

## **Kota Z. Takahashi, Ph.D.**

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[Google Scholar Site](#)

### **Education**

**Ph.D.**, Biomechanics & Movement Science Interdisciplinary Program Jan 2008 – Aug 2012

**University of Delaware** (Newark, DE)

Dissertation: “Total Power Profiles of Anatomical and Prosthetic Below-Knee Structures”

Advisor: Steven J. Stanhope

Dissertation Committee: Stephen J. Piazza, James G. Richards, Todd D. Royer, and C. Buz Swanik

**M.BE.**, Biomedical Engineering Sep 2006 – Dec 2007

**Catholic University of America** (Washington D.C.)

**B.S.**, Movement Science Sep 2002 – May 2006

**University of Michigan** (Ann Arbor, MI)

### **Academic Positions**

**Assistant Professor – University of Nebraska at Omaha** Aug 2015 - present

Center for Research in Human Movement Variability

Department of Biomechanics (Omaha, NE)

**Postdoctoral Scholar – North Carolina State University** Nov 2012 – Jul 2015

Human Physiology of Wearable Robotics (PoWeR) Laboratory - PI Gregory Sawicki

Joint Department of Biomedical Engineering, North Carolina State University & University of North Carolina at Chapel Hill (Raleigh, NC)

**Graduate Research Assistant – University of Delaware** Jan 2008 – Aug 2012

Human Performance Laboratory

Biomechanics & Movement Science Interdisciplinary Program (Newark, DE)

### **Honors/Awards**

Top 11 Finalist for Clinical Biomechanics Award, American Society of Biomechanics 2013

Professional Development Award (\$900.00), Office of Postdoctoral Affairs at North Carolina State University

Dr. Kevin Granata Young Investigator Award (\$1,000.00), Gait and Clinical Movement Analysis Society 2011

Student Travel Scholarship (\$350.00), Gait and Clinical Movement Analysis Society 2011

Student Travel Scholarship, Lilly Conference on College & University Teaching 2011

Study Abroad Scholarship, Office of International Programs at University of Michigan

## **Research Interests**

Rehabilitation Engineering & Clinical Gait Analysis (e.g., Limb Amputation, Stroke, Diabetes)  
Foot and Ankle Biomechanics  
Prosthetics, Orthotics, Exoskeletons, Shoewear

## **Peer-Reviewed Publications**

\***Takahashi KZ**, Lewek MD, Sawicki GS. A neuromechanics-based powered ankle exoskeleton to assist walking post-stroke: A feasibility study. *Journal of NeuroEngineering and Rehabilitation*, 2015, 12:23

*\*this article was featured on UNO magazine:*

<http://www.unomaha.edu/news/2016/04/uno-magazine-from-basketball-to-biomechanics.php>

Zelik KE, **Takahashi KZ**, and Sawicki GS. Six degree of freedom analysis of hip, knee, ankle and foot provides updated understanding of biomechanical work during human walking. *Journal of Experimental Biology*, 2015, 218:6, 876-886

**Takahashi KZ**, Horne JR, and Stanhope SJ. Comparison of mechanical energy profiles of passive and active below-knee prostheses: a case study. *Prosthetics & Orthotics International*, 2015, 39:2, 150-156

**Takahashi KZ**, and Stanhope SJ. Mechanical energy profiles of the combined ankle-foot system in normal gait: insights for prosthetic designs. *Gait & Posture*, 2013. 38:4, 818-823

**Takahashi KZ**, Kepple TM, and Stanhope SJ. A unified deformable (UD) segment model for quantifying total power of anatomical and prosthetic below-knee structures during stance in gait. *Journal of Biomechanics*, 2012. 45:15, 2662-2667

**Takahashi KZ**, and Stanhope SJ. Estimates of stiffness for ankle foot orthoses (AFOs) are sensitive to loading conditions. *Journal of Prosthetics and Orthotics*, 2010. 22:4, 211-219

## **Manuscripts in Review**

**Takahashi KZ**, Gross MT, van Werkhoven H, Piazza SJ, and Sawicki GS. Adding stiffness to the foot modulates soleus force-velocity behaviour during human walking. *Scientific Reports*

## **Manuscripts in Preparation (data collection complete) or Planned (collection on-going)**

**Takahashi KZ**, and Stanhope SJ. A spring-loaded roll-over model of biological ankle and foot structures during human walking. *PLOS One* (in preparation)

Worster K, Bruening DA, and **Takahashi KZ**. Partitioning foot and ankle powers during human walking: A segment-by-segment approach. *Scientific Reports* (in preparation)

Ray SF, Wurdeman SR, and **Takahashi KZ**. Transtibial prosthesis users increase push-off work following a 3-week adaptation period. *Clinical Biomechanics* (in preparation)

## **Kota Z. Takahashi – Curriculum Vitae**

Rock CG, Wurdeman SR, Stergiou N, and **Takahashi KZ**. Relationship between push-off work and stride-to-stride fluctuation in transtibial prosthesis users. *Journal of NeuroEngineering and Rehabilitation* (in preparation).

