

**CURRICULUM VITAE**  
**MARY KENT HASTINGS, PT, DPT, MSCl, ATC**

**DATE:** June 2024

**CONTACT INFORMATION:**

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**PRESENT POSITION:**

Professor **Washington University School of Medicine** 2017-present  
Program in Physical Therapy and Orthopaedic Surgery  
St. Louis, MO

**EDUCATION:**

<u>Degree</u>	<u>Institution</u>	<u>Field</u>	<u>Date(s)</u>
BS	<b>University of Illinois</b> Champaign/Urbana, IL	Kinesiology	1990
	<b>Virginia Polytechnic Institute</b> Blacksburg, VA	Exercise Physiology	1990-91
MS	<b>Washington University</b> St. Louis, MO	Physical Therapy	1993
DPT	<b>Washington University</b> St. Louis, MO	Physical Therapy	2002
MS	<b>Washington University</b> St. Louis, MO	Clinical Investigation	2011

**ACADEMIC POSITIONS / EMPLOYMENT:**

<u>Position</u>	<u>Institution/Facility</u>	<u>Date(s)</u>
Graduate Assistant-Athletic Trainer	<b>Virginia Polytechnic Institute</b> Blacksburg, VA	1990-1991
Laboratory Teaching Assistant	<b>Washington University</b> Program in Physical Therapy St. Louis, MO	1994-1999
Instructor	<b>Washington University School of Medicine</b> Program in Physical Therapy St. Louis, MO	1999-2004
Assistant Professor	<b>Washington University School of Medicine</b> Program in Physical Therapy and Orthopaedic Surgery St. Louis, MO	2005-2011
Associate Professor	<b>Washington University School of Medicine</b> Program in Physical Therapy and Orthopaedic Surgery St. Louis, MO	2012-2017

Professor **Washington University School of Medicine** 2017-present  
Program in Physical Therapy and Orthopaedic Surgery  
St. Louis, MO

**CLINICAL TITLE AND RESPONSIBILITIES:**

Barnes-Jewish Hospital, St. Louis, MO: Staff Physical Therapist 1994-1999  
Responsibilities: Provide care for patients with musculoskeletal conditions.

The Rehabilitation Hospital of St. Louis (MO): Physical Therapist 1999-2001  
Responsibilities: Provide care for patients with musculoskeletal conditions.

Washington University Physical Therapy Clinics: Physical Therapist 2001-2011  
Responsibilities: Provide clinical care for musculoskeletal foot and ankle conditions.

**TEACHING TITLES AND RESPONSIBILITIES:**

**Current-Professional Clinical Doctorate (DPT) Curriculum (WUSM)**

Coach

M3 –M8 Instructor:

Foot and Ankle Kinesiology

Foot and Ankle Anatomy

Spatiotemporal, Kinematics, and Kinetics of Gait

Diagnosis and management of foot and ankle musculoskeletal conditions

Diabetic foot screening and care

Evidence analysis

Clinician, Scientist, Education curriculum

M4-6 Lab assistant:

Mobilization

Movement exam

Lower extremity manual muscle testing

Threads:

Diagnosis and Management of Movement Problems (Member)

Imaging (Lead)

Legacy Curriculum:

Essential Skills in Physical Therapy II (PT627)

Participating Instructor Mobilization Unit: 1994-present

Diagnosis and Management of Musculoskeletal Conditions in PT III (PT638)

Participating Instructor Foot and Ankle Unit: 1996-present

Case Integration I and II (PT628, PT642)

Participating Instructor and small group leader 2008-present

Case Integration III/DEA III (PT654)

Participating Instructor and student mentor 2010-present

**Current- Movement Science Program (PhD) Curriculum**

Bioenergetics

Participating Instructor: 2019-present

Program Seminar

Grant writing/review: 2018-present

## **UNIVERSITY AND HOSPITAL APPOINTMENTS AND COMMITTEES:**

### **Program in Physical Therapy Committees**

Admissions Committee, Professional Curriculum	2003-present 1997-1998
Committee on Academic Evaluation of Student (CAES) Committee, Member	1999-2010
Faculty Recruitment Committee, Member	2004-2005 2017-2019
Research Advisory Council, Member	2004-present
Clinical Practice Advisory Council, Member	2007-2010
Washington University Program in Physical Therapy, Curriculum Architecture	2019

### **Washington University School of Medicine Committees**

Clinical and Translational Research Funding Program, Grant Reviewer	2014-2016
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### **LICENSURE/REGISTRATION:**

Missouri Board of Registration for the Healing Arts Athletic training registration number: TR 101230 Physical therapist license number: PT 104981	1991-present 1994-present
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### **HONORS AND AWARDS:**

