

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

**DATE:** June 2026

**CONTACT INFORMATION:**

Business: 4444 Forest Park Boulevard, MSC 8502-66-1101  
St. Louis, MO 63108-2292  
Main: 314-286-1400  
Direct: 314-286-1433  
Facsimile: 314-286-1410  
Email: [hastingsmk@wustl.edu](mailto:hastingsmk@wustl.edu)

**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><br>Champaign/Urbana, IL   | Kinesiology            | 1990           |
|               | <b>Virginia Polytechnic Institute</b><br>Blacksburg, VA | Exercise Physiology    | 1990-91        |
| MS            | <b>Washington University</b><br>St. Louis, MO           | Physical Therapy       | 1993           |
| DPT           | <b>Washington University</b><br>St. Louis, MO           | Physical Therapy       | 2002           |
| MS            | <b>Washington University</b><br>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><br>Blackburg, VA                                                                  | 1990-1991      |
| Laboratory Teaching Assistant       | <b>Washington University</b><br>Program in Physical Therapy<br>St. Louis, MO                                            | 1994-1999      |
| Instructor                          | <b>Washington University School of Medicine</b><br>Program in Physical Therapy<br>St. Louis, MO                         | 1999-2004      |
| Assistant Professor                 | <b>Washington University School of Medicine</b><br>Program in Physical Therapy and Orthopaedic Surgery<br>St. Louis, MO | 2005-2011      |
| Associate Professor                 | <b>Washington University School of Medicine</b><br>Program in Physical Therapy and Orthopaedic Surgery<br>St. Louis, MO | 2012-2017      |
| Professor                           | <b>Washington University School of Medicine</b><br>Program in Physical Therapy and Orthopaedic Surgery<br>St. Louis, MO | 2017-present   |

## **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

Clinician, Scientist, Education curriculum

M4-6 Lab assistant:

Mobilization

Movement exam

Lower extremity manual muscle testing, goniometry

Negotiation Practical

M6-M8 Assignment management

Musculoskeletal foot/ankle pain paper

Knowledge to Action Project

Threads:

Diagnosis and Management of Movement Problems (Member)

Imaging (Lead)

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

Bioenergetics

Participating Instructor: 2019-present

Program Seminar

Grant writing/review: 2018-present

### **Previous-Professional Clinical Doctorate (DPT) Curriculum (WUSM)**

Legacy Curriculum:

Essential Skills in Physical Therapy II (PT627)

Participating Instructor Mobilization Unit: 1994-2022

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

Participating Instructor Foot and Ankle Unit: 1996-2022

Case Integration I and II (PT628, PT642)

Participating Instructor and small group leader 2008-2022

Case Integration III/DEA III (PT654)

Participating Instructor and student mentor 2010-2022

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

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

Admissions Committee, Professional Curriculum

2003-present

|                                                                            |                        |
|----------------------------------------------------------------------------|------------------------|
| Committee on Academic Evaluation of Student (CAES) Committee, Member       | 1997-1998<br>1999-2010 |
| Faculty Recruitment Committee, Member                                      | 2004-2005<br>2017-2019 |
| Research Advisory Council, Member                                          | 2004-present           |
| Clinical Practice Advisory Council, Member                                 | 2007-2010              |
| Washington University Program in Physical Therapy, Curriculum Architecture | 2019                   |
| <b>Washington University School of Medicine Committees</b>                 |                        |
| Clinical and Translational Research Funding Program, Grant Reviewer        | 2014-2016              |

#### **LICENSURE/REGISTRATION:**

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

#### **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<br>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<br>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.<br>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, 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.                                                                                  | 2013 |

|                                                                                                                                                              |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Program in Physical Therapy Graduation Speaker<br>Washington University School of Medicine Title: “Smart, Active, Confident,<br>and Cute; sometimes...maybe” | 2016 |
| Jack Walker Award: APTA-published study in Physical Therapy Journal 2017<br>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-Present |
|----------------------------------------------------------|--------------|

#### **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  
APTA Combined Sections Meeting  
Washington, DC, 2019

**Topic: Footwear**

“Basics of footwear and orthotics”  
Washington University Division of Rheumatology-Fellows seminar  
St. Louis, MO 2025

## **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 DK107809-08

9/1/2023-8/31/2028

\$3,410,951

Co-Investigator

Targeting Intramuscular Adipose Quality in Aging

PI: Gretchen Meyer PhD

NIH R21 AG091159

2/15/2026-1/31/2028

\$427,625

Mentor

Identifying Early Signs of Foot Complications in Childhood-onset Type 2 Diabetes Mellitus

PI: Hyo Jung Jeong

K99DK142010

09/02/2025-08/31/2027

\$181,500.00

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

Mentor

Identifying Early Signs of Foot Complications in Childhood-onset Type 2 Diabetes Mellitus

PI: Hyo Jung Jeong

K99DK142010

09/02/2025-08/31/2027

\$181,500.00

### **Pending:**

Principal Investigator

Personalized and adapted physical activity to improve diabetes management in aging adults with mobility disabilities

American Diabetes Association

9/1/2026-8/31/2029

\$600,000.00

Co- Investigator

Functional 7T MRI of Skeletal Muscle Perfusion and Metabolism for Early Detection and

Clinical Phenotyping of Peripheral Artery Disease in Type 2 Diabetes

PI: Jie Zheng

NIH

7/1/2027-6/31/2032

Co- Investigator

Clinical Validation of Circulating Fatty Acid Synthase for the Diagnosis and Monitoring of

PI: Mohamed Zayed

NIH

7/1/2027-6/31/2032

**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 HD058938)

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)

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

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

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

Melissa Stevens: “A Treatment Guideline for a Patient with an Osteochondritis Dissecans 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 associated 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/NICHD 2R25HD074546-07):**

Kyle Embry PhD (2026)

Kristin Johnson PT, DPT, PhD (2026)

Shelia Clemens PT, MPT, PhD (2025)

Kerry Costello PhD (2025)

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, Engsberg 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

Sinacore DR, **Hastings MK**, Bohnert KL. Impact loads and plantar stresses while walking in subjects with adult-acquired, neuropathic medial column foot deformity. *Journal of Orthopaedic and Sports Physical Therapy*. 2009;39(1):A21.