### **Current Grant Support**

#### **NASA EPSCOR Mini-Grant**

Feb 2016 – Aug 2016

“Locomotion on Dynamically Adaptive Terrain”

Primary Investigators: Takahashi KZ; Vanderheyden T (UNO)

Total Award: \$25,000

Aim: Examine the effects of a complex treadmill terrain on mechanics and energetics of locomotion

### **Past Grant Support**

#### **North Carolina State University – Rehabilitation Engineering Center Pilot Grant**

Jul 2014 – Jun 2015

“Reverse-Engineering Human Musculoskeletal Design to Inform Rehabilitation of Ankle-Foot Pathologies”

Primary Investigators: Sawicki GS (NCSU), Gross MT (UNC Chapel Hill), Takahashi KZ

Total Award: \$25,000

Aim: Examine the role of foot mechanical properties on ankle muscle-tendon mechanics and whole-body metabolic cost during human locomotion.

### **Pending Grant Support (in review)**

#### **BADER Consortium**

submitted Nov 2015

“The Effects of Running-Specific Leg Prosthetic Alignment on Running and Sprinting Performance”

Primary Investigator: Grabowski AM (CU Boulder); co-I Takahashi KZ

Total Award: \$1,723,338

Aim: Examine the effects of prosthetic alignment on running and sprinting performance in persons with limb amputations

#### **Department of Defense CDMRP**

submitted Nov 2015

“From Laboratory to Community: Using Gait Variability to Guide Prosthetic Development and Prescription”

Primary Investigator: Myers SA (UNO); co-I Takahashi KZ

Total Award: \$915,000

Aim: Examine the effects of prosthetic mechanics and gait variability on clinical outcomes in persons with limb amputations

#### **Department of Defense CDMRP**

submitted Nov 2015

“The Effect of a Passive Exoskeletal Device on Locomotor Adaptive Ability in Chronic Stroke Survivors”

Primary Investigator: Mukherjee M (UNO); co-I Takahashi KZ

Total Award: \$500,000

Aim: Examine the effects of a passive leg exoskeleton on motor adaptation during walking in chronic stroke survivors

#### **NBA/GE Health Care Orthopedics and Sports Medicine Collaboration Grant**

submitted Feb 2016

“Contributing Factors and Risk Assessment of Patellar Tendinopathy in Collegiate Basketball Players: A Multi-Site Collaboration”

Primary Investigator: Rosen A (UNO); co-I Takahashi KZ (0% effort)

## **Kota Z. Takahashi – Curriculum Vitae**

Aim: Examine morphological characteristics in basketball players that increase risks for patellar tendinopathy

### **Grant Proposals (submitted – not funded)**

**New Balance Footwear Research Award** submitted Feb 2016

“Towards Optimizing Shoe Stiffness with In-Vivo Muscle Analyses”

Primary Investigators: Takahashi KZ; Ray S (UNO)

Total Award: cost for 45 customized footwear

Aim: Examine the role of shoe bending stiffness on ankle muscle-tendon mechanics and whole-body metabolic cost during locomotion.

**NASA EPSCOR** submitted Dec 2015

“Locomotor Adaptation to Destabilizing Force Field Perturbations in Simulated Reduced Gravity Environments”

Primary Investigators: Takahashi KZ; Mukherjee M (UNO)

Total Award: \$750,000

**National Institute of Health – Individual Postdoctoral Fellowship (F32)** submitted Apr 2013, Dec 2013

“Functional Interaction between Ankle Joint and Foot Structures during Locomotion”

Role: Principal Investigator

Total Award: \$168,846.00 1<sup>st</sup> submission = priority score of 48 2<sup>nd</sup> submission = not discussed

### **Grants for my Trainees (submitted – not funded)**

**\*National Science Foundation – Graduate Research Fellowship** submitted Oct 2015

“Augmenting Human Muscle Performance through Added Foot Stiffness”

Primary Investigator: Samuel Ray

Total Award: \$138,000 \*received an Honorable Mention

**National Science Foundation – Graduate Research Fellowship** submitted Oct 2015

“Efficient Variability: Linking Fractal Gait Patterns with Metabolic Energy Savings”

Primary Investigator: Chase Rock

Total Award: \$138,000

**National Institute of Health – Individual Postdoctoral Fellowship (F32)** submitted Dec 2015

“Using Behavior Measures and Functional Neuroimaging to Study Gait Variability with Audio Cueing”