Bronze Tablet, University of Illinois, Champaign-Urbana, IL	1990
Director's Award, Washington University Medical School, Program in Physical Therapy	1993
Roger A. Mann Award for the Outstanding Clinical Study presented at the American Orthopaedic Foot and Ankle Society annual meeting. Controlled Prospective Randomized Clinical Trial on the Effect of Tendo-Achilles Lengthening on Patients With DM and a Neuropathic Plantar Ulcer. Johnson Jeffrey E, Mueller Michael J, Hastings Mary K, Sinacore David R, Engsberg Jack R	2002
Chattanooga Research Award: APTA-Best article on clinical research published in <i>Physical Therapy</i> in 2007	2007
Program in Physical Therapy Graduation Speaker Washington University School of Medicine Title: "The Exams of Life"	2007
ERRIS (Enhancing Rehabilitation Research in the South) Grant Writing Workshop	2011
Hobson Abstract Award at the Diabetic Limb Salvage Conference 1 <sup>st</sup> Place: Progressive Foot Deformity Evident in Neuropathic (Charcot) Arthropathy at One and Two Years. Hastings Mary K., Johnson Jeffrey E., Strube Michael J., Hildebolt Charles F., Bohnert Kathryn L., Prior Fred W., Sinacore David R. 2 <sup>nd</sup> Place: "Volumetric Analysis of Intrinsic Muscle Atrophy in the Diabetic Neuropathic Foot." Cheuy Victor A., Commean Paul K., Hastings Mary K., Mueller Michael J.	2012
Roger A. Mann Award for the Outstanding Clinical Study presented at the American Orthopaedic Foot and Ankle Society annual meeting. Kinetics and Kinematics after the Bridle Procedure for Treatment of Traumatic Foot Drop. Hastings Mary K, Sinacore David R,	2013

Woodburn Jim, Paxton E Scott, Klein Sandra E, McCormick Jeremy J,  
 Bohnert Kathryn L, Beckert Krista S, Stein Michelle L, Strube Michael J,  
 Johnson Jeffrey E.

Program in Physical Therapy Graduation Speaker Washington University School of Medicine Title: “Smart, Active, Confident, and Cute; sometimes...maybe”	2016
Jack Walker Award: APTA-published study in Physical Therapy Journal 2017 presenting novel and innovative research	2017
Outstanding Faculty Mentor Award, Washington University	2020

**EDITORIAL AND EXTERNAL GRANT REVIEWER RESPONSIBILITIES:**

*Journal of Orthopaedic and Sports Physical Therapy*

*Physical Therapy Journal*

*Diabetic Medicine*

*Muscle and Nerve*

*Journal of Biomechanics*

*Clinical Biomechanics*

*Brazilian Journal of Medical and Biological Research*

*PLOS One*

Medical Research Councils UK

National Institute of Health

Diabetes Complications Consortium

Morgan State Health-Related Community-Based Participatory Research Small Grant

**NATIONAL PANELS, COMMITTEES, BOARDS**

Committee member of Foot and Ankle Task Force 2012

International Working Group on the Diabetic Foot-Charcot 2021-2023

**COMMUNITY SERVICE CONTRIBUTIONS**

Professional Societies and Organizations

National Athletic Trainers’ Association, Member 1990-present

Missouri Physical Therapy Association, Member 1999-present  
 Co-Chair of the Research Section 2005-2010

American Physical Therapy Association, Member 1999-present  
 1991-1995

Training in Grantsmanship for Rehabilitation Research, Mentor 2017-present

**MAJOR INVITED PROFESSORSHIPS AND LECTURESHIPS:**

**Topic: Diabetes Related Foot Complications**

“Healing rates by location of diabetic neuropathic (charcot) fractures using total contact casting”  
 Missouri Physical Therapy Association Spring Meeting  
 Osage Beach, MO, March 1997

“Hammer toe deformity, soft tissue density, and peak plantar pressure in subjects with and without diabetes”

Marilyn Gossman Graduate Student Seminar, APTA Combined Sections Meeting  
 Boston, MA, February 2002

“Bone density measures in patients with diabetes mellitus, peripheral neuropathy, and characteristic patterns of mid tarsal joint deformities”  
APTA Combined Sections Meeting  
Nashville, TN, February 2004

“Tarsal and metatarsal bone density assessment using volumetric quantitative computed tomography in subjects with and without charcot changes”  
APTA Combined Sections Meeting  
New Orleans, LA, February 2005

“Effect of Metatarsal Pad Location on Plantar Pressure in People with Diabetes and Peripheral Neuropathy”  
APTA Combined Sections Meeting  
San Diego, CA, February 2006

“Research in Footwear and Orthoses in Individuals with Diabetes Mellitus”  
Pedorthic Footwear Association  
Atlanta, Georgia, November 2006

“Unloading Plantar Ulcerations-Review of Research and Demonstration”  
American Orthotic & Prosthetic Associations National Assembly  
Chicago, IL, September 2008

