

CURRICULUM VITAE
MARY KENT HASTINGS, PT, DPT, MSCI, ATC

PRESENT POSITION: Professor, Program in Physical Therapy and
 Orthopaedic Surgery, Washington University School of Medicine

EDUCATION:

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

ACADEMIC POSITIONS / EMPLOYMENT:

<u>Position</u>	<u>Institution/Facility</u>	<u>Date(s)</u>
Graduate Assistant-Athletic Trainer	Virginia Polytechnic Institute Blacksburg, VA	1990-1991
Laboratory Teaching Assistant	Washington University Program in Physical Therapy St. Louis, MO	1994-1999
Instructor	Washington University School of Medicine Program in Physical Therapy St. Louis, MO	1999-2004
Assistant Professor	Washington University School of Medicine Program in Physical Therapy and Orthopaedic Surgery St. Louis, MO	2005-2011
Associate Professor	Washington University School of Medicine Program in Physical Therapy and Orthopaedic Surgery St. Louis, MO	2012-2017
Professor	Washington University School of Medicine Program in Physical Therapy and Orthopaedic Surgery St. Louis, MO	2017-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-present
Research Advisory Council, Member	2004-present
Clinical Practice Advisory Council, Member	2007-2010
Clinical and Translational Research Funding Program, Grant Reviewer	2014-present

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:

University of Illinois, Champaign-Urbana, IL Bronze Tablet	1990
Washington University Medical School, Program in Physical Therapy Director's Award	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, Engsborg 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	2012
1 st 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 nd Place: "Volumetric Analysis of Intrinsic Muscle Atrophy in the Diabetic Neuropathic Foot." Cheuy Victor A., Commean Paul K., Hastings Mary K., Mueller Michael J.	

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 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

EDITORIAL AND EXTERNAL GRANT REVIEWER RESPONSIBILITIES:

Journal of Orthopaedic and Sports Physical Therapy
Physical Therapy
Diabetic Medicine
Muscle and Nerve
Journal of Biomechanics
 Medical Research Councils UK
 National Institute of Health
 Diabetes Complications Consortium
 Morgan State Health-Related Community-Based
 participatory Research Small Grant

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
Committee member of Foot and Ankle Task Force	2012
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

Topic: Diabetes Related Foot Complications cont.

“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

Topic: Diabetes Related Foot Complications cont.

“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 2017
Seven Springs Mountain Resort, PA 2017

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

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

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

CONSULTING RELATIONSHIPS AND BOARD MEMBERSHIPS:

Dr. Scholl’s Professional Council, Member

2006-2013

Dr. Scholl’s Consultant

2009-2017

RESEARCH SUPPORT:

Active:

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

The purpose of this project is to understand the cellular features of diabetic peripheral neuropathy muscle pathology to aid in the development of targeted and effective therapies to increase muscle function and slow the progression to amputation.

Principal Investigator

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

NIH/NIDDK R01 DK107809

3/2016-10/2021

Total Cost: \$1,578,563

The purposes of this project are to examine 1) factors that contribute to toe deformity in people with diabetes and peripheral neuropathy, 2) physical therapy impact on toe deformity, and 3) factors related to progression of toe deformity and whether the physical therapy intervention changes the progression of deformity over 3 years.

Active cont.:

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

This project is to evaluate the role of regional skeletal muscle perfusion / oxygenation in the presence of foot ulcer in patients with and without diabetes and peripheral vascular disease.

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

Completed:

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, No Cost Extension

Total Cost: \$250,000

The purpose of this project is to evaluate a non-contrast MRI technique to characterize the skeletal muscle microcirculation in groups of patients with diabetes mellitus, in comparison with healthy subjects and patients with peripheral vascular disease.