Principal Investigator: Katy Worster

Total Award: \$164,365.00 1<sup>st</sup> submission = not discussed

**National Institute of Health – Individual Postdoctoral Fellowship (F31)** submitted Dec 2015

“In Vivo Biomechanics of Push-off Impairments in Peripheral Artery Disease during Walking”

Principal Investigator: Eric Pisciotta

Total Award: \$97,296.00 1<sup>st</sup> submission = not discussed

**L’Oreal USA for Women in Science Fellowship** submitted Feb 2016

“Improving Walking in Parkinson’s Disease with Audie Cues by Unveiling Brain-Behavior Relationships”

Principal Investigator: Katy Worster

Total Award: postdoc salary

## Kota Z. Takahashi – Curriculum Vitae

### Invited Presentations

- Exercise Physiology (EXS 335) – Guest Lecture** Mar 14, 2016  
Creighton University (Omaha, NE)  
“Structure and Function of Human Foot and Ankle: Inspirations for Wearable Device Technology”
- International Research Forum on Biomechanics of Running Specific Prostheses** Feb 2, 2016  
National Institute of Advanced Industrial Science and Technology (Tokyo, Japan)  
“Energy Storage and Return of Running Specific Prostheses”  
(Poster co-presenter with Sharp K, Taboga P, Wyatt M, and Grabowski AM)
- Gait Analysis/Biomechanics Laboratory – Guest Seminar** Oct 29, 2015  
Naval Medical Center San Diego (San Diego, CA)  
“Reverse-Engineering Human Musculoskeletal Structures to Inform Prescription of Prosthetic Limbs”
- Department of Surgery Doctoral Seminar** Oct 7, 2015  
University of Nebraska Medical Center (Omaha, NE)  
“Paradoxical Foot and Ankle Functions during Human Locomotion”
- Department of Health and Exercise Science Seminar** Mar 20, 2015  
Appalachian State University (Boone, NC)  
“Driving a Car with Deflated Tires: A Mechanical Analogy for Foot and Ankle Function during Locomotion”
- Technology Partnership of Nagoya University Inc., (NU Tech) Seminar** Mar 6, 2015  
(Raleigh, NC)  
“Robots Beyond Science Fiction: A New Reality Towards Technology-Assisted Rehabilitation”
- School of Health, Physical Education and Recreation (HPER) Seminar** Jan 12, 2015  
University of Nebraska at Omaha (Omaha, NE)  
“Reverse-Engineering Human Musculoskeletal Design to Drive Rehabilitation of Ankle-Foot Pathologies”
- School of Nutrition and Health Promotion Seminar** Jan 8, 2015  
Arizona State University (Phoenix, AZ)  
“Reverse-Engineering Human Musculoskeletal Design to Drive Rehabilitation of Ankle-Foot Pathologies”
- Department of Kinesiology, Recreation, and Sport Studies (KRSS) Seminar** Dec 3, 2014  
University of Tennessee (Knoxville, TN)  
“Reverse-Engineering Human Musculoskeletal Design to Drive Rehabilitation of Ankle-Foot Pathologies”
- Dr. William M. Scholl College of Podiatric Medicine – Grand Round Lecture** Aug 28, 2014  
Rosalind Franklin University (North Chicago, IL)  
“Reverse-Engineering Human Musculoskeletal Design to Drive Rehabilitation of Ankle-Foot Pathologies”
- Gait & Clinical Movement Analysis Society 2014 Conference – Tutorial Lecture** Jun 24, 2014  
(Newark, DE)  
“From Body to Joints to Muscles: An Integrative Multi-Scale Assessment of Ankle and Foot Function in Human Locomotion”  
(Co-Presenter with Robertson BD, Farris DJ, Piazza SJ, and Sawicki GS)

## Kota Z. Takahashi – Curriculum Vitae

**Department of Kinesiology Seminar** Jun 13, 2014  
East Carolina State University (Greenville, NC)  
“Paradoxical Ankle and Foot Function during Human Locomotion: Questions for Biology, Opportunities for Engineering”

**Biomechanics & Movement Science (BIOMS) Interdisciplinary Program Seminar** Feb 14, 2013  
University of Delaware (Newark, DE)  
“Reverse-Engineering Human Musculoskeletal Design to Drive Rehabilitation of Ankle-Foot Pathologies”

**Nature Research Center – National Postdoc Appreciation Week Seminar Series** Sep 18, 2013  
(Raleigh, NC)  
“Building the Next RoboCop: Wearable Devices to Help People Move”

**Human Physiology of Wearable Robotics (PoWeR) Lab** Oct 17, 2012  
North Carolina State University (Raleigh, NC)  
“Mechanical Energy Profiles of Ankle-Foot Structures: Insights for Rehabilitation Devices”

**Graduate Student Forum** May 4, 2012  
University of Delaware (Newark, DE)  
“Academic e-Portfolios: Setting Yourself Apart in the Academic Job Market”

**Good Shepherd Rehabilitation Network – Guest Seminar** Apr 25, 2012  
(Philadelphia, PA)  
“Comparisons of Power & Energy in Anatomical and Prosthetic Below-Knee Structures during Gait”

**Independence Prosthetics - Orthotics, Inc** Mar 5, 2012  
(Newark, DE)  
“Comparisons of Power & Energy in Anatomical and Prosthetic Below-Knee Structures during Gait”

**Graduate Teaching Assistant Conference** Aug 23, 2011  
University of Delaware (Newark, DE)  
“Engaging Students in Their Learning: Why and How?”