“Radiographic Correlates of Charcot Neuroarthropathic Deformity Reflect Midfoot Function and Calcaneal Bone Mineral Density”  
NIH Workshop: Charcot Neuroarthropathy: Recent Progress and Future Directions  
Washington D.C., September 2008 and  
APTA Combined Sections Meeting  
Las Vegas, NV, February 2009

“Botulinum Toxin Effect on Plantarflexor Muscle Strength and Plantar Pressure”  
APTA Combined Sections Meeting, New Orleans, LA 2011  
Washington University Research Symposium, October 27, 2010  
Physical Therapy Seminar Series, April 20, 2010

“Progressive Foot Deformity in Neuropathic Charcot Arthropathy at One and Two Years”  
APTA Combined Sections Meeting  
Chicago, IL 2012

“Unloading Plantar Ulcerations in Diabetes: Review of Research and Interactive Session”  
Undersea & Hyperbaric Medical Society  
St. Louis, MO 2012

“Heel Rise Kinetics and Kinematics in Individuals with Diabetes Related Foot Deformity”  
APTA Combined Sections Meeting  
San Diego, CA 2013

“Leg muscle and fat volumes are associated with muscle performance in individuals with diabetes mellitus and peripheral neuropathy” APTA Combined Sections Meeting  
Las Vegas, NV 2014

“Exercise for Diabetic Neuropathy: A Paradigm Shift” APTA Combined Sections Meeting,  
Indianapolis, IN 2015

“Biomechanical contributions to acquired foot deformity in diabetes”  
International Society of Biomechanics  
Glasgow UK 2015

“Physical Therapy Management of People with Diabetes”  
Pennsylvania Physical Therapy Association Annual Conference  
Seven Springs Mountain Resort, PA 2017

“Diabetes: Put your best foot forward”  
Keynote speaker: Wayne State University Physical Therapy Research Symposium  
Detroit MI 2018

“PT from head (motor learning, pain psychology) to toe (foot & ankle mechanics)”  
Panel Presenter: Mary K. Hastings, Ruth L. Chimenti, Beth E. Fisher.  
Combined Sections Meeting  
Washington, DC, 2019

“Muscle, Joint, and Movement Deterioration Contributing to Neuropathic Forefoot Deformity: Intervention Outcomes”  
Research Seminar, Washington University Program in Physical Therapy  
St. Louis MO, 2019

“Forefoot Ulcer Management”  
American Orthopaedic Foot & Ankle Society Annual Meeting  
Chicago IL 2019

“Diabetes and Foot Strength”  
American Orthopaedic Foot & Ankle Society Annual Meeting  
Chicago IL 2019

“Physical Therapist’s Role in Diabetes Prevention and Management”  
Podcast: Yumlish June 2021

“The Way You Move: A Continuing Education Course to Benefit Sustainable Therapy”  
Virtual Conference September 2021

“Diabetes: Focus on Function”  
Pedorthic Footcare Association Annual Virtual Symposium 2021

“Diabetic foot update-from bench to bedside”  
Combined sections meeting, San Antonio TX, 2022

“Keeping your best foot forward: Foot and ankle in the older adult”  
Infinity Rehab Continuing Education 2022

“Accelerated Deterioration: Foot and Ankle Structure and Function in Type 2 Diabetes”  
Washington University Foot and Ankle Orthopaedic Multidisciplinary Conference 2024

**Topic: Movement Impairments of the Foot and Ankle**

“Foot and ankle movement impairment syndromes”  
Diagnosis and Treatment of Movement System Impairment Syndromes: Lower Quarter  
Advanced Application  
Washington University Program in Physical Therapy  
St. Louis MO, 2002, 2004-Present

“Foot and ankle movement impairment syndromes”  
Alumni Day, Washington University Program in Physical Therapy  
St. Louis MO, September 2005

“Movement system impairment syndromes of the foot/ankle with applications of the physical stress theory”  
Annual Conference & Exposition of the APTA  
Orlando FL, June 2006

“The Forgotten Midfoot: Advances in Research Guiding Intervention”

APTA Combined Sections Meeting

Anaheim CA 2016

“Getting back in the game-PT for Tendon/ligament injuries”

American Orthopaedic Foot & Ankle Society, Complete Foot Care Course

St. Louis MO 2016

“PT from head (motor learning, pain psychology) to toe (foot & ankle biomechanics)”

APTA Combined Sections Meeting

Washington DC 2019

“Person-specific Care for Individuals with Foot and Ankle Dysfunction: A Roadmap Beyond Localized Tissue Damage”

APTA Combined Sections Meeting

San Diego CA 2023

“Foot and Ankle Movement System Impairment Syndromes”

Nexus Motion

Virtual 2024

### **Topic: Physical Therapy Diagnoses**

“Knee”

