CURRICULUM VITAE

Adam Goodworth
Westmont College
955 La Paz Road, Santa Barbara, CA 93108

Education

2005 -2010	Oregon Health & Science University Portland, OR Ph.D. in Biomedical Engineering
2002 -2004	Colorado School of Mines Golden, CO M.S. in Engineering Systems
1998 -2002	Colorado School of Mines Golden, CO B.S. in Engineering (Mechanical specialty)

Additional Training & Certifications

2021-	ACTAR Accredited Traffic Accident Reconstructionist, #2225
2020-	Professional Engineer, Mechanical License # M 40242, State of California
2012 -2014	Certificate in Prosthetics 2014 Newington Certificate Program in Prosthetics, Cromwell, CT
2010	Postdoctoral Training, Neurology Department Oregon Health & Science University, Portland, OR

Academic Positions

2022-present	Full Professor, Tenured Westmont College, Santa Barbara, CA
2019-2022	Associate Professor Westmont College, Santa Barbara, CA
2016-2019	Associate Professor, Tenured University of Hartford, West Hartford, CT
2010-2016	Assistant Professor University of Hartford, West Hartford, CT
2018	Visiting Scholar, Sabbatical in Mechanical Engineering Department Baylor University, Waco, TX

Other Employment

2010	Postdoctoral Researcher Oregon Health & Science University, Portland, OR
2005 -2010	Graduate Research Assistant Oregon Health & Science University, Portland, OR
2004 -2005	Design Engineer JR Engineering, LLC, Denver, CO

RESEARCH

Publications (peer-reviewed)

1. Jensen D, Jensen W, Estrada-Lopez J, Fontes D, **Goodworth A.D.** (2022) Assessing Distinctives of the New Westmont Engineering Program in Terms of Their Impact on Recruitment, Student Satisfaction and Employment Potential. *American Society for Engineering Education (in Press).*

2. **Goodworth A.D.** & Canada J. (2021) Passenger Behavior and Sitting Positions in Automobiles: A Survey of 561 Individuals. *Society of Automotive Engineering STAPP Journal (in Press)*

3. **Goodworth A.D.** & Jennings T. (2021) Can the Clinical Test of Sensory Integration and Balance Predict Performance in Perturbed Walking? *Proceedings of the IEEE Engineering in Medicine and Biology Society, 197 (in Press)*

4. **Goodworth A.D.** & Saavedra S. (2021). Postural mechanisms in moderate-to-severe cerebral palsy, *Journal of Neurophysiology*, 125(5):1698-1719. doi: 10.1152/jn.00549.2020.

5. Karmali F, **Goodworth A.D.,** Valko Y, Leeder T, Peterka RJ, Merfeld DM (2021). The role of vestibular cues in postural sway, *Journal of Neurophysiology*. 125(2):672-686. doi: 10.1152/jn.00168.2020.

6. **Goodworth A.D.**, Kratzer A, Saavedra S (2020) Influence of visual biofeedback and inherent stability on trunk posture control. *Gait & Posture*: 80, 308-314.

7. Lee D.**,** Veneri D., **Goodworth A.D**. (2019) Self-management problem solving tools for lower limb prosthesis wearers: mobile app usability and acceptability study, *Journal of Prosthetics & Orthotics:* 31(1), 33-42. DOI: 10.1097/JPO.0000000000000216

8. **Goodworth AD**, Barrett C, Rylander J, Garner G. (2019) Specificity and variability of trunk kinematics on a mechanical horse. *Human Movement Science*. 63:82-95 https://doi.org/10.1016/j.humov.2018.11.007

9. Sienko KH, Seidler RD, Carender WJ, **Goodworth AD**, Whitney S, Peterka R. (2018). Potential mechanisms of sensory augmentation systems on human postural control. *Frontiers in Neurology*. https://doi.org/10.3389/fneur.2018.00944

10. **Goodworth A.D.**, Tetreault K., Klidonas T., Lanman J., Seyoung K., Saavedra S. (2018) Sensorimotor control of the trunk in a novel sitting sway referencing test, *Journal of Neurophysiology*. 120(1):37-52. doi: 10.1152/jn.00330.2017

11. **Goodworth A.D**., Peterka R.J. (2018) Identifying mechanisms of stance control: a single stimulus multiple output model-fit approach. *Journal of Neuroscience Methods*, 296:44-56. doi: 10.1016/j.jneumeth.2017.12.015

12. Duncan K, **Goodworth AD**, Da Costa CSN, Wininger W, Saavedra S. (2018) Parent handling of Typical Infants Varies Segmentally Across Development of Postural Control *Pediatric Physical Therapy* (2017, in Press doi: 10.1007/s00221-017-5156-4)

13. Thompson L, Haburcakova C, **Goodworth AD**, Lewis RF. (2018) An engineering model to test for sensory reweighting: nonhuman primates serve as a model for human postural control and vestibular dysfunction. *Journal of Biomechanical Engineering* 140(1). doi: 10.1115/1.4038157

14. **Goodworth A.D.**, Veneri D, Burger J, Lee D. (2017). Development and pilot testing of an international knowledge assessment of prosthetic management for patients using lower limb prostheses. *Journal of Prosthetics & Orthotics* 29:28-34.

15. **Goodworth A.D.**, Wu Y, Felmlee D, Dunklebarger E, Saavedra S. (2017). A trunk support system and approach to study posture control in populations lacking full sitting ability. *IEEE Transactions on Neural Systems & Rehabilitation Engineering* 25(1):22-30.