**Graduate Teaching Assistant Conference** Aug 22, 2011  
University of Delaware (Newark, DE)  
“Life as a Graduate Student and TA: Keeping All the Balls in the Air”

### **Conference Presentations (Podium)**

Ray SF, Wurdeman SR, and **Takahashi KZ**. Transtibial prosthesis users exhibit increased positive work following adaptation. *Rocky Mountain American Society of Biomechanics*, April 2016, Estes Park, CO, USA.

Kent JA, Papachatzis N, Vanderheyden T, Stergiou N, and **Takahashi KZ**. Delivery of vibration to the residual limb via the prosthetic socket: Preliminary investigation of signal integrity. *Rocky Mountain American Society of Biomechanics*, April 2016, Estes Park, CO, USA.

Zelik KE, **Takahashi KZ**, and Sawicki GS. Positively missing: reassessing work production in human gait and the implications for assistive technology. *World Congress of Biomechanics*, July 2014, Boston, MA, USA.

## **Kota Z. Takahashi – Curriculum Vitae**

\***Takahashi KZ**, and Sawicki GS. A user-controlled powered ankle exoskeleton to assist gait propulsion post-stroke. *American Society of Biomechanics*, September 2013, Omaha, NE.

*\*received nomination for Clinical Biomechanics Award (top 11 finalist)*

**Takahashi KZ**, Stanhope SJ, and Sawicki GS. Functional interaction between ankle joint and distal foot structures during locomotion. *Dynamic Walking*, June 2013, Pittsburgh, PA.

**Takahashi KZ**, and Stanhope SJ. Positive news for passive-dynamic prosthetics: the human ankle-foot system does net negative work during stance. *Gait & Clinical Movement Analysis Society*, May 2012, Grand Rapids, MI.

**Takahashi KZ**, Razzook AR, Guinn LD, Schrank ES, Kepple TM, and Stanhope SJ. A unified deformable segment model of the combined ankle-foot system that does work. *American Society of Biomechanics*, August 2011, Long Beach, CA.

\***Takahashi KZ**, Razzook AR, Guinn LD, Schrank ES, and Stanhope SJ. A model of normal gait roll-over dynamics: one step closer to customizing prosthetic ankle-foot components. *Gait & Clinical Movement Analysis Society*, April 2011, Bethesda, MD.

*\*received award for Dr. Kevin Granata Young Investigator Award (best student podium presentation)*

**Takahashi KZ**, Razzook AR, Guinn LD, Schrank ES, and Stanhope SJ. A method for characterizing combined ankle-foot dynamics during stance phase of gait. *Center for Biomedical Engineering Research Symposium*, May 2010, University of Delaware.

### **Conference Presentation (Thematic Poster)**

**Takahashi KZ**, and Stanhope SJ. Net efficiency of the combined ankle-foot system in normal gait: insights for passive and active prosthetics. *American Society of Biomechanics*, August 2012, Gainesville, FL.

### **Conference Presentations (Poster)**

**Takahashi KZ**, Gross MT, van Werkhoven H, Piazza SJ, and Sawicki GS. Engine and transmission: soleus muscle actuator function is modulated by foot mechanics. *Biomechanics and Neural Control of Movement*, June 2016, Mt. Sterling, OH, USA

Worster K, Bruening DA, and **Takahashi KZ**. Partitioning ankle and foot power during human walking. *Rocky Mountain American Society of Biomechanics*, April 2016, Estes Park, CO, USA.

Vanderheyden T, Kent J, Papachatzis N, and **Takahashi KZ**. Design and validation of a complex terrain generating variable surface treadmill. *Rocky Mountain American Society of Biomechanics*, April 2016, Estes Park, CO, USA.

Rock CG, Marmelat V, Yentes J, and **Takahashi KZ**. Metabolic cost of transport and the persistence of stride-to-stride fluctuations during human walking. *Rocky Mountain American Society of Biomechanics*, April 2016, Estes Park, CO, USA.

Papachatzis N, Rock CG, Stergiou N, and **Takahashi KZ**. Push-off mechanics and stride-to-stride fluctuations during human walking. *Rocky Mountain American Society of Biomechanics*, April 2016, Estes Park, CO, USA.