Diagnosis Rounds

Washington University Program in Physical Therapy

St. Louis MO, November 2005

### **Topic: Gait Biomechanics**

“Gait Analysis: Implications for the evaluation and treatment of chronic foot and ankle pain”

NATA National Convention

St. Louis, MO, June 2003

“Biomechanics of the lower extremity during gait”

Pedorthic Footwear Association

Indianapolis, IN, October 2005

“Kinetics and Kinematics after the Bridle Procedure for Treatment of Traumatic Foot Drop”

American Orthopaedic Foot and Ankle Society annual meeting

Hollywood, FL, July 2013

“Stand on your own two feet”- Foot Biomechanics and Gait Analysis

American Orthopaedic Foot & Ankle Society, Complete Foot Care Course

St. Louis, MO 2016

### **Topic: Evidence Analysis**

“Tips for Finding, Analyzing, and Applying Evidence to Practice”

APTA Combined Sections Meeting

Las Vegas, NV, February 2009

### **Topic: Career Development**

“Research Funding Symposium Part 2: Perspectives from Funded PT Researchers

Panel Presenter

Combined Sections Meeting

Washington, DC, 2019

## **CONSULTING RELATIONSHIPS AND BOARD MEMBERSHIPS:**

Dr. Scholl's Professional Council, Member

2006-2013

Dr. Scholl's Consultant

2009-2017

## **RESEARCH SUPPORT**

### **Active:**

Principal Investigator

Chronic Kidney Disease-Mineral Bone Disorder (CKD-MBD) Syndrome in the Diabetic, Neuropathic Foot

NIH 2R01 DK107809-06

9/1/2023-8/31/2028

Principal Investigator

Long Term Outcomes for Modified Oblique Keller Capsular Interposition Arthroplasty (MOKCIA) for the treatment of Hallux Rigidus

AOFAS

5/1/2023-11/30/2024

\$20,000

Mentor

Walking Function in Individuals with Diabetic Peripheral Neuropathy: Biomechanical Mechanisms and Implications for Clinical Outcomes and Gait Retraining

PI: Nicole Kristen Rendos

NIH K01 HD107294

07/01/2022 – 06/30/2027

\$654,425.00

### **Completed:**

Co-Investigator

Visualizing the Diabetic Foot to Optimize Orthotic Fitting

PI: Michael Mueller, PhD, PT

Source: NIH/NICHD/ NCMRR (RO1 HD036895)

January 1, 1998 – November 30, 2001

Total Cost: \$925,166

Co-Investigator

Achilles Tendon Lengthening on Patients with Diabetes

PI: Michael Mueller, PhD, PT

Source: NIH/NICHD/NCMRR (RO1 HD036802)

January 1, 1999 – May 30, 2004

Total Cost: \$756,563

Co-Investigator

Optimal Off-Loading Therapy for Healing Diabetic Ulcers

PI: David Sinacore, PhD, PT

Source: NIH/NIDDK (RO1 DK059224)

April 1, 2001 – March 31, 2005

Total Cost: \$570,000



Co-Investigator

Visualizing the Diabetic Foot to Optimize Orthotic Fitting

PI: Michael Mueller, PhD, PT

Source: NIH/NCMRR (2 R01 HD036895)

December 1, 2002 – November 30, 2008

Total Cost: \$995,840

Principal Investigator

Botulinum Toxin's Effects on Plantar Ulcer Recurrence

PI: Mary Hastings, PT, DPT, ATC

Source: NIH/NICH/NCMRR (R21 HD048972)

January 1, 2005 – December 31, 2008

Total Cost: \$275,000

Co-Investigator

Biomarkers Development for Diabetic Complications

PI: Fred Prior PhD/Dave Sinacore PhD, PT

Source: NIH/ NIDDK (R21 DK079457)

August 1, 2007 – July 31, 2010

Total Cost: \$550,000

Co-Investigator

Effects of Weight Bearing exercise on People with Diabetes and Neuropathic Feet

PI: Michael Mueller, PhD, PT

Source: NIH/NICH/National Center for Medical Rehabilitation Research (R21 HD048972)

May 2009 – April 2010

Total Cost: \$275,000

Principal Investigator

Protocol development grant

Source: Center for Clinical Imaging Research, Washington University School of Medicine

September 1, 2009 – March 1, 2010

Clinical Scientist Scholar

Project Title: Biomechanical Contributions to Acquired Foot Deformity in Diabetes

PI: Michael Mueller PT, PhD

Source: Comprehensive Opportunities in Rehabilitation Research Training (CORRT)/NIH/NICHD, NCMRR, NINDS (K12 HD055931)

September 1, 2009 – August 31, 2014

Total Cost: Total grant \$4,626,510 Hastings portion \$285,170

Postdoctoral Scholar

Research Education, Training and Career Development Clinical and Translational Science Award

PI: Brad Evanoff MD, MPH

Source: Washington University Institute of Clinical and Translational Sciences (CTSA)/NCRR/NIH UL1 RR 024992-01

