenson, J.** Musculoskeletal adaptations to high-acceleration training during growth in an avian bipedal model. The Penn State Bone and Joint Institute Annual Musculoskeletal Research Symposium, 2018, University Park, PA, USA.
47. ***Rubenson, J.**, Salzano, M.Q., Cox, S.M., Piazza, S.J. Developmental plasticity of musculoskeletal structure and locomotor function in guinea fowl (*Numida meleagris*). Society for Integrative and Comparative Biology, Annual Meeting, 2018, San Francisco, CA. *Integr. Comp. Biol.* 58: E194.
46. Brainerd, E.L., Cox, S.M., Sawicki, G., Olsen, A.M., Flammang, B.E., Biewener, A.A., ***Rubenson, J.** ASB-SICB Joint Symposium: Insights from Animal Biomechanics. American Society of Biomechanics 41st Annual Meeting, 2017, Boulder, CO.
45. Cox, S.M., Sawicki, G., ***Rubenson, J.** Robobird: An avian model for passive-elastic exoskeletons. American Society of Biomechanics 41st Annual Meeting, 2017, Boulder, CO.
44. Salzano, M.Q., Cox, S.M., Piazza, S.J., ***Rubenson, J.** High-acceleration training during growth increase optimal muscle fiber lengths in an avian bipedal model. American Society of Biomechanics 41st Annual Meeting, 2017, Boulder, CO.
43. Green, B.A., Sawicki, G., ***Rubenson, J.** Energy cost of walking in a metatarso-phalangeal passive-elastic exoskeleton. American Society of Biomechanics 41st Annual Meeting, 2017, Boulder, CO.

42. McDonald, K.A., Peeling P., ***Rubenson, J.** Preferred walking speed in normal and unstable gait environments. American Society of Biomechanics 40th Annual Meeting, 2016, Raleigh, NC.
41. McDonald, K.A., Peeling P., ***Rubenson, J.** Energetic optimization in unstable gait environments. Biomechanics and Neural Control of Movement (BANCOM), 2016, Mt. Sterling, OH.
40. Salzano, M.Q., Piazza, S.J., ***Rubenson, J.** The effect of disuse on muscle lever systems in a rapid-growing avian bipedal model. American Society of Biomechanics 40th Annual Meeting, 2016, Raleigh, NC.
39. Sartori, M., **Rubenson, J.**, Lloyd, D.G., Farina, D., Panizzolo, F. Subject-Specificity via 3D Ultrasound and Personalized Musculoskeletal Modeling. International Conference on Neurorehabilitation (ICNR), 2016, Segovia, Spain.
38. McDonald, K.A., Stearne, S.M., and ***Rubenson, J.** (2016) The role of arch compression and metatarsophalangeal joint dynamics in modulating plantar fascia strain in running. International Society of Biomechanics XXV, 2015, Glasgow, UK.
37. Panizzolo, F.A., Maiorana, A.J., Naylor, L., Dembo, L.G., Lloyd, D.G., Green, D.J. and ***Rubenson, J.** Passive and Active soleus muscle forces in chronic heart failure. International Society of Biomechanics XXV, 2015, Glasgow, UK.
36. ***Rubenson, J.** Modulation and Distribution of Joint Work and Power in Bipedal Locomotion. *International Symposium on Adaptive Motion of Animals and Machines (AMAM)*. 2015, MIT, Cambridge, MA, USA.
35. ***Rubenson, J.**, Sanghvi, H., Cromie, M.J., Easton, K.L., Marsh, R.L. and Delp, S.L. Invited symposium speaker: 'OpenSim Showcase Seminar'. World Congress Biomechanics VII, 2014, Boston, MA, USA.
34. ***Rubenson, J.** Invited symposium speaker: 'Comparative Biomechanics of Bipedal Locomotion'. World Congress Biomechanics VII, 2014, Boston, MA, USA.
33. ***Rubenson, J.**, Sanghvi, H., Cromie, M.J., Easton, K.L., Marsh, R.L. and Delp, S.L. Influence of tendon compliance and activation level on fibre operating lengths of skeletal muscle. Society for Integrative and Comparative Biology, 2013, San Francisco, CA, USA. *Integr. Comp. Biol.* 53: E186.
32. Rankin, J.W., **Rubenson, J.** and Hutchinson, J.R. The influence of ostrich hip morphology on walking and running economy: a test case for using detailed

