

CURRICULUM VITAE

STEVEN ALLEN GARD

WORK ADDRESS

Northwestern University Prosthetics-Orthotics Center (NUPOC)
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EDUCATION

- 1983-1985 **Pre-engineering program**
Southeast Missouri State University (SEMO)
Cape Girardeau, Missouri
- 1988 **B.S., Bioengineering**
Texas A&M University
College Station, Texas
Graduated Summa Cum Laude
- 1990 **M.S., Biomedical Engineering**
Northwestern University
Evanston, Illinois
- 1995 **Ph.D., Biomedical Engineering**
Northwestern University
Evanston, Illinois

POSTDOCTORAL TRAINING

- 1995-1996 **Northwestern University Prosthetics Research Laboratory
& Rehabilitation Engineering Research Program**
Feinberg School of Medicine, Northwestern University
Chicago, IL

FACULTY, RESEARCH AND PROFESSIONAL APPOINTMENTS

- 1996-1999 **Research Associate**
Northwestern University Prosthetics Research Laboratory
& Rehabilitation Engineering Research Program
Chicago, IL
- 1997-present **Research Health Scientist**
Jesse Brown VA Medical Center
Department of Veterans Affairs
Chicago, IL

FACULTY, RESEARCH AND PROFESSIONAL APPOINTMENTS (cont'd)

1997-present **Instructor**

Northwestern University Prosthetics-Orthotics Center
Feinberg School of Medicine, Northwestern University
Chicago, IL

1998-present **Director**

Jesse Brown VA Medical Center Motion Analysis Research Laboratory
(JBVAMC-MARL)
Jesse Brown VA Medical Center
Department of Veterans Affairs
Chicago, IL

1999-2001 **Lecturer**

Department of Biomedical Engineering
Northwestern University
Evanston, IL

1999-2005

Research Assistant Professor

Department of Physical Medicine & Rehabilitation
Feinberg School of Medicine, Northwestern University
Chicago, IL

2001-present

Affiliated Faculty

Department of Biomedical Engineering
Northwestern University
Evanston, IL

2002-2004

Assistant Director

Northwestern University Prosthetics Research Laboratory
& Rehabilitation Engineering Research Program
Department of Physical Medicine & Rehabilitation
Feinberg School of Medicine, Northwestern University
Chicago, IL

2004-2010

Director (merged with NUPOC in 2010)

Northwestern University Prosthetics Research Laboratory
& Rehabilitation Engineering Research Program
Department of Physical Medicine & Rehabilitation
Feinberg School of Medicine, Northwestern University
Chicago, IL

2005-2013

Research Associate Professor

Department of Physical Medicine & Rehabilitation
Feinberg School of Medicine, Northwestern University
Chicago, IL

FACULTY, RESEARCH AND PROFESSIONAL APPOINTMENTS (cont'd)

- 2005-2008 **Research Integrity Officer**
Jesse Brown VA Medical Center, Lakeside Division
Department of Veterans Affairs
Chicago, IL
- 2007-present **Executive Director**
Northwestern University Prosthetics-Orthotics Center (NUPOC)
Feinberg School of Medicine, Northwestern University
Chicago, IL
- 2013-present **Associate Professor**
Department of Physical Medicine & Rehabilitation
Feinberg School of Medicine, Northwestern University
Chicago, IL
- 2018-present **Affiliated Faculty**
Department of Mechanical Engineering
Northwestern University
Evanston, IL

COMMITTEE SERVICE

- 1997-2003 Research and Development Committee (Chairman, 1998-2003)
Department of Veterans Affairs
VA Chicago Health Care System, Lakeside Division
- 2000-2012 Institutional Review Board
Office for the Protection of Research Subjects
Northwestern University/University of Illinois at Chicago/Jesse Brown VAMC
- 2003-2007 Graduate Program Committee
Department of Biomedical Engineering
Northwestern University
- 2004-2009 Research and Development Committee
Rehabilitation Institute of Chicago
- 2008-present Advisory Board
Northwestern University Prosthetics-Orthotics Center (NUPOC)
- 2021-present Research Advisory Panel
Jesse Brown VA Medical Center

HONORS and AWARDS

- 1983 President's Scholarship (Southeast Missouri State University)
1984 Phi Eta Sigma (Freshman Honor Society; treasurer)
1984 Outstanding Freshman Chemistry Student Award
1985 Alpha Eta Mu Beta (Bioengineering Honor Society)
1986 Tau Beta Pi (Engineering Honor Society)

HONORS and AWARDS (cont'd)

- 1987 Phi Kappa Phi Society (Senior Honor Society)
- 1988 G.E. Foundation Graduate Fellowship
- 1988 Royal E. Cabell Fellowship
- 1998 Career Development Award—Department of Veterans Affairs
- 2006 Research Award, American Academy of Orthotists & Prosthetists
- 2007 Blatchford Award, U. K. International Society for Prosthetics and Orthotics
- 2008 Honorary Membership Award, American Academy of Orthotists & Prosthetists