October 1, 2009 – May 31, 2011

Co-Investigator

Outcomes of the Bridle procedure for the treatment of traumatic foot drop

PI: Jeffrey Johnson

Source: Midwest Stone Institute

October 2009 – May 2012

Principal Investigator  
C-Motion Visual 3D Software Training  
Source: Program in Physical Therapy, Washington University School of Medicine  
April 14, 2010 – December 20, 2010  
Total Cost: \$3,700

Principal Investigator  
Multi-segmental Kinematic Assessment of Foot Motion During Walking  
PI: Mary Hastings, PT, DPT, ATC  
Source: Program in Physical Therapy, Washington University School of Medicine  
April 14, 2010 – December 1, 2010  
Total Cost: \$1,500

Principal Investigator  
Carbon Fiber Ankle Foot Orthosis Design Optimization  
PI: Mary Hastings, PT, DPT, ATC  
Source: Program in Physical Therapy, Washington University School of Medicine  
November 21, 2011 – December 1, 2011  
Total Cost: \$2,000

Principal Investigator  
Project Title: Effects of Discomfort and Lower Extremity Fatigue on Gait and Activity Parameters  
PI: Mary Hastings, PT, DPT, ATC  
Source: Dr. Scholl's  
July 20, 2011 – January 31, 2012  
Total Cost: \$30,000

Mentor  
Project Title: Foot progression angle in individuals with diabetes and peripheral neuropathy  
PI: Ericka Merriwether  
Source: NIH/NIDDK (F31 DK088512-01A1)  
July 1, 2012 – June 30, 2014  
Total Cost: \$58,848

Co-Investigator  
Project Title: MRI Methods for the Assessment of Skeletal Muscle Oxygenation  
Co-PIs: Jie Zheng PhD and Michael Mueller PT, PhD  
Source: NIH CTSA (UL1 TR000448)  
August 23, 2012 – August 22, 2013  
Total Cost: \$9,844.00

Mentor  
Project Title: Foot progression angle in individuals with diabetes and peripheral neuropathy  
PI: Ericka Merriwether  
Source: Foundation for Physical Therapy (PODSII)  
September 1, 2012 – August 31, 2013  
Total Cost: \$15,000

Principal Investigator  
Project Title: Effects of Bump Insole Intervention on Balance  
Source: Dr. Scholl's  
December 30, 2012-December 29, 2013  
Total Cost: \$40,732

Mentor

Project Title: Contributing factors to forefoot deformity in the diabetic, neuropathic foot.

PI: Victor Cheuy

Source: NIH/NIDDK (F31 DK101286)

August 2014-July 2016

Co-Investigator

Project Title: Diabetic upper extremity pathophysiology, limited joint mobility and disability

PI: Michael Mueller PT, PhD

Sources: NIH/NIDDK (R21 DK100793)

September 1, 2014-August 31, 2017

Total Cost: \$419,375

Co-Investigator

Project Title: Characterization of microcirculatory function in diabetic leg and foot with MRI

PI: Jie Zheng, PhD

Source: NIH/ NIAMS (R21 AR065672)

July 1, 2014-June 30, 2017

Total Cost: \$250,000

Co-Principal Investigator

Project Title: Carbon fiber off-loading orthosis

PI: Mary Hastings PT, DPT, MSCI and Mark Wilson, Pros

NIH/NIDDK R41 DK109731

5/24/16-5/23/2018

Total Cost: \$186,737

Co-Principal Investigator

The role of intermuscular fat in diabetic muscle pathology

Source: Program in Physical Therapy, Washington University School of Medicine

April 27, 2015 – April 26, 2017

Total Cost: \$3,000

Co-Investigator

Project Title: Defining the Cellular Basis for Poor Muscle Performance in Diabetic Peripheral Neuropathy

American Orthopaedic Foot and Ankle Society

7/1/17-6/30/2018

Total Cost: \$45,800

Mentor

Project Title: Diabetes-related tendon changes: Integrating ex vivo and in vivo approaches

Principle Investigator: Jennifer Zellers, PhD

NIH/NIDDK F32 DK123916

9/16/2019-9/25/2021

Amount: \$122,836.00

Principal Investigator

Project Title: Muscle, joint and movement deterioration contributing to neuropathic forefoot deformity

NIH/NIDDK R01 DK107809

3/1/2016-2/28/2021

Total Cost: \$1,578,563

Co-Principal Investigator

Project Title: Microcirculatory function in diabetic foot muscles with MRI

Co-PI: Jie Zheng, PhD

NIH/NIDDK RO1 DK105322

4/1/2016 – 3/31/2020

Total Cost: \$2,236,156

Co-Principal Investigator

In Vivo Tendon Structure and Function in Individuals With and Without Diabetes

Source: Program in Physical Therapy, Washington University School of Medicine

June 2019 – June 2021

Total Cost: \$1,995

Principal Investigator

Adaptive capacity of diabetic neuropathic muscle: Pilot study

ICTS (\$5,000)/MIR (\$12,500)/Physical Therapy Research Division (\$2,135)