- musculoskeletal models and computer simulations to link form and function. 10th International Congress of Vertebrate Morphology (ICVM-10), 2013, Barcelona, Spain.
31. Panizzolo, F.A., Maiorana, A.J., Green, D.J., Lloyd, D.G. and ***Rubenson, J.** Gait analysis in chronic heart failure patients points to the calf as the source of reduced functional capacity. International Society of Biomechanics XXIV, 2013, Natal, Brazil.
 30. Panizzolo, F.A., Maiorana, A.J., Green, D.J., Lloyd, D.G. and ***Rubenson, J.** Muscle and tendon morphological characteristics in chronic heart failure patients. International Society of Biomechanics XXIV, 2013, Natal, Brazil. *Finalist: Student Congress Young Investigator Award.*
 29. Stearne, S.M., Alderson, J. and ***Rubenson, J.** (Sole searching: Exploring the spring function of the arch of the foot across different foot strike techniques using a novel insole approach. International Society of Biomechanics XXIV, 2013, Natal, Brazil.
 28. Stearne, S.M., Alderson, J., Green, B., Donnely, C.J. and ***Rubenson, J.** Redistribution of mechanical work and power in rear- and fore-foot strike running techniques. International Society of Biomechanics XXIV, 2013, Natal, Brazil.
 27. Easton, K.L., Hayes, A., Besier, T., Lloyd, D. and ***Rubenson, J.** (2013). Development of a musculoskeletal model of the New Zealand white rabbit hindlimb: Joint power and work during hopping and jumping. International Society of Biomechanics XXIV, 2013, Natal, Brazil.
 26. ***Rubenson, J.**, Sanghvi, H., Cromie, M.J., Easton, K.L., Marsh, R.L. and Delp, S.L. (2013). Interaction between tendon compliance the activation level on fiber operating lengths of skeletal muscle. International Society of Biomechanics XXIV, 2013, Natal, Brazil.
 25. Stearne, S., **Rubenson, J.** and Alderson, J.A. Investigation of running foot strike technique on Achilles tendon force using ultrasound techniques and a Hill-type model. 3rd Congress of the International Foot and Ankle Biomechanics (i-FAB) Community, Sydney, Australia. *Journal of Foot and Ankle Research* 2012, 5(Suppl 1):P25.
 24. ***Rubenson, J.**, Pires, N.J., Loi, H.O., Pinniger, G.J., and Shannon, D. (2012). On the ascent: the soleus muscle is conserved to the ascending limb of the force length curve across gait mechanics in humans. American Society of Biomechanics 36th Annual Meeting, 2012, Gainesville, Florida.

23. Rankin, J.W., **Rubenson, J.** and Hutchinson, J.R. Insights gained from a three-dimensional musculoskeletal model into ostrich pelvic limb muscle. Dynamic Walking, 2012, Pensacola Beach, Florida.
22. Panizzolo, F.A., Green, D.J., Maiorana, A.J., Lloyd, D.G. and ***Rubenson, J.** Soleus fascicle strain is matched in young and old adults at the preferred walking speed. International Society of Biomechanics XXIII, 2011, Brussels, Belgium.
21. Rankin, J.W., Tsaopoulos, D.E., ***Rubenson, J.** and Hutchinson, J.R. Biomechanical simulation to determine the mechanical roles of ostrich limb muscle during walking. Society for Experimental Biology, 2011, Glasgow, Scotland.
20. ***Rubenson, J.**, Pires, N.J., Shannon, D., Loi, H.O. The force length operating range of the human soleus muscle during walking and running. VI World Congress Biomechanics, 2010, Singapore.
19. ***Rubenson, J.**, Marsh, R.L. The role of passive joint moments in the mechanics and energetics of limb swing. International Society of Biomechanics XXII., 2009, Cape Town, SA.
18. ***Rubenson, J.**, Marsh, R.L. Revealing the mechanical determinants of limb-swing cost. Society for Experimental Biology, 2008, Marseille. *Comp. Biochem. Physiol. A.* 150: S68.
17. ***Rubenson, J.**, Marsh, R.L. Integrating the mechanical and metabolic energetics of the swing phase of walking and running, American Society of Biomechanics 31st Annual Meeting, 2007, Stanford, CA.
16. ***Rubenson, J.** and Marsh, R.L. The in vivo function of two swing-phase muscles in running guinea fowl and their relation to limb-swing dynamics. Society for Experimental Biology, 2006, Canterbury. *Comp. Biochem. Physiol. A.* 143: S90.
15. Marsh, R.L. and **Rubenson, J.** Passive moments at the leg joints of guinea fowl. American Physiological Society Intersociety Meeting: Comparative Physiology: Integrating Diversity, 2006, Virginia Beach, VA.
14. Marsh R.L., **Rubenson J.**, Henry H. and Ellerby, D. Lateral gastrocnemius function in running and jumping guinea fowl *Comp. Society for Experimental Biology*, 2006, Canterbury. *Comp. Biochem. Physiol. A.* 143: S91.
13. ***Rubenson J.**, Besier T.F., Lloyd D.A., Helaims, D.B. and Fournier, P.A. Three-dimensional joint kinematics and kinetics during bipedal running: Effect of limb posture. Society for Experimental Biology, Barcelona., 2005, *Comp. Biochem. Physiol. A.* 141: S146.