16. Wu Y. Duncan K., Saavedra S., **Goodworth, A.D.** (2016). Segmental trunk and head dynamics during frontal plane tilt stimuli in healthy sitting adults. *Journal of Biomechanics* (13):2831-2837.

17. Crane B., **Goodworth A.D.,** Liquori M., Ghosh S., Certo C., McKafferty L. (2016). Multi-disciplinary testing of floor pads on stability, energy absorption, and ease of hospital use for enhanced patient safety. *Journal of Patient Safety*, 12(3):132-139.

18. **Goodworth A.D.**, Perrone K., Pillsbury M., Yargeau M. (2015). Effects of visual focus and gait speed on walking balance in the frontal plane. *Human Movement Science*. 42: 15-26.

19. **Goodworth A.D**., Mellodge P., Peterka R.J. (2014). Stance width changes how sensory feedback is used for multi-segmental balance control. *Journal of Neurophysiology*, 112:525-542.

20. **Goodworth A.D.,** Kunsman M., DePietro V., LaPenta G., Miles K., Murphy J. (2014). Characterization of how a walking boot affects balance. *Journal of Prosthetics and Orthotics*, 26:54-60.

21. **Goodworth A.D**., Chandan A., Chase H., Foster E., Francoeur H., Michaud J., Terry K. (2013). Stance width influences frontal plane balance responses to centripetal accelerations. *Gait and Posture*, 37:98-102.

22. **Goodworth A.D**., Melvill Jones G., Block E.W., Fletcher W.A., Paquette C., Hu B., Horak F.B. (2012) Linear and angular control of circular walking in healthy older adults and patients with cerebellar ataxia. *Experimental Brain Research*, 219(1): 151-161.

23. **Goodworth A.D**., Peterka R.J. (2012). Sensorimotor integration for multi-segmental frontal plane balance control in humans. *Journal of Neurophysiology*, 107:12-28.

24. **Goodworth A.D**., Wall III C., Peterka R.J. (2011). A balance control model predicts how vestibular loss subjects benefit from a vibrotactile balance prosthesis. *Proceedings of IEEE Engineering in Medicine and Biology*, 1306-1309.

25. **Goodworth A.D**., Peterka R.J. (2010). Influence of frontal plane stance width on sensory reweighting and coordination in human balance control. *Journal of Neurophysiology*, 104, 1103-1118.

26. **Goodworth A.D**., Peterka R.J. (2010). Influence of bilateral vestibular loss on spinal stabilization in humans. *Journal of Neurophysiology*, 103, 1978-1987.

27. **Goodworth A.D.**, Wall III C., Peterka R.J. (2009). Influence of feedback parameters on performance of a vibrotactile balance prosthesis. *IEEE Transactions on Neural Systems & Rehabilitation Engineering*, 17: 397-409.

28. **Goodworth A.D**., Peterka R.J. (2009). Contribution of sensorimotor integration to spinal stabilization in humans. *Journal of Neurophysiology*, 102: 496-512.

29. **Goodworth A.D.**, Wall III C., Peterka R.J. (2007). Application of optimization methods to predict performance of a vibrotactile balance prosthesis. *Proceedings of the IEEE EMBS Neural Engineering*, 510-513.

Manuscripts in review / progress

Saavedra S, Browns E, Quarum J, **Goodworth A.D.** (2021) Level of trunk control and external support affect postural and exploratory arm movements differently in infants learning to sit. *(in review).*

Book Chapters

1. Saavedra S. & **Goodworth A.D.** (2018). Posture Control in Children and Youth with Cerebral Palsy. Miller F, Bachrach S, Lennon N, O'Neil M (Ed.), *Cerebral Palsy (2nd Ed*), Springer, New York.

2. **Goodworth A.D.**, Johnson M, Popovich (2018). Chapter 12: Physical Therapy and Rehabilitation in Biomechatronics. Popovic MB (Ed), Elsevier, UK.

3. Troy K, Tetreault K, **Goodworth A.D.**, Ji S, Popovic, (2018). Chapter 16: Biomechanics and biomechatronics in sports, exercise, and entertainment Chapter 12 in Biomechatronics. Popovic MB (Ed), Elsevier, UK.

Other Publications

Veneri D., **Goodworth A.D.**, Lee D. (2016) The development and study of rehabilitation education materials for persons with lower limb amputation in developing nations: A pilot investigation. *International Journal of Health Science Research* 6: 185-196.

Provisional Patent

Goodworth A.D. *Omni-directional treadmill*. USPTO Application No. 61381983, Provisional Patent, September, 2010. (*did not pursue full patent*)

Presentations (peer-reviewed)

Goodworth A.D., Saavedra S., Quarum J, Brown E. (July 2022) Influence of trunk support and development on the evolution of spontaneous upper extremity behaviors in infants. *Neural Control of Movement, Dublin, Ireland*

Goodworth A.D., Saavedra S., Reitinger J, (July 2022) Signatures of motor learning of trunk posture in moderate-to-severe cerebral palsy. *Neural Control of Movement, Dublin, Ireland*

Goodworth A.D., Felmlee D, (July 2022). How feedback model parameters in standing relate to performance during perturbed treadmill walking International. *Society for Posture and Gait Research*. Montreal, Canada.

Howell R, **Goodworth A.D**., (June 2022) Complex Analysis, Stability, and Cerebral Palsy. *Association of Christians in the Mathematical Sciences*, Azusa, CA.

Goodworth A.D., Fitzhugh S, Kratzer A, Lommori M, Rowley M, Robertson J, Saavedra S, (June 2020) Visual Biofeedback Improves Balance Control … Until it Doesn't. *American College of Sports Medicine*, Virtual meeting.