## **TRAINEE/MENTEE/SPONSORSHIP RECORD**

### **Student Advisement (DPT)**

Melissa Stevens: “A Treatment Guideline for a Patient with an Osteochondritis Desiccans Lesions of the Talus” May 2004 (DPT)

Gretchen Leff: “An application of the physical stress theory to the rehabilitation of complex foot/ankle injuries with prolonged immobilization in a post-menopausal female: A case report” Complete April 2014 (DPT)

### **Research Advisement (PhD Students/Post-Doctoral Fellows/Residents)**

Nicole Mercer Bolton MD, PT: Radiographic measures of foot alignment. 2010

Scott Paxton MD: Radiographic measures of foot alignment. 2010

Ericka Merriwether PT, DPT, PhD, ATC: Ankle/Foot biomechanics including use of multi-segmental foot kinematic analysis. 2011-2014

Victor Cheuy, PhD, MS, BS: Ankle/Foot biomechanics including use of multi-segmental foot kinematic analysis. 2013-2015

Hyo-Jung Jeong, PT, PhD, BS: Ankle/Foot biomechanics. 2016-2021

Jennifer Zellers, PT, DPT, PhD: Diabetes related tendon changes. 2018-2021

Annalisa Na, PT, DPT, PhD: Diabetes associate complications in total knee replacement rehabilitation 2018-2022

Nicole Rendos, BS, MEd PhD: Walking Function in Individuals with Diabetic Peripheral Neuropathy: Biomechanical Mechanisms and Implications for Clinical Outcomes and Gait Retraining. 2022-present

Hyo-Jung Jeong, PT, PhD: Bone density and grant writing and management. 2023-present

**Training In Grantsmanship for Rehabilitation Research (TIGRR) program (NIH/NICHHD 2R25HD074546-07):**

Emma Beisheim-Ryan, PT, DPT, PhD (2024)

Megan Houston Roach, PhD, ATC (2024)

Rashelle Hoffman PT, DPT, PhD, GCS (2023)

Molly Baumann, PhD (2023)

Allison Cogan PhD, OTR/L (2022)  
Reivian Berrios Barillas PT, DPT, PhD (2022)  
Stephanie Di Stasi PT, PhD (2021)  
Chun-Kai Huang PhD (2021)  
Devos Hannes (2020)  
Federico Pozzi PT, PhD (2020)  
Liang-Ching Tsai, PT, PhD (2019)  
Alison Chang DPT (2019)  
Prakash Jayabalan MD, PhD (2018)  
Jo Armour-Smith PT, PhD, OCS (2018)  
Meryl Alappattu DPT, PhD (2017)  
David Logerstedt PT, MA, PhD (2017)

**PATENT:**

#60/957,238 – Multi-Plug Design Shoe Insole (Provisional)

**PUBLICATIONS:**

**Peer Reviewed Manuscripts:**

**Hastings MK**, Mueller MJ, Sinacore DR, Salsich GB, Engsborg JR, Johnson JE. Effects of a tendo-achilles lengthening procedure on muscle function and gait characteristics in a patient with diabetes mellitus. *Journal of Orthopaedic and Sports Physical Therapy*. 2000;30(2):85-90. PMID: 10693086

Klaesner JW, Commean PK, **Hastings MK**, Zou D, Mueller MJ. Accuracy and reliability testing of a portable soft tissue indenter. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. 2001;9(2):232-240. PMID: 11474976

Klaesner JW, **Hastings MK**, Zou D, Lewis C, Mueller MJ. Plantar tissue stiffness in patients with diabetes mellitus and peripheral neuropathy. *Archives of Physical Medicine & Rehabilitation*. 2002;83(12):1796-1801. PMID: 12474190

Mueller MJ, Sinacore DR, **Hastings MK**, Strube MJ, Johnson JE. Effect of Achilles tendon lengthening on neuropathic plantar ulcers. A randomized clinical trial. *Journal of Bone and Joint Surgery*. 2003;85-A(8):1436-1445.