12. ***Rubenson, J.**, and Marsh, R.L. Integrating the mechanics and energetics of the swing phase during walking and running. Society for Experimental Biology, 2005, Barcelona. *Comp. Biochem. Physiol. A.* **141**: S135.
11. Marsh R.L., Ellerby, D.J., **Rubenson, J.** and Henry, H.T. Altering energy use by specific muscle groups in running guinea fowl: carrying loads and running uphill. Society for Experimental Biology, 2005, Barcelona. *Comp. Biochem. Physiol. A.* 141: S135.
10. Dimoulas P.M., Henry H., **Rubenson J.**, et al. Homogenous activation patterns of the anatomically compartmentalized semimembranosus muscle in *Bufo marinus*. Society for Integrative and Comparative Biology, 2005, San Diego. *Integr. Comp. Biol.* 44: 546.
9. Henry HT, **Rubenson J.**, Hoogendyk T.A. and Marsh, R.L. Storage of elastic energy in guinea fowl lateral gastrocnemius tendon in running versus jumping. Society for Integrative and Comparative Biology, 2005, San Diego. *Integr. Comp. Biol.* 44: 547.
8. Marsh RL, **Rubenson J.**, Henry H.T. and Dimoulas, D.M. Muscle energetics measured by blood flow in guinea fowl during uphill running. Society for Integrative and Comparative Biology, 2005, San Diego. *Integr. Comp. Biol.* 44: 597.
7. ***Rubenson, J.** and Marsh, R.L. Joint moments and powers during the swing-phase of running in the guinea fowl (*Numida meleagris*). Society for Integrative and Comparative Biology, 2005, San Diego. *Integr. Comp. Biol.* 44: 633.
6. ***Rubenson, J.**, Besier, T.F., Heliams, B.D., Lloyd, D.A., and Fournier, P.A. Three-dimensional kinematics and kinetics of running in the ostrich (*Struthio camelus*). Society for Integrative and Comparative Biology, 2005, San Diego. *Integr. Comp. Biol.* 44: 744.
5. Carr, J.A., Ellerby, D., Hoogendyk, T.A., **Rubenson, J.**, Marsh, R.L. Differential strain in an architecturally complex muscle. Society for Integrative and Comparative Biology, 2005, San Diego. *Integr. Comp. Biol.* 44: 533.
4. Hoogendyk, T.A Carr, J.A., Henry, H.T., **Rubenson, J.**, Marsh, R.L. Mechanical and neural determinants of differences in fascicle strain between functionally distinct compartments in *M. Iliofibularis* during terrestrial locomotion in guinea fowl. Society for Integrative and Comparative Biology, 2005, San Diego. *Integr. Comp. Biol.* 44: 571.

3. ***Rubenson, J.**, Heliams, B.D., Maloney, S.K., Withers, P.C., Martin, G.B.M., Lloyd, D.A., and Fournier, P.A. How economical is human bipedal locomotion? *V World Congress Biomechanics*, 2002, Calgary, Canada.
2. ***Rubenson, J.**, Heliams, B.D., Maloney, S.K., Withers, P.C., Martin, G.B.M., Lloyd, D.A., and Fournier, P.A. Mechanical and metabolic characteristics of bipedal gait transition. *International Society of Biomechanics XVIII*, 2001, Zurich, Switzerland.
1. ***Rubenson, J.**, Heliams, B.D., Maloney, S.K., Withers, P.C., Martin, G.B.M., Lloyd, D.A., and Fournier, P.A. The economy of bipedal locomotion: effect of limb design. *International Union of Physiological Sciences XVIII satellite*, 2001, Wollongong, Australia.

Teaching; Courses Taught at The Pennsylvania State University

2015, 2016 **Course Coordinator, KINES 384**, “Biomechanics”. Single semester (15 weeks), 3rd-year undergraduate course with laboratory component.