## Kota Z. Takahashi – Curriculum Vitae

Mattes K, Kent JA, Stergiou N, and **Takahashi KZ**. Comparison of Wii balance board and laboratory grade force plate for the measurement of sway during standing. *Rocky Mountain American Society of Biomechanics*, April 2016, Estes Park, CO, USA.

Maaiah S, Worster K, Vanderheyden T, **Takahashi KZ**. Designing a more versatile cap for monitoring brain activity. *Student Research and Creative Activity Fair*, March 2016, University of Nebraska at Omaha.

Papachatzis N, Kent J, Vanderheyden T, Stergiou N, **Takahashi KZ**. Frequency validation of a high-bandwidth vibrotactile transducer for clinical use. *Student Research and Creative Activity Fair*, March 2016, University of Nebraska at Omaha.

Ray S, Wurdeman S, **Takahashi KZ**. Quantifying energetic adaptation to prosthetic devices. *Student Research and Creative Activity Fair*, March 2016, University of Nebraska at Omaha.

Rock C, Wurdeman S, Stergiou N, **Takahashi KZ**. Push-off work and stride-to-stride fluctuations in below knee prosthesis users. *Student Research and Creative Activity Fair*, March 2016, University of Nebraska at Omaha.

\*Vanderheyden, **Takahashi KZ**. Locomotion on dynamically adaptive terrain. *Student Research and Creative Activity Fair*, March 2016, University of Nebraska at Omaha.

*\*received honorable mention for best poster presentation for undergraduate*

Worster K, Bruening DA, **Takahashi KZ**. Expanding our knowledge of ankle and foot interactions in walking. *Student Research and Creative Activity Fair*, March 2016, University of Nebraska at Omaha.

**Takahashi KZ**, Gross MT, van Werkhoven H, Piazza SJ, and Sawicki GS. The effects of added foot stiffness on soleus muscle fascicle behavior during human walking. *American Society of Biomechanics*, August 2015, Columbus, OH, USA

Bell EA, **Takahashi KZ**, Rider PM, Sawicki GS and Domire ZJ. Effect of plantar fascia stiffness on foot energy absorption during overground walking. *American Society of Biomechanics*, August 2015, Columbus, OH, USA.

**Takahashi KZ**, Lewek MD, Sawicki GS. A user-controlled powered ankle exoskeleton to drive gait modifications post-stroke. *World Congress on Biomechanics*, July 2014, Boston MA.

**Takahashi KZ**, Razzook AR, Guinn LD, Schrank ES, Kepple TM, and Stanhope SJ. A unified deformable (UD) segment model for measuring combined shank-foot power. *Center for Biomedical Engineering Research Symposium*, May 2011, University of Delaware.

**Takahashi KZ**, Razzook AR, Guinn LD, Schrank ES, and Stanhope SJ. Roll-over shape dynamics during stance in natural gait. *American Society of Biomechanics*, August 2010, Providence, RI.

**Takahashi K**, and Stanhope SJ. Sensitivity analysis of loading conditions on mechanical stiffness measurements of a passive dynamic ankle foot orthoses. *American Society of Biomechanics*, August 2009, State College, PA.



## Kota Z. Takahashi – Curriculum Vitae

**Takahashi K**, and Stanhope SJ. A novel method for estimating stiffness of passive dynamic ankle foot orthoses. *Center for Biomedical Engineering Research Symposium*, May 2009, University of Delaware.

### Teaching Experience

- Instructor**      **Biomechanics of Human Motion**      Spring 2011  
Department of Kinesiology & Applied Physiology (HESC 425)  
University of Delaware  
Created a course syllabus, coordinated laboratory activities with a Graduate Teaching Assistant, designed lectures, and assigned grading for homework and exams. Total of 36 students enrolled, majoring in Athletic Training, Physical Education, and Health Behavior Science.
- Instructor**      **Strength & Conditioning Laboratory**      Spring 2008  
Department of Health, Nutrition, and Exercise Science (HESC 317)  
University of Delaware  
Constructed a course syllabus, and designed laboratory activities. Total of 42 students enrolled in two sections, majoring in Athletic Training, Nutrition, and students minoring in Strength & Conditioning.
- Teaching Assistant**      **Functional Anatomy**      Fall 2010  
Department of Kinesiology & Applied Physiology (HESC 420)  
University of Delaware  
Assisted human cadaver dissections, and anatomical interpretation of dissected specimens. Total of 20 students enrolled, composed of students majoring in Athletic Training.
- Teaching Assistant**      **Biomechanics**      Spring 2007  
Department of Biomedical Engineering (BE 202)  
Catholic University of America  
Tutored students with understanding of course materials. Held weekly office hours. Graded homework assignments and exams. Class composed of undergraduate students majoring in Biomedical Engineering.
- Guest Lecturer**      **Anatomy & Physiology**      Fall 2010  
Department of Kinesiology & Applied Physiology (HESC 220)  
University of Delaware  
Presented a lecture on "Integumentary system of the human body"  
Presented a lecture on "Overview on tissues of the human body"
- Guest Lecturer**      **Introduction to Laboratory Instruments**      Fall 2009  
Department of Health, Nutrition, and Exercise Science (HESC 689)  
University of Delaware  
Introduced and demonstrated the appropriate use of 3D motion capturing instruments to graduate-level students in Biomechanics & Movement Science program.  
Presented a workshop on obtaining accurate measures of force platform and 3D motion capturing data through live-demonstrations.
- Guest Lecturer**      **Neuromechanical Basis of Human Movements**      Fall 2009 & Spring 2009  
Department of Health, Nutrition, and Exercise Science (HESC 375)