Commean PK, Ju T, Liu Lu, Sinacore DR, **Hastings MK**, Mueller MJ. Tarsal and Metatarsal Bone Mineral Density Measurement using Volumetric Quantitative Computed Tomography. *Journal of Digital Imaging*. 2009;22(5):492-502. PMCID: PMC2745489

**Hastings MK**, Gelber JR, Isaac, EJ, Bohnert, KL, Strube MJ, Sinacore DR. Foot progression angle and medial loading in individuals with diabetes mellitus, peripheral neuropathy, and a foot ulcer. *Gait and Posture*. 2010;32:237-241. PMCID: PMC2409979

Gutekunst DJ, **Hastings MK**, Bohnert KL, Strube MJ, Sinacore DR. Removable cast walker boots yield greater forefoot off-loading than total contact casts. *Clinical Biomechanics*. 2011;26(6):649-654. PMCID: PMC3119372

**Hastings MK**, Sinacore DR, Mercer-Bolton N, McCormick J, Hildebolt CK, Prior FW, Johnson JE. Precision of foot alignment measures in individuals with diabetes mellitus related neuropathic charcot arthropathy. *Foot and Ankle International*. 2011;32(9):867-872. PMCID: PMC3586199

Commean PK, Tuttle LJ, **Hastings MK**, Strube MJ, Mueller MJ. Magnetic resonance imaging measurement reproducibility for calf muscle and adipose tissue volume. *J of Magnetic Resonance Imaging*. 2011;34(6):1285-1294. PMCID: PMC3221819.

Commean PK, Kennedy JA, Bahow KA, Hildebolt CF, Smith KE, Liu L, **Hastings MK**, Ju T, Prior FW, Sinacore DR. Volumetric Quantitative Computed Tomography Measurement Precision for Volumes and Densities of Tarsal and Metatarsal Bones. *J of Clinical Densitometry*. 2011;14(3):313-320. PMCID: PMC21723764

Tuttle LJ, **Hastings MK**, Mueller MJ. A moderate-intensity weight-bearing exercise program for a person with type 2 diabetes and peripheral neuropathy. *Physical Therapy*. 2012;92(1):133-141. PMCID: PMC3258413

**Hastings MK**, Mueller MJ, Sinacore DR, Strube MJ, Crowner BE, Johnson JE, Racette BR. Botulinum toxin effect on plantarflexor muscle strength and plantar pressure in people with diabetes mellitus, peripheral neuropathy, and a plantar ulcer. *Foot and Ankle International*. 2012;33(5):363-370. PMCID: PMC3747956

**Hastings MK**, Johnson JE, Strube MJ, Hildebolt CF, Bohnert KL, Prior FW, Sinacore DR. Progressive Foot Deformity in Neuropathic (Charcot) osteoarthropathy. *Journal of Bone and Joint Surgery American*. 2013;95(13):1206-1213. PMCID: PMC3689259

Mueller MJ, Tuttle LJ, LeMaster JW, Strube MJ, McGill JB, **Hastings MK**, Sinacore DR. A weight-bearing versus non-weight-bearing exercise program for people with diabetes and peripheral neuropathy: A randomized controlled trial. *Archives of Physical Medicine Rehabilitation*. 2013;94(5):829-38. PMCID: PMC3637853

**Hastings MK**, Sinacore DR, Woodburn J, Paxton ES, Klein SE, McCormick JJ, Bohnert KL, Beckert KS, Stein ML, Strube MJ, Johnson JE. Kinetics and Kinematics after the Bridle Procedure for Treatment of Traumatic Foot Drop. *Clinical Biomechanics*. 2013;28(5):555-561. PMCID: PMC3934630

Cheuy VA, Commean PK, **Hastings MK**, Mueller MJ. Reliability and validity of a magnetic resonance-based volumetric analysis of the intrinsic foot muscles. *Journal of Magnetic Resonance Imaging*. 2013;38(5):1083-1093. PMCID: PMC4400725

Sinacore DR, Gutekunst DJ, **Hastings MK**, Strube MJ, Bohnert KL, Prior FW, Johnson JE. Neuropathic midfoot deformity: associations with ankle and subtalar joint motion. *Journal of Foot and Ankle Research*. 2013;6(1):11. PMCID: PMC3616933

Cheuy VA, **Hastings MK**, Commean PK, Ward SR, Mueller MJ. Intrinsic foot muscle deterioration is associated with metatarsophalangeal joint angle in people with diabetes and neuropathy. *Clinical Biomechanics*. 2013;28(9-10):1055-1060. PMCID: PMC3893062

Zheng J, **Hastings MK**, Zhang X, Coggan A, An H, Snozek D, Curci J, Mueller MJ. A pilot study of regional perfusion and oxygenation in calf muscles of diabetes with a noninvasive measure. *Journal of Vascular Surgery*. 2014;59(2):419-426. PMCID: PMC4114721

Gelber JR, Sinacore DR, Strube MJ, Mueller MJ, Johnson JE, Prior FW, **Hastings MK**. Windlass mechanism in individuals with diabetes mellitus, peripheral neuropathy and low medial longitudinal arch height. *Foot and Ankle International*. 2014;35(8):816-824. PMCID: PMC4262736

**Hastings MK**, Woodburn J, Mueller MJ, Strube MJ, Johnson JE, Sinacore DR. Kinematics and kinetics of single-limb heel rise in diabetes related medial column foot deformity. *Clinical Biomechanics*. 2014;29(9):1016-1022. PMCID: PMC4253905

**Hastings MK**, Woodburn J, Mueller MJ, Strube MJ, Johnson JE, Beckert KS, Stein ML, Sinacore DR. Radiographic-directed local coordinate systems critical in kinematic analysis of walking in diabetes-related medial column foot deformity. *Gait Posture*. 2014;40(1):128-33. PMCID: PMC4038905.