Schramm A, Kent W, Gordon A, Wessman C, Freeman N, Heacock A, **Goodworth AD**, Felmlee D (2020). Static and Dynamic Balance Comparison within Transfemoral K2 Population Utilizing K3 Componentry, *Academy of Orthotists and Prosthetists National Assembly,* Virtual Conference.

Rayappa K, Griffiths R, **Goodworth AD** (Oct 2019). Manual Pulley Perturbation System, *Biomedical Engineering Society*, Philadelphia, PA.

Saavedra S, **Goodworth AD** (Oct 2018). Posture control and motor learning in infants and children with cerebral palsy during development of sitting. *American Academy for Cerebral Palsy and Developmental Medicine,* Cincinnati, OH.

Goodworth AD, Peterka RJ. (July 2018). Estimating feedback control parameters in a two-segment posture model with realistic noise. *World Congress of Biomechanics*, Dublin, Ireland.

Goodworth AD, Saavedra S. (July 2018). Posture development of head and trunk degrees of freedom in infants. *World Congress of Biomechanics*, Dublin, Ireland.

Saavedra S., **Goodworth AD.** (July 2018). Effect of optimal support on infant behaviors during development of sitting, *International Congress on Infant Studies*, Phillidephia, PA.

Talari H, Tabrizi P, Morozova O, Burton J, Belschner J, Monfaredi R, Salvador T, Coley C, Alyamani S, Saavedra S, **Goodworth AD**, Evans S, Cleary K. (Feb 2018) Hippotherapy simulator for children with cerebral palsy, SPIE, Huston.

Lee DJ, Veneri DA, **Goodworth AG**. (Sep, 2017) Empowering prosthesis wearers self-management abilities through mobile technology: A usability and acceptability study. *American Orthotic & Prosthetics Association National Assembly*. Las Vegas, NV.

Goodworth A.D., Tetreault K., Klidonas T., Lanman J., Mcguirl A., Warchol E., Saavedra S. (June, 2017). Sway referencing in sitting: visual/vestibular feedback, motor learning, and cognitive influences. *International Society for Posture and Gait Research*. Fort Lauderdale, FL.

Goodworth A.D., Wu Yen-Hsun, Saavedra S. (June, 2017). Sensory conflict stimuli as a window into emergence of posture control mechanisms in infants. *International Society for Posture and Gait Research*. Fort Lauderdale, FL.

Saavedra S, Parsonage L; Barnes S, Shah S; Duque J, Wu, Y; **Goodworth AD** (Sep, 2016) Effect of optimal support on infant behaviors during development of sitting, *CT Physical Therapy Association*.

Peterka R.J. and **Goodworth A.D.** (June 2016). Model-based Analysis of Condition-dependent Vestibular Contributions to Human Balance Control. *Biomechanics and Neural Control of Movement*, Sterling, OH.

Saavedra S., Wu Yen-Hsun, **Goodworth A.D**. (Feb, 2016). Characterization of sensory integration during development of trunk posture control. *American Physical Therapy Association Combined Sections Meeting*. Anaheim, CA

Duncan K, Saavedra S., **Goodworth A.D**. (Feb, 2016). Infant Visual Attention and Postural Control: A Comparison with the Segmental Assessment of Trunk Control (SATCo). *American Physical Therapy Association Combined Sections Meeting*. Anaheim, CA

Goodworth A.D., Veneri D, Burger J, Lee D. (2015) Preliminary Design and Evaluation of a Knowledge Based Outcome Measure for Patients with a Lower Limb Prosthesis. *International Society for Prosthetics and Orthotics.* Lyon, France.

Peterka R.J. and **Goodworth A.D.** (2015). Utilizing system identification methods and galvanic vestibular stimulation to understand the vestibular contribution to balance control. *Association for Research in Otolaryngology.* Baltimore, Maryland.

Peterka R.J. and **Goodworth A.D.** (2014). Balance control dynamics and sensory reweighting investigated using combinations of pseudorandom surface-tilt and galvanic-vestibular stimuli. *International Society for Posture and Gait Research*. Vancouver, Canada.

Thompson L.A., **Goodworth A.D.**, Haburcakova C., Merfeld D.M., Wall C., Lewis R.F. (2014). Sensorimotor integration used for rhesus monkey postural control. *International Society for Posture and Gait Research*. Vancouver, Canada.

Thompson L.A., Haburcakova C., Wall C., **Goodworth A.D.**, Merfeld D.M., Lewis R.F. (2014). The severity of vestibular dysfunction influences postural compensation. *International Society for Posture and Gait Research*. Vancouver, Canada.

Perrone K., Pillsbury M., Smollen A., **Goodworth A.D.**, Kunsman M. (2013) Effects of visual focus and gait speed on balance. *CT Physical Therapy Association*. New Haven, CT.

Goodworth A.D. and Peterka R.J. (2013) Identification of sensory contributions to stance control in transtibial amputees. *American Orthotic & Prosthetics Association National Assembly*. Orlando, FL.

Kunsman M., **Goodworth A.D.** (2013) Influence of instant total contact casts on balance. *American Physical Therapy Association Combined Sections Meeting*. San Diego, CA. (also presented at *Symposium on Advanced Wound Care*. Denver, CO, May 2013).

Crane B., Certo C., Ghosh S., **Goodworth A.D.**, McCafferty L., Liquori M. (2012). Will a floor covering surface mitigate injury if falls occur? *CT Physical Therapy Association*, Cromwell, CT.

Goodworth A.D., and Peterka R.J. (2012). Feedback mechanisms for frontal-plane balance control are strongly influenced by stance width. *International Society for Posture and Gait Research*. Trondheim, Norway.