Student Rating of Teaching Effectiveness Fall 2015: 5.15 / 7.
Student Rating of Teaching Effectiveness Fall 2016: 6.06 / 7.

2016 – present **Course Coordinator, KINES 488**, “Biomechanics of Locomotion”. Single semester (15 weeks), 4th -year undergraduate course incorporating laboratory work.

Student Rating of Teaching Effectiveness Spring 2016: 6.86 / 7.
Student Rating of Teaching Effectiveness Spring 2017: 6.33 / 7.
Student Rating of Teaching Effectiveness Fall 2017: 6.67 / 7.
Student Rating of Teaching Effectiveness Spring 2019: 6.33 / 7.

2016 – 2018 **Team Taught Course; PHYSIOL 571**, “Animal Physiology”. Single semester (15 weeks), 5th -year graduate course incorporating laboratory work. Team taught course; 4 lectures (~8.5% of course).

Student Rating of Teaching Effectiveness Fall 2016: 4.80 / 7.
Student Rating of Teaching Effectiveness Fall 2017: 6.25 / 7.

2018 – present **Course Coordinator, KINES 597**, “Instrumentation and Physical Computing for Movement Sciences”. Single semester (15 weeks), 5th -year graduate course.

Student Rating of Teaching Effectiveness Spring 2018: 6.00 / 7.
Student Rating of Teaching Effectiveness Spring 2020: 7.00 / 7.

2019 – present **Course Coordinator, KINES 101**, “The Biophysical Foundations of Kinesiology”. Single semester (15 weeks), 1st-year undergraduate course.

Student Rating of Teaching Effectiveness Fall 2019: 5.36 / 7.
Student Rating of Teaching Effectiveness Sp. 2020: 6.19 / 7.
Student Rating of Teaching Effectiveness Fall 2020: 6.00 / 7.
Student Rating of Teaching Effectiveness Spring 2021: 6.00 / 7.

Teaching; Courses Taught at The University of Western Australia

Evaluations are based on Student Perceptions of Teaching (SPOT) surveys. A score of 5 represents the highest ranking. Rankings between 4.4 and 5.0 fall in the top 25% of all scores at UWA. Ranking between 3.5 and 4.4 represents the middle 50% of all scores at UWA.

2012 – 2014 **Unit Coordinator, SSEH 3355**, “Biomechanical Principles: from movement analysis to muscle function”. Single semester (13 weeks), 3rd-year undergraduate course with laboratory component.

Student Perception of Teaching Semester 1, 2012: na.
Student Perception of Teaching Semester 1, 2013: 4.8 /5.
Student Perception of Teaching Semester 1, 2014: 4.7 /5.

2013 **Unit Coordinator, SSEH 5634**, “Principles of Musculoskeletal and Locomotor Biomechanics”. Single semester (13 weeks), graduate course with laboratory component.

Student Perception of Teaching Semester 2, 2013: 4.8 /5.

2008 – 2011 **Unit Coordinator, SSEH 3356**, “Neuromuscular biomechanics and motor control”. Single semester (13 weeks), 3rd-year undergraduate course with laboratory component.

Student Perception of Teaching Semester 2, 2008: 3.7 /5.
Student Perception of Teaching Semester 2, 2009: 4.6 /5.
Student Perception of Teaching Semester 2, 2010: 4.5 /5.
Student Perception of Teaching Semester 2, 2011: 4.4 /5.

2009 – 2011 **Unit Coordinator, SSEH 7634**, “Advanced neuromuscular biomechanics and motor control”. Single semester (13 weeks), graduate course with laboratory component.

Student Perception of Teaching Semester 2, 2009: 4.7 /5.
Student Perception of Teaching Semester 2, 2010: 4.7 /5.
Student Perception of Teaching Semester 2, 2011: 4.4 /5.

2009 – 2013 **Team Taught Course, SSEH 2250**, “Biomechanics in sport and exercise”. Single semester (13 weeks), 2nd-year undergraduate course with laboratory component. Team Instruction; 3 lectures (~ 8% of course).

Student Perception of Teaching Semester 1, 2009: na.
Student Perception of Teaching Semester 1, 2010: na.
Student Perception of Teaching Semester 1, 2011: na.
Student Perception of Teaching Semester 1, 2012: na.
Student Perception of Teaching Semester 1, 2013: na.