Zou D, He T, Dailey M, Smith KE, Silva MJ, Sinacore DR, Mueller MJ, **Hastings MK**. Experimental and computational analysis of composite ankle-foot orthosis. *Journal of Rehabilitation Research and Development*. 2014;51(10): 1525-1536.

Zheng J, **Hastings MK**, Muccigross D, Fan Z, Gaso F, Curci J, Hildebolt CF, Mueller MJ. Non-contrast MRI perfusion angiosome in diabetic feet. *European Radiology*. 2015;25(1):99-105.

Johnson JE, Paxton ES, Lippe J, Bohnert KL, Sinacore DR, **Hastings MK**, McCormick JJ, Klein SE. Outcomes of the Bridle Procedure for the treatment of foot drop. *Foot and Ankle International*. 2015;36(11):1287-1296. PMCID: PMC5257245

Bittel DC, Bittel AJ, Tuttle LJ, **Hastings MK**, Commean PK, Mueller MJ, Cade WT, Sinacore DR. Adipose tissue content, muscle performance and physical function in obese adults with type 2 diabetes mellitus and peripheral neuropathy. *Journal of Diabetes Complications*. 2015;29(2);250-257. PMCID: PMC4333054

**Hastings MK**, Dailey MM, Zou D, Sinacore DR, Mueller MJ. Comparing plantarflexor power and function using carbon fiber versus traditional thermoplastic ankle foot orthoses: Case Series. *Clinical Research on Foot & Ankle*. 2015;3:168

**Hastings MK**, Mueller MJ, Woodburn J, Strube MJ, Commean PK, Johnson JE, Cheuy V, Sinacore DR. Acquired midfoot deformity and function in individuals with diabetes and peripheral neuropathy *Clinical Biomechanics*. 2016;32;261-267. PMCID: PMC4779409.

Merriwether EN, **Hastings MK**, Bohnert KL, Hollman JH, Strube MJ, Sinacore DR. Impact of foot progression angle modification on plantar loading in individuals with diabetes mellitus and peripheral neuropathy. *Edorium Journal of Disability and Rehabilitation*. 2016;2(1);15-23. PMCID: PMC5154677

Cheuy VA, **Hastings MK**, Commean PK, Mueller MJ. Muscle and joint factors associated with forefoot deformity in the diabetic neuropathic foot. *Foot and Ankle International*. 2016;37(5);514-521. PMCID: PMC5111819

Cheuy VA, **Hastings MK**, Mueller MJ. Metatarsophalangeal hyperextension movement pattern related to diabetic forefoot deformity. *Physical Therapy Journal*. 2016;96(8);1143-1151. PMCID: PMC4992145

Zheng J, Muccigrosso D, Zhang X, An H, Coggan AR, Adi B, Hildebolt CF, Vemuri C, Geraghty P, **Hastings MK**, Mueller MJ. Oximetric angiosome imaging in diabetic feet. *Journal of Magnetic Resonance Imaging*. 2016;44(4);940-946. PMCID: PMC5369352.

Merriwether EN, **Hastings MK**, Mueller MJ, Bohnert KL, Strube MJ, Snozek DR, Sinacore DR. Static and dynamic predictors of foot progression angle in individuals with and without diabetes mellitus and peripheral neuropathy. *The Annals of Gerontology and Geriatric Research*. 2016;3(2):1038. PMCID: PMC5117663

Kluding PM, Bareiss SK, **Hastings MK**, Marcus R, Sinacore DR, Mueller MJ. Physical training and activity in people with diabetic peripheral neuropathy: A paradigm shift. *Physical Therapy*. 2017;97(1);31-43. PMCID: PMC6256941

Sorensen CJ, **Hastings MK**, Lang CE, McGill JB, Clark BR, Bohnert KL, Mueller MJ. Relationship of shoulder activity and skin intrinsic fluorescence with low level shoulder pain and disability in people with type 2 diabetes. *Journal of Diabetes and Its Complications*. 2017;31(6); 983-987. PMCID: PMC5438882

Sinacore DR, Bohnert KL, Smith KE, **Hastings MK**, Commean PK, Gutekunst DJ, Johnson JE, Prior FW. Persistent inflammation with pedal osteolysis 1 year after Charcot neuropathic osteoarthropathy. *Journal of Diabetes and Its Complications*. 2017;31(6);1014-1020. PMCID: PMC5438890.

Sinacore DR, **Hastings MK**, Bohnert KL, Strube MJ, Gutekunst DJ, Johnson JE. Immobilization-induced osteolysis and recovery in neuropathic foot impairments. *Bone*. 2017;105;237-244. PMCID: PMC5650927

Mueller MJ, Sorensen CJ, McGill JB, Clark BR, Lang CE, Chen L, Bohnert KL, **Hastings MK**. Effect of a shoulder movement intervention on joint mobility, pain, and disability in people with diabetes: A randomized controlled trial. *Diabetes*. 2018;98(9);745-753. PMCID: PMC6692706

Edalati M, Sorensen C, **Hastings MK**, Zayed M, Mueller MJ, Zheng J. Diffusion tensor imaging of the calf muscles in subjects with and without diabetes mellitus. *Journal of Magnetic Resonance Imaging*. 2019;49(5);1285-1295. PMCID: PMC6424658

Edalati M, **Hastings MK**, Muccigrosso D, Sorensen CJ, Hildebolt C, Zayed MA, Mueller MJ, Zheng J. Intravenous contrast-free standardized exercise perfusion imaging in diabetic feet with ulcers. *Journal of Magnetic Resonance Imaging*. 2019;50(2);474-480. PMCID: PMC6933046

Harris-Hayes M, Schootman M, Schootman JC, **Hastings MK**. The Role of Physical Therapists in the Type 2 Diabetic Epidemic. *Journal of Orthopaedic and Sports Physical Therapy*. 2020;50(1);5-16. PMCID: PMC7069691.