Co-Investigator

Visualizing the Diabetic Foot to Optimize Orthotic Fitting

PI: Michael Mueller, PhD, PT

Source: NIH/NICHHD/ 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/NICHHD/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

Completed cont.:

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

Award Recipient

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

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

Completed cont.:

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

Award Recipient

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

Award Recipient

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

Award Recipient

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

Completed cont.:

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, No Cost Extension

Total Cost: \$419,375

The project evaluates how advance glycation end-product accumulation and shoulder movement contribute to shoulder limited joint motion, pain, and disability.

Co-Principal Investigator

Project Title: Carbon fiber off-loading orthosis

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

NIH/NIDDK R41 DK109731

5/24/16-5/23/2017, No Cost Extension

Total Cost: \$186,737

The purpose of this project is to optimize the design and fit of a carbon off-loading orthosis to maximize patient function while minimizing risk for ulcer formation or recurrence and limiting the need for re-fabrication with the ultimate goal to prevent lower extremity amputation.

PATENT:

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

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.

Consult with fellows and faculty on complicated foot and ankle cases.

TEACHING RESPONSIBILITIES:

Current Teaching Responsibilities

Essential Skills in Physical Therapy II (PT627)

Participating Instructor Mobilization Unit: 1994-present

Class Size: 85

3 Credit Hours

Professional Clinical Doctorate (DPT) Curriculum (WUSM)

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

Participating Instructor Foot and Ankle Unit: 1996-present

Class Size: 85

3 Credit hours

Professional Clinical Doctorate (DPT) Curriculum (WUSM)

Human Anatomy (PT611)

Participating Instructor Foot and Ankle Unit: 2003-present

Class Size: 89

5 Credit hours

Professional Clinical Doctorate (DPT) Curriculum (WUSM)

Case Integration Lab I and II (PT628, PT642)

Participating Instructor and small group leader 2008-present

Class size: 85

1 Credit hour

Professional Clinical Doctorate (DPT) Curriculum (WUSM)

Case Integration Lab III/DEA III (PT654)

Participating Instructor 2010-present

Class size: 85

1 Credit hour

Professional Clinical Doctorate (DPT) Curriculum (WUSM)

Diagnosis and Management of Musculoskeletal Ankle and Foot Conditions:

Fellowship Curriculum

Advanced Biomechanics, Kinesiology (L63 IPMS 5810)

Participating Instructor Multiple Segmental Foot Model: 2012-present

Class Size: 2-6

3 Credit hours

Movement Science Program (PhD) Curriculum

Program Seminar

Grant writing/review: 2018-present

Class Size: 2-6

Movement Science Program (PhD) Curriculum

Student Advisement (DPT)

Melissa Stevens

“A Treatment Guideline for a Patient with an Osteochondritis Desiccans Lesions of the Talus”
Complete 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 and Scott Paxton MD: Radiographic measures of foot alignment. 2010

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

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

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

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

PUBLICATIONS:

Peer Reviewed Manuscripts:

Sinacore DR, Mueller MJ, **Kent ME**, Elser T, Rubinow C. Healing rates by location of diabetic neuropathic (charcot) fractures using total contact casting. *Journal of Orthopaedic and Sports Physical Therapy*. 1997;25(1):63. PMID: 9017353

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. Measures of Bone Mineral Density Throughout Total Contact Cast Immobilization for Treatment of 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. *The Foot*. 2008;18:61-67. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: 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.

Peer Reviewed Manuscripts cont.:

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. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: 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. PMID: PMC3934630

Cheyu 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. PMID: PMC4400725

Peer Reviewed Manuscripts cont.:

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. PMID: 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. PMID: 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. PMID: 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. PMID: PMC4262736

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

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- 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
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- 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 77th 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. Submitted: APTA 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. Submitted: APTA Combined Sections Meeting. New Orleans, LA 2018.

Conference Abstracts cont.:

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

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

Service cont.:

St. Louis Gymnastics Center Parent Organization Member	2010-2015
Kirkwood Baptist Church, Youth Council Chairperson	2012-present
Kirkwood Baptist Church, Nominating Committee Chairperson	2016-present
Kirkwood Baptist Church, Gift ID Council Chairperson	2017-present