Teaching; Courses Taught at Northeastern University

2005 – 2006 Guest Instructor, Biology U553- Biology of Muscles: Molecules to Movement; Department of Biology, Northeastern University.

Current Post-Doctoral Scholars

2022- Present Dr. Sean Thomas, Ph.D., Robotics, Control and Intelligent Systems, EPFL; École Polytechnique Fédérale de Lausanne
Commencing March, 2022

Past Post-Doctoral Scholars

2016 – 2020 Dr. Suzanne Cox, Ph.D., Biology.
University of Massachusetts, Amherst, 2016.
Post-doc at Penn State University

2011 – 2014 Dr. Katrina Easton, Doctor of Veterinary Medicine and Ph.D. in Biomedical Engineering.
Colorado State University, 2011.
Australian Research Council Grant into tendon biology and bioengineered scaffolds for tendinopathy treatment (rabbit model).
Post-doc at The University of Western Australia

Current Graduate Students

Kavyasree Ph.D. Candidate, Penn State.
Katugam Thesis topic: Developmental plasticity of locomotor mechanics & energetics. Anticipated graduation – 2022.

Past Graduate Students (Ph.D. and M.Sc. completions)

- 2019 - 2021 Talayah Johnson, M.Sc., Department of Kinesiology, Penn State.
Thesis topic: Locomotor energetic plasticity.
Current Position: Ph.D. Candidate, UPenn Perelman School of Medicine.
- 2015 - 2020 Mathew Salzano, Ph.D., Integrative and Biomedical Physiology Program, Penn State.
Thesis topic: Effect of load stimulus during growth on musculoskeletal form and function.
Current Position: Postdoctoral Scholar, UMass, Amherst, Kinesiology.
- 2009 – 2019 Neville Pires, Ph.D. Candidate, UWA (Coordinating Supervisor; candidature suspended from 2014 – 2019 while student was working at Vicon Inc, Denver, CO.).
Thesis topic: Distribution and modulation of joint mechanical work and power across gaits and speed in human locomotion.
Current Position: Engineer, Vicon Inc., Denver, CO.
- 2013 – 2018 Kirsty McDonald, Ph.D., UWA; Penn State visiting scholar, 2015-18 (Coordinating Supervisor).
Thesis topic: Discovering optimality criteria in human walking.
Current Position: Assistant Professor, Department of Physiology, School of Medicine, University of New South Wales.
- 2013 – 2017 Peter Bishop, Ph.D., Griffith University (Co-Supervisor).
Thesis topic: Biomechanics of extant and extinct bipeds.
Current Position: Post-Doctoral Research Associate, Royal Veterinary College, University of London (with John Hutchinson).
- 2010 – 2014 Fausto Panizzolo, Ph.D., UWA (Coordinating Supervisor).
Thesis topic: Optimizing exercise and functional capacity in heart failure: A focus on enhancing skeletal muscle mechanics .
Finalist, International Society of Biomechanics Young Investigator, 2013.
Current Position: Post-Doctoral Research Associate, Wyss Institute, Harvard University (with Conor Walsh); CEO MoveoWalks, Cambridge, MA.
- 2010 – 2014 Sarah Stearne, Ph.D., UWA (Coordinating Supervisor).
Thesis topic: Exploring passive elastic mechanisms in walking and running.
Current Position: Adjunct Assistant Prof., School of Physiotherapy & Exercise Science, Curtin Univ., Australia.

- 2009 – 2012 Laurence Haughton, Ph.D., UWA (Co-Supervisor).
Thesis topic: Effect of fatigue on the Achilles tendon material properties.
- 2011 – 2012 Hardik Sanghvi, M.Sc., Linköping University, Bioengineering Dept.; UWA visiting scholar (Co-Supervisor).
Thesis topic: A 3D computational neuromuscular model of the avian hind-limb (guineafowl).
- 2008 – 2009 Shioto Fukushima, Ph.D., UWA, (Co-Supervisor).
Thesis: Effect of flexibility on forward bending kinematics.
- 2006 – 2008 Lisa Coder, M.Sc., California State Polytechnic University (Supervisor- Adjunct).
Thesis topic: Effect of growth on the metabolic cost of locomotion in ostriches.