Zellers JA, Mueller MJ, Commean PK, Chen L, Jeong H-J, **Hastings MK**. Multi-System Factors Associated with Metatarsophalangeal Joint Deformity in Individuals with Type 2 Diabetes. *Journal of Clinical Medicine*, 2020;9(4), 1012. PMCID: PMC7230982

Bohnert KL, **Hastings MK**, Sinacore DR, Johnson JE, Klein SE, McCormick JJ, Gontarz P, Meyer GA. Skeletal Muscle Regeneration in Advanced Diabetic Peripheral Neuropathy. *Foot and Ankle International*. 2020;41(5):536-548. PMCID: PMC8783612

**Hastings MK**, Jeong H, Sorensen CJ, Zellers JA, Chen L, Bohnert KL, Snozek D, Mueller MJ. Relationships within and between lower and upper extremity dysfunction in people with diabetes. *The Foot*. 2020;44:101680. PMCID: PMC7483835.

Foster SN, Harris MD, **Hastings MK**, Salsich GB, Mueller MJ, Harris-Hayes M. Static Ankle Dorsiflexion and Hip and Pelvis Kinematics during Forward Step-Down in Patients with Hip-Related Groin Pain. *J Sport Rehabil*. 2020;8:1-8. PMCID: PMC8184886

Jeong JJ, Mueller MJ, Zellers JA, **Hastings MK**. Midfoot and ankle motion during heel rise and gait are related in people with diabetes and peripheral neuropathy. *Gait & Posture*. 2021;84:38-44. PMCID: PMC8330810.

**Hastings MK**, Commean PK, Chen L, Zellers JA, Sinacore DR, Baker JC. Qualitative study of musculoskeletal tissues and their radiographic correlates in diabetic neuropathic foot deformity. *The Foot*. 2021;47. PMCID: PMC8212350.

Jeong H, Mueller MJ, Zellers JA, Yan Y, **Hastings MK**. Heel rise and non-weightbearing tasks to assess foot and ankle function in people with diabetes mellitus and peripheral neuropathy. *Physical Therapy*. 2021;101(7):1-9. PMCID: PMC8280925.

Zellers JA, Bernhardson HJ, Jeong HJ, Commean PK, Chen L, Mueller MH, **Hastings MK**. Association of toe-extension movement pattern magnitude and variability during three functional tasks with diabetic foot complications. *Clinical Biomechanics*. 2021;85. PMCID: PMC8283772.

Zheng J, Li R, Zayed M, Yan Y, An, H, **Hastings MK**. Pilot study of contrast-free MRI reveals significantly impaired calf skeletal muscle perfusion in diabetes with incompressible peripheral arteries. *Vascular Medicine*. 2021;26(4):367-373. PMCID: PMC8822493.

Zheng J, Sorensen C, Li R, An H, Hildebolt CF, Zayed MA, Mueller MJ, **Hastings MK**. Deteriorated regional calf microcirculation measured by contrast-free MRI in patients with diabetes mellitus and relation with physical activity. *Diabetes and Vascular Disease Research*. 2021;18(4):1-8. PMCID: PMC8481746.

Zellers JA, Commean PK, Chen L, Mueller MJ, **Hastings MK**. A limited number of slices yields comparable results to all slices in foot intrinsic muscle deterioration ratio on computed tomography and magnetic resonance imaging. *Journal of Biomechanics*. 2021;129, 110750. PMCID: PMC9152770.

Zellers JA, Eekhoff JD, Walk R, **Hastings MK**, Tang SY, Lake SP. Human Achilles tendon mechanical behavior more strongly related to collagen disorganization than advanced glycation end-products content. *Scientific Reports*. 2021;11(1):24147. PMCID: PMC8683434.