## **Kota Z. Takahashi – Curriculum Vitae**

University of Delaware

Performed a demonstration of 3D motion capturing capabilities, and provided an introduction of commercially available software for biomechanical analysis.

### **Short-Term Professional Experience**

#### **Software Specialist, C-Motion Inc.**

Aug 29-31, 2011

Visual3D Software Workshop (Tokyo, Japan)

Designed and instructed a three-day training seminar on Visual3D software for employees of a Japanese reseller of Visual3D (Inter-Reha Co., LTD), and a professor of biomechanics. Collected gait data of a single human subject, and taught basic principles of biomechanical modeling, computation, data analysis, and data reporting using Visual3D.

#### **IT Specialist/Volunteer, Biomechanics Priorities Conference**

Jun 9-11, 2010

(Newark, DE, USA)

Assisted in preparation and organization of the conference. Provided IT support during the conference.

#### **Software Specialist/Interpreter, C-Motion Inc.**

May 12-14, 2010

Visual3D Software Workshop (Tokyo, Japan)

Executed on-site English-Japanese translations during Visual3D software training. Provided one-on-one training for existing and potential Visual3D users. Visited a laboratory of an existing Visual3D user (Digital Human Research Center) to supply customer support and expertise.

#### **Software Specialist/Interpreter, C-Motion Inc.**

Apr 23-24, 2009

Visual3D Software Workshop (Kingston, ON, Canada)

Executed on-site English-Japanese translations during Visual3D software training for employees of a Japanese reseller of Visual3D (NAC Imaging Technology Inc.). Provided on-one-on software training.

### **Professional Development (Research)**

#### **‘Nonlinear Analysis’ Workshop**

Summer 2015

University of Nebraska at Omaha (Omaha, NE)

A week-long workshop for movement scientists to learn nonlinear methods to analyze biological time-series data

#### **‘Scientific Writing from the Reader’s Perspective’ Workshop**

Fall 2014

The North Carolina Translational & Clinical Sciences Institute (Chapel Hill, NC)

A workshop for clinical researchers and faculty in learning to write from the reader’s perspective

#### **Grant Writing: Hands-On Workshop on Grant Review**

Fall 2013

Office of Postdoctoral Affairs, North Carolina State University

A hands-on workshop for post-doctoral researchers to practice submitting grant proposals and to perform mock grant reviews

#### **‘Securing Funding for Your Work’ Workshop**

Fall 2013

Office of Postdoctoral Affairs, North Carolina State University

A 2 hour workshop for post-doctoral researchers on resources for securing funding and tips for effective grant writing