**Hastings MK**, Commean PK, Smith KE, Pilgram TK, Mueller MJ. Aligning Anatomical Structure from Spiral X-ray Computed Tomography with Plantar Pressure Data. *Clinical Biomechanics*. 2003;18(9):877-882. PMID: 14527816

Mueller MJ, Sinacore DR, **Hastings MK**, Lott DJ, Strube MJ, Johnson JE. Impact of Achilles tendon lengthening on functional limitations and perceived disability in people with a neuropathic plantar ulcer. *Diabetes Care*. 2004;27(7):1559-1564. PMID: 15220228

**Hastings MK**, Sinacore DR, Fielder FA, Johnson JE. Bone mineral density during total contact cast Immobilization for a patient with Neuropathic (Charcot) Arthropathy. *Physical Therapy*. 2005;85(3):249-256. PMID: 15733049

Salsich GB, Mueller MJ, **Hastings MK**, Sinacore DR, Strube MJ, Johnson JE. Effect of tendo achilles lengthening procedure on plantar flexor muscle performance in people with diabetes and a neuropathic plantar ulcer. *Physical Therapy*. 2005;85(1):34-43. PMID: 15623360

Mueller MJ, Lott DJ, **Hastings MK**, Commean PK, Smith KE, Pilgram TK. Efficacy and Mechanism of Orthotic Devices to Unload Metatarsal Heads in People with Diabetes and a History of Plantar Ulcer. *Physical Therapy*. 2006;86(6):833-842. PMID: 16737409

Lott DJ, **Hastings MK**, Commean PK, Smith KE, and Mueller MJ. Effect of footwear and orthotic devices on stress reduction and soft tissue strain of the neuropathic foot. *Clinical Biomechanics*. 2007;22(3):352-359. PMID: 17182156

**Hastings MK**, Mueller MJ, Pilgram TK, Lott DJ, Commean PK, Johnson JE. Effect of metatarsal pad placement on plantar pressure in people with diabetes and peripheral neuropathy. *Ankle & Foot International*. 2007;28(1):84-88. PMID: 17257544

Prior F, Commean PK, Ju T, **Hastings MK**, Hildeboth CF, Sinacore DR. Developing a biomarker for neuropathic arthropathy in diabetic patients. 2007 IEEE/NIH Life Science Systems and Applications Workshop (LISSA 2007).

Garcia CA, Hoffman SL, **Hastings MK**, Klaesner JW, Mueller MJ. Effect of metatarsal phalangeal joint extension on plantar soft tissue stiffness and thickness. *Foot*. 2008;18:61-67. PMCID: PMC2607031

Sinacore DR, Bohnert KL, **Hastings MK**, Johnson JE. Mid foot kinetics characterize structural polymorphism in diabetic foot disease. *Clinical Biomechanics*. 2008;23(5):653-661. PMCID: PMC2517423

**Hastings MK**, Gelber JR, Commean PK, Prior FW, Sinacore DR. Bone mineral density of the tarsals and metatarsals with reloading. *Physical Therapy*. 2008;88(6):766-779. PMCID 2409979

Actis RL, Ventura LB, Lott DJ, Smith KE, Commean PK, **Hastings MK**, Mueller MJ. Multi-plug insole design to reduce peak plantar pressure on the diabetic foot during walking. *Med Bio Eng Comput*. 2008;46(4):363-371. PMCID: PMC2650823

Sinacore DR, **Hastings MK**, Bohnert KL, Fielder FA, Villareal DT, Blair VP, Johnson JE. Inflammatory osteolysis in diabetic neuropathic (Charcot) arthropathies of the foot. *Physical Therapy*. 2008;88(11):1399-1407. PMCID: PMC2579909

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Mueller MJ, **Sorensen CJ**, McGill JB, Clark BR, Lang CE, Chen L, Bohnert KL, Hasting MK. Effect of a Shoulder Movement Intervention on Joint Mobility, Pain and Disability in People with Diabetes. American Diabetes Association 77<sup>th</sup> Scientific Sessions. San Diego, CA. 2017

Foster SN, Harris MD, **Hastings MK**, Mueller MJ, Wiseman T, Huber N, Harris-Hayes MJ. Ankle Dorsiflexion and 2D hip, pelvic, and trunk kinematics in patients with chronic hip joint pain during forward step-down. SubAPTA Combined Sections Meeting. New Orleans, LA 2018.

Jeong H, Mueller MJ, **Hastings MK**. Performance of bilateral and unilateral heel rise task in people with diabetes mellitus and peripheral neuropathy. APTA Combined Sections Meeting. New Orleans, LA 2018.

Zheng J, **Hastings MK**, Zayed M, Mueller MJ. Magnetic resonance imaging of diabetic feet-going with the flow. Society for Magnetic Resonance Angiography 30<sup>th</sup> Annual International Conference. Glasgow, Scotland 2018.

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Zellers JA, Eekhoff J, Walk R, Tang SY, **Hastings MK**, Lake S. Relationship of advanced glycation end-product accumulation with posterior tibialis tendon mechanics. APTA Combined Sections Meeting. Denver, CO 2020.

Jeong H-J, Mueller MJ, Stumpf JL, **Hastings MK**. Role of foot and ankle joint mobility on heel rise performance in people with diabetes. APTA Combined Sections Meeting. Denver, CO 2020.