- Holmes CJ, **Hastings MK**. The application of exercise training for diabetic peripheral neuropathy. *Journal of Clinical Medicine*. 2021;10(21): 5042. PMCID: PMC8584831.
- Commean PK, Mueller MJ, Chen L, Wolfsberger MA, **Hastings MK**. Computed tomography and magnetic resonance correlation and agreement for foot muscle and adipose tissue measurements. *Journal of Computer Assisted Tomography*. 2022;46(2), 212-218.
- Jeong H, Cha B, Zellers JA, Chen L, **Hastings MK**. Midfoot and ankle movement coordination during heel rise is disrupted in people with diabetes and peripheral neuropathy. *Clinical Biomechanics*. 2022;96:105662. PMID: 35569256.
- Jeong H, Mueller MJ, Zellers JA, Commean PK, Chen L, **Hastings MK**. Body mass index and maximum available midfoot motion are associated with midfoot angle at peak heel rise in people with diabetes. *Foot*. 2022;51:101912. PMCID: PMC9169461.
- Bohnert K, Zellers JZ, Hyo-Jung J, York A, Chen L, **Hastings MK**. Remote research: Resource, intervention needs, and methods in people with diabetes and peripheral neuropathy. *Journal of Diabetes Science and Technology*. 2023;17(1):52-58. PMCID: PMC9846402.
- Youmans N, Vaidya R, Chen L, Jeong HJ, York A, Commean PK, **Hastings MK**, Zellers JA. Rate of tarsal and metatarsal bone mineral density change in adults with diabetes mellitus and peripheral neuropathy: A longitudinal study. *Journal of Foot and Ankle Research*. 2023;16(1):6. PMCID: PMC9924878.
- Zheng J, Li R, Dickey EE, Yan Y, Zayed MA, Zellers JA, **Hastings MK**. Regional skeletal muscle perfusion distribution in diabetic feet may differentiate short-term healed foot ulcers from non-healed ulcers. *European Radiology*. 2023;33(5):3303-3311. PMCID: PMC10121766.
- Zellers J, Edalati M, Eekhoff J, McNish R, Tang S, Lake S, Mueller M, **Hastings M**, Zheng J. Quantitative MRI predicts tendon mechanical behavior, collagen composition, and organization. *Journal of Orthopaedic Research*. 2023;41(10):2329-2338. doi:10.1002/jor.25471.
- Wahidi R, Zhang Y, Li R, Xu J, Zayed MA, **Hastings MK**, Zheng J. Quantitative Assessment of Peripheral Oxidative Metabolism with a new Dynamic 1H MRI: a Pilot Study in People with and without Diabetes Mellitus. *Journal of Magnetic Resonance Imaging*. 2024;59(6):2091-2100. PMCID: PMC10925551.
- McNish R, Lohse K, Pruthi S, **Hastings MK**, Zheng J, Zellers JA. Achilles tendon assessment on quantitative MRI: Sources of variability and relationships to tendinopathy. *Scandinavian Journal of Medicine & Science in Sport*. 2024;34(5):e14650. DOI: 10.1111/sms.14650.
- Wukich DK, Schaper N, Gooday C, Bal A, Bem R, Chhabra A, **Hastings M**, Holmes C, Petrova N, Araujo MGS, Senneville E, Raspovic KM. Guidelines on the Diagnosis and Treatment of active Charcot Neuro-osteoarthropathy in Persons with Diabetes Mellitus (IWGDF 2023). *Diabetes Metab Res Rev*. 2024;40(3):e3646.
- Raspovic KM, Schaper N, Gooday C, Bal A, Bem R, Chhabra A, **Hastings M**, Holmes C, Petrova N, Araujo MGS, Senneville E, Wukich DK. Diagnosis and Treatment of active Charcot Neuro-osteoarthropathy in Persons with Diabetes Mellitus: A systematic Review. *Diabetes Metab Res Rev*. 2024;40(3):e3653.
- Kaszyk E, Commean PK, Meyer GA, Smith G, Jeong H, York A, Chen L, Mueller MJ, Zellers AJ, **Hastings MK**. Use of computed tomography to identify muscle quality in subgroups, spatial mapping, and preliminary relationships to function in those with diabetic peripheral neuropathy. *Gait and Posture*. 2024;14:159-166. PMID: 38797052. PMCID: PMC11265324
- Johnson JE, Phinney AR, **Hastings MK**, Jeong HJ, Chen L, Thome AP, McCormick JJ, Backus JD. Fifteen-year follow-up of the modified oblique Keller capsular interposition arthroplasty compared to

arthrodesis for treatment of advanced first metatarsophalangeal joint arthritis. *Foot & Ankle Orthopaedics*. 2025;10(1);1-12.

Gui C, Kamm DR, Ferey JLA, Bohnert KL, McCormick JJ, **Hastings MK**, Meyer GA. Insights into intramuscular adipose-muscle signaling in the diabetic lower extremity. *J Clin Transl Endocrinol*. 2025; 28:42:100422. PMID: 41234395. PMC12617770

Zellers JA, Steger-May K, Commean PK, Jeong H-J, Kaszyk E, Mueller MJ, **Hastings MK**. Foot-specific exercise intervention for forefoot deformity in individuals with type 2 diabetes and peripheral neuropathy: A randomized controlled clinical trial with 3-year follow-up. *Braz J Phys Ther*. 2026;30(1). PMID: 41411980. PMC12771100.

Cheuy VA, Sadoughi S, Moon H, Ellis JE, Gross R, Sinacore D, **Hastings MK**, Souza RB, Kazakia GJ. Synergistic Effects of Diabetic Neuropathy and Kidney Function Decline on Second Metatarsal Skeletal Health and Foot Function: a Pilot Study. *JBMR Plus*. 10: 6; 2026. zia058. PMID: 42110971. PMC13156507.

Sinacore DR, Jones MA, **Hastings MK**, Cheuy VA, Kazakia G, Yan Y, Hruska KA. Bone-vascular paradox in diabetic neuropathic foot: a pilot study. *Metab Target Organ D*. In review.

Zheng J, **Hastings MK**. Spatially and temporally resolved assessment of quantitative skeletal muscle perfusion with non-contrast MRI in patients with PAD and healthy controls. *QIMS*. In review.

#### Invited Publication:

Sahrmann S and Associates. *Movement System Impairment Syndromes of the Extremities, Cervical and Thoracic Spines*. St. Louis: Mosby. 2011. (Author of Chapter 8: Movement Impairment Syndromes of the Foot and Ankle).

Porter D and Schon L. J. *Baxter's The Foot and Ankle in Sport, 3<sup>rd</sup> Edition*. (Nixon D, **Hastings MK**, McCormick Chapter 8: Nonsurgical treatment of acute and chronic ankle instability). Elsevier. 2020

Gefen, A. *The Science, Etiology and Mechanobiology of Diabetes and its Complications, 1<sup>st</sup> Edition*. (Zellers JA, Eekhoff JE, Tang SY, **Hastings MK**, Lake SP Chapter 12: Clinical complications of tendon tissue mechanics due to collagen cross-linking in diabetes). Elsevier. 2021

#### Conference Abstracts:

Klaesner JW, Commean PK, **Hastings MK**, Mueller MJ. Portable soft tissue indenter for use in clinical setting. Biology Society (BMES & EMBS) Joint Conference. Atlanta, GA. Proceedings. 1999;6.3:1-5.