Goodworth A.D., and Peterka R.J. (2009). Evidence for sensory integration in spinal stabilization. *International Society for Posture and Gait Research*. Bologia, Italy.

Goodworth A.D., and Peterka R.J. (2009). Model-based interpretation of mechanisms contributing to spinal stability in humans. Satellite Symposium: *Basic mechanisms underlying balance control under static and dynamic conditions*. *International Society for Posture and Gait Research*. Pavia, Italy.

Goodworth A.D., Wall III C., Peterka R.J. (2007). Application of optimization methods to predict performance of a vibrotactile balance prosthesis. *Northwest Ear, Nose, and Throat Conference*. Portland, OR.

Goodworth A, Remanis I, Berger J (2004). The free-edge singularity dominated zone in copper-tungsten graded materials. *IABEM International Conference on Boundary Element Methods*. Minneapolis, MN.

Seminars and other Presentations

Goodworth A.D. (2021, Sep). Engineering approaches to identify the reactive postural control system with moderate-to-severe cerebral palsy. *International Symposium on Technology in Rehabilitation: Neuropediatrics* (Techrehab 2021). Virtual Symposium.

Goodworth A.D. (2018, May). Feedback modeling of human stance control and the development of infant posture. *Oregon State University*. Corvallis, OR.

Goodworth A.D. (2018, March). Dynamic balance control during human locomotion and turning. *University of Wyoming*. Laramie, WY.

Goodworth A.D. (2018, March). Modeling sensorimotor integration of standing posture in single and double link pendulum systems. *University of Colorado.* Boulder, CO.

Goodworth A.D. (2018, March). How humans stand up - from a control systems perspective. *Graduate Biomechanics Colloquium, Colorado School of Mines.* Golden, CO.

Goodworth A.D. (2018, Feb). Motor learning concepts in infant posture and in adult manual tracking. *University of Auckland.* Auckland, New Zealand

Goodworth A.D. (2018, Feb). Perturbed balance – Insights into prosthetics and locomotion. *University of Texas. Clinically Applied Rehabilitation Research and Engineering seminar series.* Austin, TX.

Goodworth A.D., (2017, June). Posture Research with Children with severe Cerebral Palsy, *1st Annual Cerebral Palsy Collaborative of Western New England,* Shriners Hospital, Springfield, MA.

Goodworth A.D., Saavedra S. (2017, May). Preliminary study of sensorimotor integration in subjects with AIS and controls during perturbed upright sitting, *26th Annual Leon M. Kruger, Guest Lectureship*, Shriners Hospital, Springfield, MA.

Goodworth A.D. (2016, Sep). Walking balance – perturbation methods and recent findings *Carnegie Mellon University. Bipedal Locomotion Seminar*. Pittsburg, PA.

Goodworth A.D. (2016, Sep). Novel approaches to measure balance responses during gait *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.

Goodworth A.D. (2016, March). Standing balance and the integration of galvanic vestibular stimulation *University of Washington. Virginia Merrill Bloedel Hearing Research Center*, Seattle, WA.

Goodworth A.D. (2016, Jan). How is galvanic vestibular stimulation used during stance? *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.

Goodworth A.D., Saavedra S. (2015, June). Characterizing sensorimotor integration for trunk control in children with moderate-to-severe cerebral palsy. *Kentucky spinal cord and Head Injury Research Trust Symposium* Louisville, KY

Saavedra S., **Goodworth A.D**. (2015, June). Changes in sensory integration for postural control prior to the acquisition of sitting: A longitudinal infant study. *Kentucky spinal cord and Head Injury Research Trust Symposium,* Louisville, KY

Baseler C., **Goodworth A.D.**, Charry S. (2014, October). STEM Collaboration: LIMBS International, Hartford Public Schools & University of Hartford. *Connecticut STEM Conference.* Hartford, CT.

Veneri D., **Goodworth A.D**., and Flow E., (2014, July). Prosthetic Training across Borders, *LIMBS Summit 2014,* El Paso, TX.

Horak, F., **Goodworth A.D**., Mancini M., Paquette C., Block E.W., Fletcher W.A., Melvill Jones G. (2013, July) Turning is more Difficult than Walking. *Sensing Motion for Action: Tribute to Geoffrey Melvill Jones*. Montreal, Quebec, Canada.

Goodworth A.D. (2013, March). Investigations into Vestibular Prostheses and Vestibular Contributions to Stance Control. *Hartford HealthCare Rehabilitation Network*. West Hartford, CT.

Goodworth A.D. (2011, July). Modeling Neural Processing of Vibrotactile Feedback for Balance Control. *University of Pittsburg Physical Therapy Department Seminar*. Pittsburg, PA.

Goodworth A.D. (2011, May). Vestibular Contribution to segmental orientation in human balance control. *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.

Goodworth A.D. (2011, March). Insight into the Human Balance Control System using a Multi-linkage Model. *Yale Robotics Seminar*. Yale University, New Haven, CT.

Goodworth A.D. (2009, Aug). An Introduction to Human Balance Control. *Hayes and Associates Forensic Engineering*. Corvallis, OR

External Grant Activity

Current external awards

9/2019 - 8/2022 **Department of Defense OPORP: OP180014**
$350,000
Direct quantification of balance amongst limited community ambulators using microprocessor prosthetic knees
Co-PIs: Adam D. Goodworth and Duffy Felmlee
Role: Quantify reactive balance responses and balance mechanisms during perturbed stance and perturbed walking when low mobility ambulators use advanced microprocessor knee technology.