## Kota Z. Takahashi – Curriculum Vitae

- ‘Twelve Keys to Successful Grant Writing’ Seminar** Summer 2013  
Office of Research Development, University of North Carolina at Chapel Hill  
A one-day workshop for post-doctoral researchers on tips for successful grant writing strategies
- ‘Managing the Tenure Process’ Workshop** Spring 2013  
Preparing the Professoriate Program, North Carolina State University  
A one-day workshop for graduate students and post-doctoral scholars to familiarize on the tenure and promotion process and recognize differences in institutions
- Grant Writing Workshop** Winter 2012  
Delaware Rehabilitation Institute, University of Delaware  
A one-day workshop targeted to senior graduate students and post-doctoral researchers for gaining understanding of the NIH structure, components of R01 proposals, and career development awards
- Responsible Conduct of Research Training** Winter 2009  
Research Office, University of Delaware  
A two-day course for graduate students exploring current issues in areas of responsible conduct of research. Completed classes include: *UNIV 604: Ethics*, *UNIV 605: Research*, *UNIV 606: Authorship*, and *UNIV 607: Funding Opportunities*.
- Human Subject Research Training Certification** Spring 2008  
Research and Graduate Studies, University of Delaware  
A training session on the use of human subjects in research. Topics included: federal regulations and institutional procedures for using humans in research, and procedures for obtaining informed consent.
- Professional Development (Teaching)**
- Higher Education Teaching Certification (HETC) Program** Winter 2011 – Fall 2011  
Center for Teaching and Learning, University of Delaware  
A program designed to enhance teaching effectiveness and provide a systematic preparation for all aspects of academic careers. Completed classes in: *Pedagogy in Higher Education*, *Academic Job Search*, *Learning in the College Classroom*, and *Faculty Roles in Institutions of Higher Education*.
- Symposium on ‘Teaching Biomechanics’** Summer 2011  
American Society of Biomechanics 2011 Annual Conference (Long Beach, CA)  
A symposium where faculty of different disciplines shared their experiences of teaching undergraduate biomechanics classes
- Lilly Conference on College & University Teaching** Summer 2011  
(Washington, DC)  
A teaching conference designed for future faculty to refine their teaching skills, support their growth as teacher-scholars in the discipline, and deepen their understanding of faculty roles in different institutional contexts
- Graduate Teaching Assistant Conference** Fall 2010  
Center for Teaching and Learning, University of Delaware  
A conference offered to newly appointed Graduate Teaching Assistants. Attended workshop sessions in: "Learning and Teaching with Technologies", and "Low-Stakes, Easy-to-Grade Writing".

## Kota Z. Takahashi – Curriculum Vitae

### Community Outreach

**Caregiver Appreciation Open House** Nov 12, 2015  
Home Instead (Omaha, Nebraska)

Demonstrated an apparatus to measure balance and coordination, and displayed prosthetic legs to local caregivers.

**Lights On Afterschool – Exhibitor** Oct 5, 2015  
University of Nebraska at Omaha (Omaha, Nebraska)

Demonstrated an apparatus to measure balance and coordination, and displayed prosthetic legs to kids in elementary and middle schools participating in afterschool activities.

**Lab Visit for Home-Schooled Children - Coordinator** Oct 10, 2014  
North Carolina State University

Designed a 2 hour lab session for ~15 home-schooled children from North Carolina, and demonstrated basics of 3D motion capture, electromyography, ultrasound, and a robotic exoskeleton

**Open Minds: Teen Science Cafés – Guest Speaker** Mar 7, 2014  
North Carolina Museum of Natural Sciences (Raleigh, NC)

Presented a talk on ‘Wearable Robotics’ and demonstrated a thought-controlled robotic ankle exoskeleton to an audience of young teens.

**‘Live at Nine’ – Guest Speaker** Jun 4, 2013  
WBFT TV (Sanford, NC)

Appeared for a 1-hour local television show, demonstrated a myoelectrically controlled robotic ankle exoskeleton and discussed rehabilitation applications.

**UNC Science Expo – Exhibitor** Apr 13, 2013  
North Carolina Science Festival (Chapel Hill, NC)

Demonstrated a myoelectrically controlled robotic ankle exoskeleton to a general audience of students and their parents.

**BEST Fest (Biotechnology, Engineering, Science and Technology) – Exhibitor** Apr 6, 2013  
North Carolina Museum of Natural Science (Raleigh, NC)

Demonstrated a myoelectrically controlled robotic ankle exoskeleton to a general audience of students and their parents.

**Biomechanics Laboratory Demonstrations** Oct 16, 2010 & Oct 10, 2009  
Parents and Family Weekend, University of Delaware

Presented an overview of the research projects at the Biomechanics Laboratory, and provided a demonstration of motion capturing technology and biomechanical software

### Academic Service

**Conference Podium Session - Co-Chair** Aug 8, 2015  
American Society of Biomechanics Annual Conference 2015 (Columbus, OH)

Co-chaired a podium session on ‘Level Gait’ (co-chair: Brian Umberger)

## Kota Z. Takahashi – Curriculum Vitae

**BME Research Retreat – Panel Speaker** Sep 26, 2014  
University of North Carolina at Chapel Hill and North Carolina State University (Raleigh, NC)  
Served on a panel as a postdoc representative to offer perspectives on issues related to research activities at UNC and NC State, writing peer-reviewed publications and grants, and work-life balance.

**Conference Tutorial Lecture – Lead Organizer** Jun 24, 2014  
Gait & Clinical Movement Analysis Society Annual Conference 2014 (Newark, DE)  
Organized a tutorial lecture series and invited established scientists with unique expertise related to ankle and foot biomechanics and human locomotion.

**Mentoring from the Postdoc Perspective Workshop – Panel Speaker** Feb 26, 2014  
Office of Faculty Development, North Carolina State University  
Participated in a panel consisting of postdoctoral scholars for a workshop dedicated to faculty members regarding tips and good practices for mentoring postdocs.