Current Undergraduate/Honors Thesis Students

- Rasheedat Ekiyoyo Mechanical Engineering, Penn State
Millennium Scholar Program
- Valeria Ortiz Mechanical Engineering, Penn State
Millennium Scholar Program
- Aidan Johnson Biobehavioral Health, Penn State
Pre-med

Past Undergraduate/Honors Thesis Students

- 2018 - 2019 Talayah Johnson; Millennium Scholar Program Honors Thesis:
Analysis of stride variability during guinea fowl use of a lower limb exoskeleton.
- 2018 - 2019 Megan McPaul; Schreyer Honors Student, Penn State
Thesis topic: Tendon material properties after disuse during growth in an avian biped (*Numida meleagris*).
- 2017 – 2018 Adam De Boef, Penn State.

Thesis topic: Effect of botulinum toxin induced muscle paralysis during growth on muscle-tendon architecture in an avian biped (*Numida meleagris*).

- 2013 David Nathan, B.Sc. Honors student, Computer Science, UWA (Co-Supervisor).
Thesis topic: Development of a Microsoft Kinect plugin for estimating metabolic energy expenditure using a 3D kinematic model and machine learning.
- 2013 Kirsty McDonald, B.Sc. Honors student, UWA (Coordinating Supervisor).
Thesis topic: Plantar fascia mechanics during shod and barefoot running in rear- and fore-foot runners.
- 2012 Jonathan Staynor, B.Sc. Honors student, UWA (Coordinating Supervisor).
Thesis topic: Development of a NZ white rabbit computational musculoskeletal model in OpenSim.
- 2011 Ben Milton, B.Eng. Honors student, UWA (Co-Supervisor).
Thesis topic: Design and implementation of an ankle orthosis for augmenting elastic energy storage and release.
- 2011 Sean Pepper B.Eng., 3rd year thesis, UWA (Co-Supervisor).
Thesis topic: Design and implementation of a micro muscle ergometer for cultured muscle cells (in collaboration with SymbioticA, Center of Excellence in Biological Arts).
- 2010 Heok Loi, B.Sc. Honors student, UWA (Coordinating Supervisor).
Thesis topic: Effect of age on the force-length properties of the human soleus muscle. 1st Class Hon.
- 2009 Neville Pires, B.Sc. Honors student, UWA (Coordinating Supervisor).
Thesis topic: A novel method for establishing the force-length properties of the human soleus muscle and its operating range during walking. 1st Class Hon. Ron Fry Award for best Hon. Thesis, School of Sport Science, Exercise and Health, UWA.
- 2009 Edwin Goh, B.Eng. Honors student, UWA (Co-Supervisor).
Thesis topic: Design and implementation of a lower-limb orthotic garment.

- 2006 Danielle Gutierrez, B.Sc., Veterinary Science, Cal Poly, 2007, (Supervisor- Adjunct). Senior student project, SEES/California Wellness Health Professionals Program.
Thesis topic: locomotor mechanics and energetics in emus.
- 2006 Rainy Grandpre, B.Sc., Veterinary Science, Cal Poly, 2007, (Supervisor- Adjunct). Senior student project, McNair Fellowship.
Thesis topic: Pelvic limb muscle architecture in the ostrich.

Visiting Graduate Student Scholars

- Alberito
Carvalho Ph.D. Candidate, Universidade Estadual do Oeste do Paraná, Brazil (Co-Supervisor).
Thesis topic: Cardiopulmonary-Locomotor synchronisation in distance running. Joint project with Prof. Leonardo Tartaruga, Science Without Borders Program).
Visited Penn State University, Biomechanics Laboratory:
Nov. 2015 – Nov. 2016.

Graduate Student Committee Member (Penn State)

- Danny Davis David Desmet, Ph.D. student. Anticipated graduation – 2022.2023.
- David Desmet, Ph.D. student. Anticipated graduation – 2022.
- Logan Faux-Dugan, MSc. Student. Anticipated graduation – 2022.
- Meghan Kazanski, Ph.D. student. Anticipated graduation – 2022.
- Lauren Hickox, Ph.D. student. Anticipated graduation – 2022.
- Cristian Javier Cuadra Gonzales Sr., Ph.D. student. Graduated – 2019.
- Samuel Masters, Ph.D. student. Graduated – 2021.
- Francesca Wade, Ph.D. student. Graduated – 2020.
- Gautum Srinivisan, M.Sc. student. Graduated – 2018.
- Sasha Reschechtko, Ph.D. student. Graduated – 2018.
- Justin Wager, M.Sc. student. Graduated- 2017.

Graduate Student External Committee Member (Domestic) and Thesis Examiner (International)

Ryan Schroeder, Ph.D. candidate, Department of Biomedical Engineering, University of Calgary. Supervisor: John Bertram. Graduated – 2020.