7/2018 - 6/2022 **National Science Foundation DARE #1803714**
$299,556
Unraveling posture control in severe cerebral palsy
Co-PIs: Adam D. Goodworth and Sandra Saavedra
Role: Apply engineering control systems to identify mechanisms of segmental posture control in children and teens with moderate-to-severe CP using feedback modeling with external perturbations and sitting sway referencing.

Completed external awards

6/2014 - 5/2018 **National Institutes of Health R03 Grant DC013858**
$416,230
Sensory contributions to typical and atypical development of trunk control
Co-PIs: Sandra Saavedra and Adam D. Goodworth (submitted under Saavedra)
Role: Implement sensorimotor integration testing, analysis, and modeling in infants and children with cerebral palsy.

9/2011 - 8/2015 **National Institutes of Health R01 Grant DC010779**
$112,462 subcontract to University of Hartford
$1,230,547 total grant to Oregon Health & Science University

Vestibular contribution to the control of human upright stance
PI: Robert J. Peterka, Ph.D. at Oregon Health & Science University
Co-I: Adam D. Goodworth
Role: Use mathematical modeling to analyze clinical balance tests with and without artificial vestibular stimulation on patients with and without vestibular disorders.

4/2014 - 4/2016 **Scoliosis Research Society**
$10,000
Segmental sensoriomotor control of trunk posture in adolescent idiopathic scoliosis
Co-PIs: Adam D. Goodworth and Sandra Saavedra
Role: Quantify sensory reliance and spinal segmental control in adolescents with idiopathic scoliosis using experimentation and sensorimotor integration modeling.

5/2015 - 5/2016 **CT Space Grant College Consortium Graduate Research Fellowship**
$10,000
A longitudinal description of sensorimotor adaptations for posture control
PI: Alysha Kaminski (supervised by Sandra Saavedra and Adam D. Goodworth)
Role: Co-supervise Alysha Kaminski (graduate student in DPT program) in experimental design and data analysis of an investigation of adaptions in infants learning about gravity and posture control.

5/2011 - 5/2013 **Saint Francis Medical Center / University of Hartford** (Jointly funded)
Balance and Mobility Research Initiative
$15,000
A gel surface to mitigate injury when falls occur
Co-PIs: Barbara Crane and Lorraine McCafferty
Co-Is: Adam D. Goodworth, Catherine Certo, and Suhash Ghosh
Role: Determine if floor pads can reduce injury when falling without increasing fall risk.

Internal Grant Activity

Summary of awarded internal grants

2022 **Westmont College Professional Development Grant**
$3600, *Development and pilot testing of restraint systems for injury biomechanics*
PI: Adam D. Goodworth

2019 **Westmont College Professional Development Grant**
$3600, *Development of motion analysis biomechanics Laboratory*
PI: Adam D. Goodworth

2019 **ENHP Institute of Translational Research Seed Grant**
$6,000, *Engineering solutions for clinical innovation in rehabilitation*
PI: Adam D. Goodworth; Co-Is: Takafumi Asaki and Kiwon Sohn

2017 **ENHP Institute of Translational Research Seed Grant**
$4,500, *Segmental trunk support for hippotherapy*
PI: Adam D. Goodworth

2017 **University Coffin Grant**
$3,000, *Sensorimotor integration for posture control in the developing infant*
PI: Adam D. Goodworth

2016 **Growing Partnership Award (Strategic Goal II)**
$10,700, *Customized Support Devices in Electric Cars for Children with Disabilities*
PIs: Andrea Kwaczala, Mary Arico, and Sandra Saavedra; Co-Is: Adam D. Goodworth & Duffy Felmlee

2016 **ENHP Institute of Translational Research Seed Grant**
$3,000, *Isolating vestibular contributions to sitting through a sway-referenced backboard system*
PI: Adam D. Goodworth

2014 **Summer Stipend**
$2,500, *Crafting prosthetic education tools for clinics and patients in developing countries*
PI: Adam D. Goodworth

2014 **ENHP Institute of Translational Research Sprout Grant**
$7,000, *Prosthetics training across borders (Peru, Kenya, Uganda, and USA)*
Co-PIs: Adam D. Goodworth and Diana Veneri

2012 **Greenberg Junior Faculty Grant**
$8,850, *Reducing falls through mathematical equations*
PI: Adam D. Goodworth

2011 **ENHP Institute of Translational Research Seed Grant**
$2,000, *Influence of an ankle orthoses on dynamic balance control*
PI: Adam D. Goodworth; Co-I: Michelle Kunsman

2011 **Summer Stipend**
$2,500, *Identification of brain structures and the rules which govern coordination of body segmental motion during curvilinear walking*
PI: Adam D. Goodworth

Consultant roles

2020- Technical advisor for Solos Health Analytics, Pleasanton, CA
2020- Consultant for Automotive Safety Research, Inc., Goleta, CA

Honors and Awards

2020/ 21 Paul C. Wilt Phi Kappa Phi Lecture Series Speaker at Westmont College
2015 Belle K. Ribicoff Junior Faculty Prize at University of Hartford
2015-2016 National Institutes of Health Loan Repayment Program Award Recipient
2013 Research award by American Physical Therapy Assoc. Combined Sections Meeting in Wound Care Special Interest Group
2011 Awarded Humanities Fellowship for session on Creativity from University of Hartford for experimentation and modeling of human balance control
2010 Awarded J.M. Lee Memorial Graduate Scholarship

2008	Awarded National Science Foundation funding to attend workshop at Mathematical Biosciences Institute
2007	First place winner in Oregon Health & Science University Student Research Forum presentations
2007	Awarded Institute of Electrical and Electronics Engineers (IEEE), Engineering in Medicine and Biology Society's Neural Engineering Conference Travel Fellowship
2006-2007	Awarded National Institutes of Health Training Grant T32DC005945 to test performance of vibrotactile balance prosthesis, PI: Richardson M, Advisor: Peterka RJ.