Sinacore DR, Mueller MJ, **Hastings MK**. Lack of primary aging effect on healing time of neuropathic foot ulcers. APTA Combined Sections Meeting. New Orleans. February 2000. Issues on Aging. 2000;23:26.

**Hastings MK**, Mueller MJ, Klaesner JW. Measurement of tissue stiffness using a portable indenter. Poster Presentation: APTA Combined Sections Meeting. New Orleans. Feb 2000. *Journal of Orthopaedic and Sports Physical Therapy*. 2000;30:A7.

Mueller MJ, **Hastings MK**, Sinacore DR, Henry JD, Johnson JE. Effect of tendon achilles lengthening on muscle performance characteristics in patients with DM. *Journal of Orthopaedic and Sports Physical Therapy*. 2001;31(1):PL10:A-4.

Sinacore DR, Mueller MJ, **Hastings MK**, Henry JD. Does persistent hyperglycemia delay cutaneous neuropathic wound healing using TCC? Poster Presentation: Abstract for APTA Combined Sections Meeting. 2001.

**Hastings MK**, Klaesner JW, Mueller MJ. Metatarsal soft tissue stiffness in subjects with and without diabetes. *Journal of Orthopaedic and Sports Physical Therapy*. 2001;31(1):PO79:A-28.

Maluf KS, Mueller MJ, **Hastings MK**, Henry JD, Johnson JE. Effect of tendon achilles lengthening on gait characteristics in patients with diabetes. *Journal of Orthopaedic and Sports Physical Therapy*. 2001;31(1):PLO9:A-3.

Sinacore DR, Hastings **MK**, Bohnert KL, Villareal DT, Fielder FA, Johnson JE. Bone loss in perimenopausal women with neuropathic (Charcot) arthropathy of the foot. *Journal of Orthopaedic and Sports Physical Therapy*. 2004;34:A20.

**Hastings MK**, Sinacore DR. Bone density measures in patients with diabetes mellitus, peripheral neuropathy, and characteristic patterns of mid tarsal joint deformities. *Journal of Orthopaedic and Sports Physical Therapy*. 2004;34:A21.

Lott DJ, Mueller MJ, **Hastings MK**, Commean PK, Smith KE. Effect of Footwear on Pressure Reduction and Soft Tissue Deformation of the Plantar Neuropathic Foot. Abstract for platform presentation: Marilyn Gossman Graduate Student Seminar. APTA Combined Sections Meeting. New Orleans, LA. February 2005.

Sinacore DR, Bohnert KL, **Hastings MK**. Bone loss and elevated plantar pressure contribute to unilateral charcot midfoot deformities in patients with diabetes and peripheral neuropathy. *Journal of Orthopaedic and Sports Physical Therapy*. 2005;35(1):A18.

**Hastings MK**, Sinacore DR, Commean PK, Bae KT. Tarsal and metatarsal bone density assessment using volumetric quantitative computed tomography in subjects with and without charcot changes. *Journal of Orthopaedic and Sports Physical Therapy*. 2005;35(1):A19.

Lott DJ, Mueller MJ, **Hastings MK**, Commean PK, Smith KE. Effect of footwear and orthotic devices on soft tissue thickness and pressure variables of the neuropathic foot. *Journal of Orthopaedic and Sports Physical Therapy*. 2006;36(1):A11.

**Hastings, MK**, Mueller MJ, Pilgram TK, Commean PK. The effect of metatarsal pad placement on plantar pressure at the second metatarsal head. *Journal of Orthopaedic and Sports Physical Therapy*. 2006;356(1):A11.

**Hastings MK**, Commean PK, Gelber JR, Sinacore DR. Bone mineral density of the tarsals and metatarsals after immobilization and non-weight-bearing followed by reloading. *Journal of Orthopaedic and Sports Physical Therapy*. 2007;37(1):A16.

Sinacore DR, **Hastings MK**, Bohnert KL. Immobilization-induced bone loss in diabetic foot disease. *Journal of Orthopaedic and Sports Physical Therapy*. 2007;37(1):A16.

Sinacore DR, Commean, PK, Ju T, Liu L, **Hastings MK**, Bohnert KL, Prior FW. Atlas-based Quantitative Imaging in Charcot Neuroarthropathy. Abstract for platform presentation: Charcot Neuroarthropathy: Recent Progress and Future Directions. National Institutes of Health. Bethesda, MD. September 2008. Summary Report available: <http://www3.niddk.nih.gov/fund/other/neuroarthropathy/SummaryReport.pdf>

**Hastings MK**, Johnson JE, Kathryn L. Bohnert KL, Vendt BA, Fred Prior F, Sinacore DR. Radiographic Correlates of Charcot Neuroarthropathy Deformity Reflect Midfoot Function and Calcaneal Bone Mineral Density. Abstract for platform presentation: Charcot Neuroarthropathy: Recent Progress and Future Directions. National Institutes of Health. Bethesda, MD. September 2008. Summary Report available:<http://www3.niddk.nih.gov/fund/other/neuroarthropathy/SummaryReport.pdf>

Isaac EJ, Gelber JR, Bohnert KL, Sinacore DR, **Hastings MK**. Foot progression angle in subjects with diabetes, peripheral neuropathy and a plantar forefoot ulcer: A comparison of methods. *Journal of Orthopaedic and Sports Physical Therapy*. 2009;39(1):A41.