Nikolaos Papachatzis, Ph.D. candidate, Center for Research in Human Movement Variability, University of Nebraska at Omaha. Supervisor: Kota Takahashi. Anticipated graduation – 2022.

Lee Barber, Ph.D., Griffith University, Australia. Supervisor: Glen Lichtwark. Graduated – 2011.

T. Zwaan, Ph.D., University of Notre Dame, Fremantle, Australia. Graduated – 2012.

Visiting Scholars (postdoctoral, faculty)

2022
(3months) Dr. Jeroen Aeles
Postdoctoral Scholar, University of Nantes, France
Barron International Research Fellow, Penn State

2009
(6 months) Dr. Scott Delp
Professor, Mechanical Engineering, Stanford University
Sabbatical visit to University of Western Australia

Membership in Professional Organizations

2001 – present International Society of Biomechanics
2006 – 2010 Society for Experimental Biology
'05 – '08, '12 – present Society for Integrative and Comparative Biology
2007 – present American Society of Biomechanics
2010 – 2014 Australia & New Zealand Society of Biomechanics
2018 – present Comparative Neuromuscular Biomechanics; Working Group of the International Society of Biomechanics (Chairperson).
2018 – present Comparative Neuromuscular Biomechanics; Working Group of the International Society of Biomechanics (Founder and Chairperson).

Editorial Service

2021 – Present: Associate Editor: *Royal Society Open Science*, Organismal and Evolutionary Biology Section.

2019 – Present: Guest Associate Editor: *Frontiers in Physiology*; *Integrative Physiology*.

Reviewer:

Journal of Applied Physiology; *Journal of Biomechanics*; *Journal of Applied Biomechanics*; *Journal of Experimental Biology*; *Comparative Biochemistry and Physiology*; *Journal of Theoretical Biology*; *Zoology*; *Journal of Experimental Zoology*; *Proceedings of the Royal Society, London, B*; *Philosophical Transactions of the Royal Society, B*; *Journal of Physiology*; *American Journal of Physical Anthropology*; *Journal of Anatomy*, *PLoS ONE*, *PeerJ.*; *Scandinavian Journal of Medicine and Science in Sports*; *Medicine and Science in Sport and Exercise*; *Exercise and Sport Sciences Reviews*; *Journal of Motor Behavior*; *IEEE Transactions on Biomedical Engineering*, *Royal Society Open Science.*; *Science Robotics*; *Proceedings of the National Academy of Sciences*; *Journal of Comparative Physiology B*.

The Pennsylvania State University Service and Outreach

2019 – present Honors Advisor, Kinesiology Representative, Penn State Schreyer Honors College.

2019 – present Council Member, Penn State Research Computing and Cyber Infrastructure (RCCI) Advisory Council.

2015 – 2017
2021- present Committee Member, Curriculum Committee, Department of Kinesiology.

2018 – present Reviewer, PSU- Hershey Pathway to Partnership Stage (P3) grant reviewer.

2020 – 2021 Committee Chair, Awards Committee, Department of Kinesiology.

2017 – 2019 Committee Member, Diversity & Climate Committee, Department of Kinesiology.

2016 American Society of Biomechanics, National Biomechanics Day participating laboratory. Demonstrations and tours for 60 local high school students.

2017 College of Health and Human Development, graduate student fellowship grant reviewer (Kligman Fellowships).

2016 Development of educational programs for the NSF and Robert Wood Johnson Foundation supported “Finding your Roots” summer science camp at Penn State (PI Nina Jablonski).

The University of Western Australia Service and Outreach

2012 – 2014 Academic Board Member, The University of Western Australia.

2012 – 2014 Committee Member, The University of Western Australia Faculty of Science Research Committee.

2011 – 2014 Sustainability coordinator for the School of Sport Science, Exercise and Health, Green Building Project.

2008 – 2014 Committee Member, Higher Degrees and Ethics Committee, School of Sport Science, Exercise & Health.

2008 – 2014 Committee Member, Research Development Committee, School of Sport Science, Exercise & Health (Chair, 2013 - 2014).

National and International Service

2018 – present Founder and Chair, International Society of Biomechanics Working Group in Comparative Neuromuscular Biomechanics <https://sites.psu.edu/cnbgroup/>.

2017 Symposium Organizer; ASB-SICB Joint Symposium: Insights from Animal Biomechanics. American Society of Biomechanics 41st Annual Meeting, 2017, Boulder, CO. (With Beth Brainerd and Suzanne Cox).

2016, 2017 Moderator, American Society of Biomechanics annual meeting.