TEACHING

Courses

Westmont College

2021-	Injury Biomechanics (Spring semester) Enrollment: 7 students
2021-	Kinesiology Research (Fall or Spring semester) Ave Enrollment: 4 students
2021-	Engineering Materials (May term) Ave Enrollment: 10 students
2020-	Basic Physic Primer (Fall & Spring semesters) Ave Enrollment: 12 students
2020-	Engineering Statics Programming (Spring semesters) Ave Enrollment: 10 students
2019-	Biomechanics Lecture (Fall & Spring semesters) Ave Enrollment: 22 students
2019-	Biomechanics Laboratory (Fall & Spring semesters) Ave Enrollment: 22 students
2019-2022	Engineering and the Liberal Arts (Fall semesters) Ave Enrollment: 15 students

University of Hartford

2017-19	Thermo-Fluids (engineering undergrad program) Average Enrollment: 18 students
2010-18	Motor Control Lecture (DPT program) Average Enrollment: 38 students
2010-18	Motor Control Laboratory (DPT program) Average Enrollment: 38 students

2010-18	Scientific Inquiry II (DPT & MSPO programs) Average Enrollment: 6 students
2011-19	Scientific Inquiry III (DPT & MSPO programs) Average Enrollment: 6 students
2011-19	Doctoral Research (DPT program) Average Enrollment: 6 students
2011,18	Neuroscience Laboratory (DPT program) Enrollment: 38 students
2011,12,15	Freshman Dialogue (health science undergrad program) Average Enrollment: 10 students
2016,17	Freshman Pre-Physical Therapy Course (health science undergrad) Enrollment: 35 students
2014	Biomechanics (Engineering undergrad program) Enrollment: 24 students
2013	Biomechanics Laboratory (DPT& MSPO programs) Enrollment: 65 students
2011-2019	Kinesiology Laboratory (DPT& MSPO programs) Average Enrollment: 67 students
2018,19	Gross Anatomy Laboratory (DPT& MSPO programs) Average Enrollment: 67 students
2018	Foundations of Professional Practice (DPT program) Enrollment: 40 students

Colorado School of Mines Engineering

2002-04	Multi-disciplinary Engineering Laboratory (Teaching Assistant) Enrollment: 25 students
2002-03	Machine Design (Teaching Assistant) Enrollment: 25 students

Mentored Researchers

5/2016- 17	Dr. Seyoung Kim, Research Scientist from Korean Institute of Machinery and Materials completing lower extremity exoskeleton design project.
2014-2016	Dr. Yen Hsun-Wu, Completed 2-year postdoc in the Balance Control and Pediatric Balance Lab. Co-mentorship with Dr. Sandra Saavedra.

Mentored Graduate Students

2019- Duffy Felmlee, University of Connecticut. Supervising PhD student in Kinesiology working on research to assess microprocessor knee technology in reducing falls.

2016 Kimberly Tetreault, U Hartford DPT student. Supervised summer project creating lightweight backboard system for testing sitting posture in children.

2015-2016 Alysha Kaminski, DPT. U Hartford. Co-supervised behavior coding and visual-vestibular testing in children with CP. Recipient of CT Space Grant Graduate Fellowship.

2014- 2015 Kerian Duncan, M.S. (graduated in Spring 2015). Current student in the DPT program at the U Hartford. M.S. committee member. Thesis title, "Infant visual attention and postural control: A comparison with the segmental assessment of trunk control".

2011-2013 Lara Thompson, Ph.D. (graduated in 2013). Harvard-MIT Division of Health Sciences and Technology. PhD committee member. Dissertation title, "A study of the effects of sensory state on Rhesus monkey postural control". Current faculty member of University of DC.

Mentored Undergraduate Students in Research/Internships

Primary Advisor or Technical Advisor

2019 Balance and amputee function (1 student)
2020 Infant posture control and spontaneous arm movements (1 student)
2020 Motion capture laboratory and perturbed walking protocols (1 student)
2020 Mathematical approaches to stability in posture control (1 student)
2021 Out of position occupants survey (1 student)
2021 Kinematics of an intervention for severe cerebral palsy (1 student)
2021 Servomotor platform development and vehicle safety (2 students)
2021 Honor thesis committee member in Mathematics (1 student)

Previous mentoring at University of Hartford

Individual Internships

2011-2019 About 30 students completed research projects in one of the following areas: 3D motion capture, modeling kinematics, trunk support for disabilities and feeding in developing countries, video gaming, scoliosis, calibration of camera systems, omnidirectional treadmill, electromyography, & interface pressure on wheelchairs

Engineering Senior Design projects (typically 3-4 students / project)

2018-2019 Sensor implementation for video game system for rehab and education purposes.
2017-2018 Design of video game systems for children with severe cerebral palsy using Arduino and Scratch Programming
2016-2017 Vibration feedback for lower limb prosthetic users, encoding changes in force under the prosthetic foot.
2014-2015 Position feedback control of Omni-directional treadmill with user interface for motion control. (Awarded first place amongst 30 projects)
2012-2012 Development of a wide-bandwidth portable potentiometer-based motion capture system with noise characterization.

2011-2011 Instrumentation and geometric design for measuring body sway using portable potentiometer-based motion capture.
2011-2011 Integration and control of a motor to drive a moving platform to deliver perturbations while walking on a treadmill.