Brogan HV, Sorensen CJ, Mueller MJ, **Hastings MK**. Decline in Physical Activity in Individuals with Diabetes Mellitus and Peripheral Neuropathy. APTA Combined Sections Meeting. Denver, CO 2020.

Zellers JA, Eekhoff JD, Walk R, **Hastings MK**, Tang SY, Lake SP. Collagen organization – but not glycation – predicts mechanical behavior in human Achilles tendon. Orthopaedic Research Society annual meeting 2021, held virtually. Poster presentation.

Zellers JA, Edalati M, Tang SY, Lake SP, Eekhoff JD, Walk R, Zheng J, **Hastings MK**. Diffusion tensor imaging reveals collagen content and organization in ex vivo human Achilles tendon. Orthopaedic Research Society annual meeting 2021. Poster presentation.

Zellers JA, Zheng J, Youmans NJ, Tang SY, Lake SP, **Hastings MK**. Tendon changes with glycation on quantitative magnetic resonance imaging. APTA Combined Sections Meeting 2021. Poster presentation.

Youmans NJ, **Hastings MK**, Mueller MJ, Commean PK, Zellers JA. Variability in rate of bone mineral density loss between bones in the diabetic foot. APTA Combined Sections Meeting 2021. Poster presentation.

Sinacore DR, Jones MA, **Hastings MK**, Cheuy VA, Ford KR. Incipient Biomarkers of Elevated risk for neuropathic foot deformity across stages of chronic kidney disease-mineral bone disorder (CKD-MBD). APTA Combined Sections Meeting 2022. Submitted

Jeong HJ, Cha B, Zellers JA, Chen L, **Hastings MK**. Midfoot and Ankle Coupling during Heel Rise in People with and without Diabetes Mellitus. APTA Combined Sections Meeting 2022. Platform presentation.

Bohnert KL, York A, Jeong HJ, Zellers JA, Chen L, **Hastings MK**. Blood glucose control worsens, sedentary time stable over 4 years and COVID. APTA Combined Sections Meeting 2022. Poster presentation.

Pruthi S, McNish R, Lohse K, Hastings MK, Zheng J, Edalati M, Zellers JA. Preliminary reproducibility analysis of diffusion tensor imaging of the Achilles tendon. American Medical Association Research Challenge Conference 2022. Poster Presentation

McNish RN, Pruthi S, Hastings MK, Mueller MJ, Zheng J, Zellers JA. Relationships of functional performance with quantitative MRI in healthy Achilles tendon. American Physical Therapy Associations Combined Sections Meeting 2023, San Diego, CA. Platform presentation.

Kaszyk E, Hastings MK. Foot intrinsic muscle deterioration in individuals with Type 2 diabetes mellitus and peripheral neuropathy. APTA Combined Sections Meeting 2023, San Diego, CA. Platform presentation.

Vaidya RS, Youmans NJ, Chen L, Jeong H-J, York A, Commean P, Hastings MJ, Zellers JA. Rate of tarsal and metatarsal bone mineral density change in adults with diabetes mellitus and peripheral neuropathy: A longitudinal study. Orthopaedic Research Society, Annual Meeting 2023, Dallas, TX. Poster presentation

Kaszyk E, Steger-May K, Jeong HJ, Zellers JA, Hastings MK. Bone Mineral Density Contributes to Longitudinal Changes in Diabetic Neuropathic Forefoot Deformity. APTA Combined Sections Meeting 2024, Boston, MA. Platform presentation.

Gross R, Sadoughi S, Sinacore DR, Hastings MK, Kazakia GJ, Cheuy VA. Altered Bone Quality and Planter Pressure in the Diabetic Neuropathic Foot with Chronic Kidney Disease. APTA Combined Sections Meeting 2024, Boston, MA. Platform presentation.

Cheuy V, Gross R, Sadoughi S, Ramil G, Sinacore D, Hastings M, Kazakia G. Risk Factors For Amputation In The Diabetic, Neuropathic Foot In Patients With Chronic Kidney Disease. ORS 2024, Long Beach, CA.

#### **Service:**

Kirkwood Baptist Church Adult Sunday School Teacher	1998-present
Kirkwood Baptist Church Deacon	1999-2001
Kirkwood Baptist Church Pastor Search Committee Member	2001-2003
Kirkwood Baptist Church Playground Adhoc Committee Chairperson	2003-2005
Kirkwood Baptist Church, Hands on Kirkwood, Community-wide day of service Organization committee member and team leader	2009-present
St. Louis Gymnastics Center Parent Organization Member	2010-2015
Kirkwood Baptist Church, Youth Council Chairperson	2012-2019
Kirkwood Baptist Church, Nominating Committee Chairperson	2016-2019



Kirkwood Baptist Church, Gift ID Council Chairperson	2017-2019
Kirkwood Baptist Church, Church Leadership Council Member	2017-2021
Kirkwood Baptist Church, Church Leadership Council Chairperson	2022-2023