2015 American Society of Biomechanics Award Committee, Reviewer.

2015 – present Reviewer, American Society of Biomechanics meeting abstracts.

2014 – present Reviewer, International Society of Biomechanics; Student dissertation and travel awards.

2014 Symposium Organizer; ‘OpenSim Showcase Seminar’. World Congress Biomechanics VII, 2014, Boston, MA, USA.

2014 Session Moderator, World Congress Biomechanics VII, 2014,
Boston, MA, USA.

External Grant Review

American College of Sports Medicine ACSM Grants.
Research Foundation Flanders (Belgium).
Human Frontiers Science Program (HFSP) Program Grant Scheme.
Australian Research Council (OZREADER).
National Health & Medical Research Council (NHMRC, Australia).
National Science Foundation, Division of Integrative Organismal Systems, External
Reviewer, 2019.
National Science Foundation, Division of Integrative Organismal Systems, invited
grant panelist, 2016; 2020 (could not attend panel due to proposal submission).

External Review for Tenure / Promotion

The University of Memphis, 2017.
Ben Gurion University of the Negev, 2020
Hebrew University, Jerusalem, 2020

Invited Lectures

2022 Center for Limb Loss and Mobility, VA Puget Sound / University of
Washington. "Avian bipedal models in pre-clinical biomechanics
research".

2020 Action Club, HUCK Life Sciences, Penn State University. "The
merits of comparative biomechanics and motor control".

2019 Department of Ecology and Evolutionary Biology Seminar Series,
Brown University. "Blurring the lines between comparative and
applied biomechanics"

2019 Movement Research Center (UMOVE) seminar, UMass Lowell.
"Keynote: Comparative Biomechanics: from basic principles to
Human Health"

2018 Applied Physiology Graduate Program Seminar Series, Georgia
Tech. "Effort minimization: A general principle of legged
locomotion?"

2017 Action Club, HUCK Life Sciences, Penn State University. Effort
minimization in legged locomotion".

- 2016 Animal Science Seminar Series, Penn State University, UP. "Discovering Locomotor Function Using Avian Bipedals".
- 2015 AMAM International Symposium: Adaptive Motion in Animals and Machines. MIT, Cambridge, MA, USA, "Modulation and Distribution of Joint Work and Power in Bipedal Locomotion."
- 2015 Biomechanics Symposium, Penn State University, UP. "Integrative locomotor biomechanics: Bridging human and comparative research."
- 2015 Noll Seminar, Penn State University, UP. "Bridging biomechanics and physiology of movement: Basic principles & human health."
- 2014 World Congress Biomechanics VII. Boston, MA, USA. Symposium Chair (with Brian Umberger): 'Metabolic Energy Use in Movement: Basic Principles to Human Health'.
- 2014 World Congress Biomechanics VII. Boston, MA, USA. Invited symposium speaker: "OpenSim Showcase Seminar".
- 2014 World Congress Biomechanics VII. Boston, MA, USA. Invited symposium speaker: "Comparative Biomechanics of Bipedal Locomotion".
- 2012 Royal Veterinary College, University of London: "Muscle mechanics & energetics in locomotion: bridging comparative and human research".
- 2011 Australian Conference of Science and Medicine in Sport Fremantle, WA, Australia; Influence of development, exercise and disease on tendon and muscle mechanics symposium.
- 2008 Society for Experimental Biology; Linking Mechanics and Energetics Seminar, Marseille, France; "Revealing the mechanical determinants of limb-swing cost".
- 2007 Harvey Mudd College: Department of Biology Colloquium "Mechanics and energetics of bipedal locomotion: from organismal analyses to muscle-specific measurements".
- 2006 Brown University: Department of Ecology and Evolutionary Biology; "Integrating experimental data and neuromusculoskeletal modeling in exploring muscle mechanics and energetics".

- 2005 Stanford University: Dep. of Bioengineering., Neuromuscular Biomechanics Meeting; “The mechanical determinants of the metabolic cost of locomotion: current dogma and future directions”.
- 2005 Harvard University: Department of Organismal and Evolutionary Biology, Concord Field Station Seminar; “The effect of limb orientation on joint mechanics: a comparison of human and avian running”.
- 2003 University of British Columbia: Department of Physics, Biophysics Seminar; “Mechanics and energetics of running with and without an aerial phase”.
- 2003 Stanford University: Department of Bioengineering, Neuromuscular Biomechanics Meeting; “Mechanics and energetics of bipedal locomotion”.

External References

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