Additional teaching / workshops

11/2020 Provided lecture to University of Maryland's Engineering Class *Assistive Robotics* (instructor: James Borrelli, class ENME444). lecture called *Prosthetics, Engineering, and the Human factor*.

4/2017 Provided lecture and article review facilitation for graduate class at MIT *Sensory-Neural Systems: Spatial Orientation from End Organs to Behavior and Adaptation* (instructor: Faisal Karmali & Larry Young, class: HST.514[J])

4/2014 *Introduction to Motor Control and Rehabilitation.* Provided a training workshop to Ugandan and Kenyan prosthetics technologists in Kampala, Arua, Lira, and a LIMBS International training workshop in Kenyataan Medical Training Center, Nairobi, Kenya.

2012 *Creativity in Science & Engineering*, lecture to Humanities Honors Seminar on Creativity for Hillyer College at University of Hartford

SERVICE

Service Activity at Westmont College

College level

2019- Advisory/consultant role for Engineering Program
- supported curriculum development
- collaborated on equipment and space decisions
- contributed to Fletcher Jones Foundation grant for new building

2020- Budget & Salary Committee member
2020 Curriculum committee for new Westmont post-baccalaureate in Nursing program
2020 Search committee for Tenure-track Engineering Faculty
2020 Search committee for Computer Science Tenure-track Faculty
2020 Presented at Augustinian prospective student weekend
2021 Augustinian cohort leader for prospective student weekend
2021 Search committee for Computer Science Tenure-track Faculty
2021 Chair of search committee for Kinesiology Tenure-track Faculty

Department level

2019- *Director of Biomechanics & Balance Lab,* Custom design-built motor-driven translational platform for dynamic balance assessment, along with accelerometers, 3D motion capture systems, and force plates.

Service / Membership in Professional Organizations

2021-	Member, *American Scientific Affiliation*
2021-	Member, *Society for Automotive Engineering International*
2020-	Member, *California Association of Accident Reconstruction Specialists*
2020-	Member, *Sigma Xi*
2008-	Member, *International Society for Posture and Gait Research*

Leadership roles

- External Relations Committee member since 2016
- Lead workshop on Non-academic paths for graduate students and post-docs, Edinburgh, Scotland, July 2019
- Presented "A practical approach for modeling sensory stimulations and balance" at Summer School Workshop, Montreal, CA, July 2016

2016	Ambassador for *NIH Loan Repayment Program*
2011	Member, *IEEE Engineering Medicine & Biology Society*
2010	Member, *Society for the Neural Control of Movement*

National and International level grant reviewer

2019	Reviewer for Small Projects in Rehabilitation Research, *Veterans Affairs Office* of Research and Development
2017	Reviewer for *Action Medical Research*, a UK-based charity supporting medical research
2017, 19	Review panel member for *National Institutes of Health*, National Institute on Disability and Rehabilitation Research, US
2017	Reviewer for *Netherlands Organization for Scientific Research*, Applied and Engineering Sciences domain.

Peer-review for Journals

2021	Scientific Reports–Nature
2021	IEEE Transactions on Neural Systems & Rehabilitation Engineering
2021	Reviewer for Healthcare, Nursing section
2020	Reviewer for International Journal of Functional Morphology and Kinesiology
2020	Reviewer for International Journal of Environmental Research and Public Health
2018-	Reviewer for Journal of Pediatric Rehabilitation Medicine
2010-2017	Reviewer for Journal of Neurophysiology
2017	Reviewer for IEEE Transactions on Biomedical Engineering
2016	Reviewer for Archives of Physical Medicine and Rehabilitation
2016	Reviewer for PLOS ONE
2016	Reviewer for Disability and Rehabilitation
2015	Reviewer for Journal of Sports Sciences
2015	Reviewed for Journal of Biomechanics
2010, 14	Reviewer for Experimental Brain Research Journal
2014, 2018	Reviewed for Gait and Posture
2013	Reviewed for Journal of Haptics in Rehabilitation and Neural Engineering
2013	Reviewed for Journal of Bioengineering & Biomedical science
2012	Reviewed for IEEE Biomedical Robotics and Biomechatronics Conference

Community Service

2021	Volunteer coach for Friday Night Lights football, 10-12 yr olds, Santa Barbara, CA
2019	Volunteer AYSO soccer coach, CA, 10-11 yr olds, Goleta, CA.
2018	Volunteer children's football coach, 8-9 yr olds, Simsbury, CT.
2017	Volunteer children's soccer coach, 7 yr olds, Simsbury, CT
2017	Volunteer youth leader for outreach school event in Hartford, The Hartford Project
2015-2018	Member of Mission and Outreach Team at Wintonbury Church, Bloomfield, CT • Support budgetary and decision making efforts • Led one-week Missions Trip to Dominican Republic with Kids Alive Int.
1/2012-12/2017	Volunteer Youth leader for children, Calvary Church, West Hartford, CT • Teach at weekly meetings to children and teens.
3/2014-4/2014	Distributed rehabilitation material and trained prosthetists at four clinics in Uganda and one hospital in Kenya
8/2013, 8/2014	Volunteer teacher for Wintonbury Church Summer Faith Quest 1-week youth program, Bloomfield, CT
6/2011-6/2013	Volunteer children's teacher at Valley Baptist Church, Avon, CT
5/2013, 9/2013	Volunteer at Hartford's Women of Vision Chapter Walk for Water Event, Simsbury, CT
11/2012	Volunteer at Addison's House, Safe Home for Women, New Britain, CT
5/2012	Delivered supplies to staff at Bongolo Hospital in Lebamba, Gabon and CVM (humanitarian non-profit) staff in Soroti, Uganda.
7/2011-10/2011	Volunteer children's soccer coach, Simsbury, CT
8/2008-1/2010	Volunteer teacher of English as a second language to immigrants and refugees, Portland, OR