**Postdoctoral Association - Secretary** Fall 2013 & Spring 2014  
North Carolina State University  
Reported and recorded minutes for monthly Postdoctoral Association meetings and played a leadership role to promote visibility of all Postdoctoral Scholars at NCSU.

**Student Career Symposium – Panel Speaker** May 9, 2012  
Gait & Clinical Movement Analysis Society Annual Conference 2012 (Grand Rapid, MI)  
Participated in a panel consisting of senior professors, post-docs, and graduate students for a symposium dedicated to graduate/undergraduate students regarding future career decisions.

**Roundtable Discussion Facilitator** Jun 17, 2011  
INBRE Undergraduate Researcher Retreat, University of Delaware  
Offered career advice to undergraduate summer interns, and fielded questions on ‘*Should I go to graduate school/professional school?*’

**Research Symposium Student Committee** May 7, 2010  
Center for Biomedical Engineering Research (CBER) Research Symposium 2010, University of Delaware  
Created and collected a total of 67 surveys at the annual CBER Research Symposium, and summarized survey results to offer guidelines for improving future symposiums

### Ad hoc Journal Reviewer

Journal of Biomechanics	2012-present
Journal of Theoretical Biology	2013-present
IEEE Transactions on Neural Systems & Rehabilitation Engineering	2014-present
Prosthetics & Orthotics International	2014-present
Scientific Reports	2014-present
Journal of Applied Biomechanics	2015-present
Applied Bionics and Biomechanics	2015-present
Journal of NeuroEngineering and Rehabilitation	2015-present
Human Movement Science	2016-present

## Kota Z. Takahashi – Curriculum Vitae

### Abstract Reviewer

American Society of Biomechanics Conference 2015, 2016  
Gait and Clinical Movement Analysis Society Conference 2016  
Design of Medical Devices Conference 2016

### Mentoring

#### *Postdoc*

**Kate Worster** - Biomechanics, University of Nebraska Omaha Fall 2015 - present

#### *Masters Student*

**Samuel Ray** - Biomechanics, University of Nebraska Omaha Fall 2015 – present  
recipient of GRACA research grant from UNO, honorable mention from NSF Graduate Fellowship

**Chase Rock** - Biomechanics, University of Nebraska Omaha  
recipient of GRACA research grant from UNO Fall 2015 - present

**Nikolaos Papachatzis** – Biomechanics, University of Nebraska Omaha Fall 2015 - present

#### *Undergraduate Students*

**Samuel Maaiah** - Biotechnology, University of Nebraska Omaha Fall 2015 – present  
recipient of FUSE undergraduate research grant

**Taylor Cook** - Biomedical Engineering, North Carolina State University Spring 2015

**Neelam Modi** - Biomedical Engineering, North Carolina State University Spring 2015

**Arianna Nasser** - Biomedical Engineering, North Carolina State University Summer 2014 – Spring 2015

**Leighanne Davis** - Biomedical Engineering, North Carolina State University Fall 2013 – Spring 2014

**Samuel Ray** - Biomedical Engineering, North Carolina State University Summer 2013-Spring 2014

**Brittany Wilder** - Mechanical Engineering, University of Delaware Summer & Fall 2008

**Alissa Kregling** - Exercise Science, University of Delaware Summer 2009

#### *High School Student*

**Rohan Chandrasekhar** - Enloe High School, Raleigh, NC Summer 2013

### Graduate Student Committees (not Chair)

#### *Doctoral Students*

**Jenny Kent** - Biomechanics, University of Nebraska Omaha (Chair: Nicholas Stergiou) Fall 2014 - present

### Professional Affiliations

American Society of Biomechanics 2009-present

Gait and Clinical Movement Analysis Society 2012-present

International Society of Biomechanics 2007

National Council on Strength and Fitness 2006-2008

Bridging Advanced Developments for Exceptional Rehabilitation (BADER) Consortium 2013-present

### Professional Certifications

First Aid/CPR, *American College of Emergency Physicians* 2008-2009, 2010-present

## **Kota Z. Takahashi – Curriculum Vitae**

Personal Training, *National Council on Strength and Fitness*

2006-2008

### **Software/Hardware Experience**

Visual3D

Matlab

Labview

Oxycon Mobile

Bertec Instrumented Treadmill

AMTI Force Platforms

Telemed Ultrasound

Vicon Nexus

EvaRT/Cortex

Microsoft Office (PowerPoint, Word, Excel)

### **Language Skills**

Fluency in English and Japanese

**References**

**Gregory S. Sawicki, Ph.D.**

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Vice Provost for Graduate and Professional Education  
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Department of Kinesiology & Applied Physiology  
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**Stephen J. Piazza, Ph.D.**

(Dissertation Committee Member, Collaborator)  
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Pennsylvania State University  
Department of Kinesiology  
Email: piazza@psu.edu  
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