Gelber JR, Isaac EJ, Bohnert KL, Sinacore DR, **Hastings MK**. Foot progression angle increases medial loading of the foot. *Journal of Orthopaedic and Sports Physical Therapy*. 2009;39(1):A23.

**Hastings MK**, Johnson JE, Bohnert KL, Prior F, Sinacore, DR. Radiographic measures of midfoot deformity reflect dynamic midfoot function. *Journal of Orthopaedic and Sports Physical Therapy*. 2009;39(1):A24.

Gelber JR, Sahrman SA, **Hastings MK**. Case report: Functional training to reduce great toe pain. APTA Combined Sections Meeting. San Diego, CA. February 2010.

Gutekunst DJ, Hastings **MK**, Bohnert KL, Sinacore DR. Off-loading with total contact casting compared to ankle-foot orthoses in individuals with diabetes related plantar ulcers. APTA Combined Sections Meeting. San Diego, CA. February 2010.

Sinacore, DR, **Hastings MK**, Bohnert KL, Kwon OY, Vendt BA, Prior FW, Macky RB, Johnson JE. Talar Declination & Calcaneal Inclination Angles: Effect on Ankle Joint Motion. APTA Combined Sections Meeting. San Diego, CA. February 2010.

**Hastings MK**, Sinacore DR, Mercer-Bolton N, Bohnert KL, Prior FW, Vendt BA, Johnson JE. Reliability of foot alignment radiographic measures in diabetic neuropathic deformities. APTA Combined Sections Meeting. San Diego, CA. February 2010.

Gutekunst DL, Bohnert KL, **Hastings MK**, and Sinacore DR. Cast-boot ankle-foot orthoses yield greater forefoot load reduction than total contact casts. Proceedings of the Novel ESM meeting. Providence, RI. August 2010

Gutekunst DJ, Liu L, Ju T, Commean PK, Smith KE, **Hastings MK**, and Sinacore DR. Structural polymorphisms in midtarsal bone alignment lead to focal midfoot pressures. Proceedings of the International Foot & Ankle Biomechanics meeting. Seattle, WA. Sept 2010.

Sinacore, DR, **Hastings MK**, Commean PK, Smith KE, Bohnert KL, Johnson JE, Prior FW. Image-based Candidate Biomarker in the Acute Stage of Neuropathic (Charcot's) Arthropathy: VQCT-derived pedal BMD. APTA Combined Sections Meeting. New Orleans, LA. 2011. *Journal of Orthopaedic and Sports Physical Therapy*. 2011;41(1):A32.

Sinacore, DR, **Hastings MK**, Commean PK, Smith KE, Bohnert KL, Prior FW. Lumbar spine, hip & calcaneal BMD in people with Diabetes Mellitus, Peripheral Neuropathy and Charcot Neuroarthropathy. APTA Combined Sections Meeting. New Orleans, LA. 2011.

**Hastings MK**, Mueller MJ, Sinacore DR, Crouner B, Bohnert KL, Johnson JE, Racette B. Botulinum toxin effect on plantarflexor muscle strength and plantar pressure. APTA Combined Sections Meeting. New Orleans, LA. 2011. *Journal of Orthopaedic and Sports Physical Therapy*. 2011;41(1):A31.

Mercer Bolton N, **Hastings M**, Sinacore D, McCormick J, Hildebolt C, Prior F, Johnson J. How to perform radiographic foot alignment measures of cuboid height, calcaneal pitch, and hindfoot-forefoot angle for detection of foot deformity in individuals with neuropathic charcot arthropathy. *American Journal of Roentgenology*. 2011;196(5):A201-A226.

Sinacore DR, Bohnert KB, **Hastings MK**, Commean PK, Smith KE, Johnson JE, Prior FW. Persistent local and systemic markers of inflammation after acute neuropathic (Charcot's) arthropathy. APTA Combined Sections Meeting. Chicago, IL 2012. *Journal of Orthopaedic and Sports Physical Therapy*. 2012;42(1):A27-A28.

Sheldahl KB, **Hastings MK**, Stein M, McCormick J, Klein S, Paxton ES, Strube MJ, Sinacore DR, Johnson JE. Kinematic and Muscle Function After the Bridle Procedure for Treatment of

Traumatic Foot Drop. APTA Combined Sections Meeting. Chicago, IL. 2012. *Journal of Orthopaedic and Sports Physical Therapy*. 2012;42(1):A28.

Stein M, **Hastings MK**, Sheldahl KB, McCormick J, Klein S, Paxton ES, Strube MJ, Sinacore DR, Johnson JE. Heel rise kinetics and kinematics after the Bridle procedure for treatment of traumatic foot drop. APTA Combined Sections Meeting. Chicago, IL. 2012. *Journal of Orthopaedic and Sports Physical Therapy*. 2012;42(1):A28-A29.

**Hastings MK**, Johnson JE, Strube MJ<sup>3</sup>, Hildebolt CK, Bohnert KL, Prior FW, Sinacore DR. Radiographic foot alignment change in Neuropathic Charcot Arthropathy at one year after acute onset. APTA Combined Sections Meeting. Chicago, IL. 2012. *Journal of Orthopaedic and Sports Physical Therapy*. 2012;42(1):A27.

Paxton ES, Lippe J, Bohnert KL, Sinacore DR, **Hastings MK**, McCormick J, Klein S, Johnson JE. Outcomes of the Bridle Procedure for the Treatment of Traumatic Foot Drop. AOFAS Annual Meeting. San Diego, CA. 2012.

**Hastings MK**, Johnson JE, Strube MJ, Hildebolt C, Bohnert K, Prior F, Sinacore D. Progressive Foot Deformity Evident in Neuropathic Charcot Arthropathy at One and Two Years. AOFAS Annual Meeting. San Diego, CA. 2012.