PROFESSIONAL SOCIETY MEMBERSHIPS

- 1996-present American Society of Biomechanics (ASB)
- 1996-present Gait and Clinical Movement Analysis Society (GCMAS)
- 2004-present American Academy of Orthotists and Prosthetists (AAOP)
- 2004-present Amputee Coalition of America (ACA)
- 2015-present International Society for Prosthetics and Orthotics (ISPO)

PROFESSIONAL AND SCIENTIFIC SERVICE

- 1998-2002 Education Committee, Gait and Clinical Movement Analysis Society

- 1998 Ad Hoc Member, Proposal Review Committee, VA Centers of Excellence Shared Equipment Request, Department of Veterans Affairs

- 1999 Ad Hoc Member, Proposal Review Committee, Associated Health Rehabilitation Research Pre-Doctoral Training Program, Department of Veterans Affairs

- 2000-2002 Proposal Review Committee, Graduate Fellowship Program, National Science Foundation (NSF)

- 2000 Ad Hoc Member, Proposal Review Panel, Rehabilitation Engineering Research Centers, National Institute on Disability and Rehabilitation Research (NIDRR)

- 2002-present Editorial Board
Journal of Prosthetics & Orthotics
American Academy of Orthotists and Prosthetists

- 2002-2009 Member, Editorial Board
Journal of Rehabilitation Research & Development
Department of Veterans Affairs

- 2002-2006 Associate Editor
Transactions on Neural Systems & Rehabilitation Engineering
The Institute of Electrical and Electronics Engineers, Inc. (IEEE)

- 2003-present Editorial Board
Journal of Neuroengineering and Rehabilitation
BioMed Central

- 2004 Ad Hoc Member, SBIR Proposal Review Panel, National Institutes of Health (NIH)

PROFESSIONAL AND SCIENTIFIC SERVICE (cont'd)

- 2005-present Ad Hoc Member, Proposal Review Committee, Rehabilitation Research & Development Program, Department of Veterans Affairs
- 2005-2008 Member, Clinical Assessment/Research Development Committee
National Commission on Orthotic and Prosthetic Education (NCOPE)
- 2005-2010 Member, Research Education Committee
American Academy of Orthotists & Prosthetists (AAOP)
- 2006 Ad Hoc Member, Musculoskeletal Rehabilitation Sciences Study Section,
National Institutes of Health (NIH)
- 2006-2008 Member, Task Force on Systematic Review and Guidelines
National Center for the Dissemination of Disability Research (NCDDR)
- 2007-2009 Member, Outcome Steering Committee
American Orthotic & Prosthetic Association (AOPA) &
American Academy of Orthotists and Prosthetists (AAOP)
- 2007-2010 Leadership Advisory Board
Brown University/Providence VA Center for Restorative and Regenerative
Medicine
- 2007 Ad Hoc Member, CSR Special Emphasis Panel, National Institutes of Health
(NIH)
- 2009-2016 Associate Editor, Editorial Board
Journal of Rehabilitation Research & Development
Department of Veterans Affairs
- 2009 Ad Hoc Member, CSR Challenge Grant Review Panel, National Institutes of
Health (NIH)
- 2012-2015 Member, Practitioner Advisory Council
O&P Business News, Healio Publishing
- 2012 Ad Hoc Member, RR&D Center of Excellence Review Panel, Dept. of Veterans
Affairs
- 2013 Ad Hoc Member, RERC Grant Review Panel, National Institute on Disability and
Rehabilitation Research (NIDRR), Department of Education
- 2013 Ad Hoc Member, RR&D Small Projects In Rehabilitation Research (SPIRE)
Review Panel, Dept. of Veterans Affairs
- 2014 Proposal Review Committee, Graduate Fellowship Program, National Science
Foundation (NSF)

PROFESSIONAL AND SCIENTIFIC SERVICE (cont'd)