Prior Service Activity at University of Hartford

University level

11/2016-2019	*Faculty Senate Committee member* • Represented college in policy and decisions relating to academic and welfare • Curriculum Review committee • Led initiate to revise research and external grants policies
2018	*Sabbatical Application Selection Committee* • Reviewed & rated internal Sabbatical applications across colleges
2017	*Greenberg Junior Faculty Selection Committee* • Reviewed & rated internal grant applications across colleges
2013, 2016-18	*Human Subjects Committee member* • Reviewed research proposal across the University for Adherence to ethical principles in research
2017	*Steering Committee for University's Facilities Master Planning Committee* • Provided input to help direct priorities for facilities across the university

2016 *Sub-committee member to help revise Annual Faculty Evaluation process*

- Help define reasonable and transparent procedures to merit pay evaluation and dissemination across colleges.

College level (Education, Nursing, and Health Professions)

2016-2019 *Promotion & Tenure (P&T) committee member*

- Leads college level P&T guidelines, reviews faculty with college during the P&T, and provides recommendations to the Dean.
- Help define criteria for new clinical faculty appointments.

2015-2017 *Advisory Council on Research*

- Committee to steer research initiates and review internal grant funding applications for the college and honor′s students′ projects

2012–2019 *Academic Standing Committee*

- Evaluate and vote on student appeals to academic decisions, such as dismissal.

2011-2012 *Director of Center for Health, Care, and Well-being*

- Helped in vision casting of the Center and facilitated inter-disciplinary and translational research at college, including pilot grants.
- Initiated and facilitated university partnership with LIMBS International, a non-profit prosthetics organization.
- Initiated off-site partnerships and presentations on campus

Department

2016-2019 *Graduate Program Admissions Committee member*

- Evaluate applications for the DPT program and provide recommendation for admission.

2010-2015 *Physical Therapy Faculty Research Committee Chair*

- Facilitated department research vision, organized research dissemination events each semester, organized presentations to faculty, supported department resource allocation to research and Scientific Inquiry courses.

2012-2013 *Co-directed the development of the Pediatrics Balance Lab*

- Lab integrates electromyography, 3-D kinematics, and a custom design-build servomotor tilting platform for identifying sensory reliance. Co-director: Sandra Saavedra.

2012-2013 *Accreditation*

- Supported Physical Therapy program′s self-study report for accreditation

2010-2019 *Director and developer of the Human Balance Control Lab*

- Lab can assess walking balance on an Omni-directional treadmill system. Lab has 2-D motion capture, tilt sensors, and custom design-build motor driven platform that rotates a treadmill.

2011-2019 *Student advising*

- Advise undergraduate students with schedule (~12- 15 per year).

Faculty Search Committees

2017	Clinical faculty prosthetic & orthotics
2016	Tenure-track faculty physical therapy
2015	Clinical faculty prosthetic & orthotics (Chair of search committee)
2014	Tenure-track faculty mechanical engineering
2014	ETC faculty joint prosthetic & orthotics / physical therapy
2012	Tenure-track faculty prosthetics & orthotics
2011	Tenure-track faculty prosthetics & orthotics
2011	ETC faculty prosthetics & orthotics

University Community

2018-2019	Led initiative to develop *Center for Clinical Sciences Innovation*, combining Rehabilitation Sciences and Engineering for collaborative projects & faculty.
2017-2018	Project mentor for *University High School STEM* student teams working on a capstone project for hippotherapy with trunk support for children with disabilities
2014-2019	Faculty representative for University of Hartford's *Fellowship of Christian Athletes*
2013-2014	Project mentor and University liaison to *University High School STEM* student teams developing upper extremity prostheses in fulfillment of capstone projects with *Learning for LIMBS*, Hartford, CT
10/2014	Presentation at Hawktober weekend "The University of Hartford at the Cutting Edge: A review of some of the most interesting research going on at the university"
2012, 13	Presented at *Crossing the Bridge* to incoming freshman
2012	Presented at *Connecticut STEM Conference* in a "lunch and learn" session to teachers and administrators about engineering and prosthetics in higher education
2012	Presented at *Our Campus Creates* to incoming freshman

CONTINUING EDUCATION

2021	California Association of Accident Reconstruction Specialists, Fall conference on Accident Investigation Review, Industry Update, and Case Studies, Lake Tahoe, CA.
2021	Institute of Police Technology and Management, ACTAR test preparation
2021	American Academy of Forensic Sciences Virtual conference
2021	California Association of Accident Reconstruction Specialists, Scene Visualization & Courtroom Presentation
2012-2014	Newington Certificate Program in Prosthetics & University of Hartford MSPO program 8 courses in prosthetics (26 credits) with 3.83 GPA and 250+ internship hours. Cromwell and West Hartford, CT.
2013	LIMBS International Summit Presentations/Discussions on development of prosthetics devices for developing countries El Paso, TX
2013	American Orthotic Prosthetic Association World Congress Workshops on appropriate technologies and concerns related to prosthetics work in developing countries. Orlando, FL
2012	American Orthotic Prosthetic Association Workshops on ankle foot orthoses and balance Boston, MA
2011	IEEE Engineering Medicine and Biology Workshop on Motor Control Principles in Neuro-robotics Boston, MA

2011	Vestibular Rehabilitation in the Medically Complex Elder Jennifer M. Bottomley Rocky Hill, CT
2008	National Science Foundation Mathematical Biosciences Institute: Biomechanics – muscle and whole body Columbus, OH