**Hastings MK**, Woodburn J, Strube MJ, Mueller MJ, Stein M, Sheldahl KB, Johnson JE, Sinacore DR. Heel rise kinetics and kinematics in individuals with diabetes related foot deformity. APTA Combined Sections Meeting. San Diego, CA. 2013. *Journal of Orthopaedic and Sports Physical Therapy*. 2013;43(1):A26

Mueller MJ, Tuttle LJ, LeMaster JW, Strube MJ, McGill B, **Hastings MK**, Sinacore DR. Weight-bearing versus non-weight-bearing exercise for people with diabetes and peripheral neuropathy. APTA Combined Sections Meeting. San Diego, CA. 2013. *Journal of Orthopaedic and Sports Physical Therapy*. 2013;43(1):A26

Gelber JR, Sinacore DR, Strube MJ, Mueller MJ, Bohnert KL, Snozek DR, Johnson JE, **Hastings MK**. Plantar fascia function in diabetes mellitus related foot deformity. APTA Combined Sections Meeting. San Diego, CA. 2013. *Journal of Orthopaedic and Sports Physical Therapy*. 2013;43(1):A31-32

Sinacore DR, Gutekunst DJ, Bohnert KL, Mueller MJ, **Hastings MK**. Metatarsal buckling ratio as a fracture index in neuropathic (Charcot) arthropathy. San Diego, CA. 2013. *Journal of Orthopaedic and Sports Physical Therapy*. 2013;43(1):A30

Merriwether EN, **Hastings MK**, Bohnert KL, Sinacore DR. Impact of modification of foot progression angle on plantar loading. APTA Combined Sections Meeting. San Diego, CA. 2013. *Journal of Orthopaedic and Sports Physical Therapy*. 2013;43(1):A29

**Hastings MK**, Mueller MJ, Paul Commean PK, Strube MJ, Sinacore DR. 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. *Journal of Orthopaedic and Sports Physical Therapy*. 2014;44(1):A22

Lanier VM, Gelber JR, Royer N, **Hastings MK**. A modified standing heel-rise test for ankle plantar flexor strength. APTA Combined Sections Meeting. Las Vegas, NV. 2014. *Journal of Orthopaedic and Sports Physical Therapy*. 2014;44(1):A23

Sinacore DR, Mitchell BE, Bohnert KL, Jackson TA, **Hastings MK**. Tarsal bone density, talar declination angle and peak plantar pressure in neuropathic medial column foot deformities. APTA Combined Sections Meeting. Las Vegas, NV. 2014. *Journal of Orthopaedic and Sports Physical Therapy*. 2014;44(1):A22

Bittel AJ, Bittel DC, Tuttle LJ, **Hastings MK**, Mueller MJ, Cade WT, Sinacore DR. Calf muscle compartment intermuscular adipose tissue (IMAT) accumulation in obese, Type 2 diabetes mellitus and peripheral neuropathy: Relationship to physical function. APTA Combined Sections Meeting. Indianapolis, IN 2015.

Korgan WE, **Hastings MK**, Bohnert KL, Sorensen CJ, Clark RB, Lang CE, McGill J, Mueller MJ. Effect of a shoulder movement intervention on joint mobility, pain, and disability in people with diabetes mellitus: A randomized trial. APTA Combined Sections Meeting. San Antonio, TX 2017

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.

Zheng J, Chen Y, Haacke M, **Hastings MK**, Zayed M. Contrast free MRI methods for vascular assessment in diabetic lower extremities. Society for Magnetic Resonance Angiography 30<sup>th</sup> Annual International Conference. Glasgow, Scotland 2018.

Bernhardson HJ, Jeong H-J, Brogan HV, Stumpf JL, Ellis M, **Hastings MK**. Consistency of a Metatarsophalangeal Joint Movement Pattern across Functional Tasks in People with Diabetes Mellitus. APTA Combined Sections Meeting. Denver, CO 2020.

Zellers JA, **Hastings MK**, Silbernagel KG. Inferior Tendon Mechanical Properties in Presence of Diabetes in Individuals with Achilles Tendinopathy. APTA Combined Sections Meeting. Denver, CO 2020.

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 MK**, 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.

Johnson JE, Phinney AR, **Hastings, MK**, Jeong HJ, Chen L, Thome AP, McCormick JJ, Backus, JD. What is the Gold Standard for Advanced Hallux Rigidus? Minimum 10-Year Follow-up Comparison of Interposition Arthroplasty and Arthrodesis Shows Similar Outcomes. Roger A Mann Award Finalist 2024- nominated for Best Clinical Paper presented at the 2024 Annual Meeting of the American Orthopaedic Foot and Ankle Society. 2024, Vancouver, BC. Foot Ankle Int. 45(1S): 20S-21S, 2024. DOI: 10.1177/1071100724S00017.

Jeong HJ, Zellers J, Steger-May K, Commean PK, Kaszyk E, Mueller MJ, **Hastings MK**. Foot-specific intervention for individuals with diabetic peripheral neuropathy: A randomized control trial with 3-year follow-up. Combined Sections Meeting of the American Physical Therapy Association 2025. Houston, Tx.

Bonakdar K, Jeong HJ, Commean PK, Yan Y, Kazakia G, Cheuy V, PhD, Sinacore DR, **Hasting MK**. Kidney Disease, Foot Bone Deterioration, and Function in People with Type 2 Diabetic Peripheral Neuropathy. APTA Combined Sections Meeting, February 12-14, 2026; Anaheim, 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<br>Chairperson                                                          | 2003-2005    |
| Kirkwood Baptist Church, Hands on Kirkwood, Community-wide day of service<br>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-present |
| Kirkwood Baptist Church, Church Leadership Council Chairperson                                                             | 2022-2023    |