- 2014 Ad Hoc Member, RERC Grant Review Panel, National Institute on Disability and Rehabilitation Research (NIDRR), Department of Education
- 2014 Ad Hoc Member, RR&D Small Projects In Rehabilitation Research (SPIRE) Review Panel, Dept. of Veterans Affairs
- 2014-present Editor-in-Chief
Journal of Prosthetics & Orthotics
American Academy of Orthotists and Prosthetists
- 2014 Ad Hoc Member, SBIR Review Panel, National Science Foundation (NSF)
- 2014 Ad Hoc Member, RR&D Career Development Award Review Panel, Dept. of Veterans Affairs
- 2015-2019 Member, Editorial Board
O&P Business News, Healio Publishing
- 2016-present Member, Exceed Research Network (ERN)
- 2016 Ad Hoc Member, SBIR Review Panel, National Institutes of Health (NIH)
- 2016 Ad Hoc Member, RR&D Career Development Award Review Panel, Dept. of Veterans Affairs
- 2016 Ad Hoc Member, RR&D Center of Excellence Review Panel, Dept. of Veterans Affairs
- 2016-2018 Member, Editorial Board
PLOS ONE
- 2017 Ad Hoc Member, CDMRP Peer Reviewed Orthopaedic Research Program (PRORP), Dept. of Defense (DoD)
- 2018 Ad Hoc Member, SBIR Review Panel, National Institutes of Health (NIH)
- 2019 Ad Hoc Member, MOSS Review Panel, National Institutes of Health (NIH)
- 2019 Ad Hoc Member, MRS Review Panel, National Institutes of Health (NIH)
- 2020 Ad Hoc Member, CDMRP Review Panel, Restoring Warfighters with Neuromusculoskeletal Injuries Research Award (RESTORE), Dept. of Defense (DoD)
- 2020-present Member, VA Federal Advisory Committee for Prosthetics and Special Disabilities Programs, Dept. of Veterans Affairs
- 2020-present Trustee, Exceed Worldwide

PROFESSIONAL AND SCIENTIFIC SERVICE (cont'd)

- 2020 Ad Hoc Member, RR&D Career Development Award Review Panel, Dept. of Veterans Affairs
- 2021 Ad Hoc Member, RR&D Career Development Award Review Panel, Dept. of Veterans Affairs

TEACHING EXPERIENCE

- 1997-2000 Course on "Mechanics, Biomechanics, Pathomechanics and Locomotion"
Northwestern University Prosthetics-Orthotics Center
Feinberg School of Medicine, Northwestern University
Chicago, IL
- 1999-2006 BMD_ENG 366 - "Biomechanics of Movement"
Department of Biomedical Engineering
McCormick School of Engineering and Applied Science, Northwestern University
Evanston, IL
- 2000-present Course on "Introduction to Research Methods for Prosthetists and Orthotists"
Northwestern University Prosthetics-Orthotics Center
Feinberg School of Medicine, Northwestern University
Chicago, IL
- 2004-present BMD_ENG 365 - "Control of Human Limbs and Their Artificial Replacements"
Department of Biomedical Engineering
McCormick School of Engineering and Applied Science, Northwestern University
Evanston, IL

RESEARCH TRAINING OF STUDENTS

<u>Date</u>	<u>Role</u>	<u>Student(s)</u>	<u>Degree</u>	<u>Project title</u>
1996(summer)	Advisor	J. Uehlers	Undergrad	The effect of stance-phase knee flexion during able-bodied gait
1997(summer)	Advisor	J. Uehlers B. Ruhe	Undergrad	Mechanical characterization of shock absorbing pylons
1998(summer)	Advisor	S. Blasberg	M.S. (ind. study)	Analysis of able-bodied gait characteristics in adult females
1999(winter)	Preceptor	Senior design group in Biomedical Engineering	Undergrad	Development of an improved shock-absorbing mechanism for lower-limb prostheses
1999-2000	Supervisor/Advisor	A. Kuncel	Undergrad	Comparison of gait kinematics between male and female adult ambulators

RESEARCH TRAINING OF STUDENTS (cont'd)

<u>Date</u>	<u>Role</u>	<u>Student(s)</u>	<u>Degree</u>	<u>Project title</u>
1999-2000	Co-advisor	S. Miff	M.S.	The effects of step length, cadence, and walking speed on gait kinematics, kinetics, and energetics
2000	Mentor	K. Lim	NIDRR Young Scholar	Case study gait analysis of an adult female with bilateral transtibial amputations
2000-2001	Advisor	N. Rosenblatt	Undergrad (independent study credits)	Characterization of the stance knee flexion feature in the Otto Bock 3R60 knee joint
2000-2001	Advisor	N. Edelmann S. Gurnani	M.S. (Physical Therapy)	The effect of shoe heel height on gait
2000-2002	Co-advisor	M. Meier	Postdoctoral Fellow	Gait biomechanics of lower-limb prosthesis users
2000-2003	Co-advisor	S. Fatone	Postdoctoral Fellow	Effects of AFO heel height adjustment on gait of stroke patients
2000-2007	Co-advisor	R. Konz	Ph.D.	The role of the spine in human walking
2000-2004	Co-advisor	B. Ruhe	M.S.	Kinematic compensatory motions employed by persons with bilateral transfemoral amputations
2000-2006	Co-advisor	G. Bertos	Ph.D.	Characterization of the shock absorption of the able-bodied locomotor system, with application to unilateral transfemoral amputee gait
2001	Advisor	N. Gryfakis	M.S. (ind. study)	The effect of residual limb compliance on prosthetic use in transtibial amputee subjects
2001-2004	Co-advisor	S. Miff	Ph.D.	Gait initiation and termination in non-disabled ambulators and in people with unilateral lower limb loss
2002	Advisor	M. El-Shamma	M.S. (ind. study)	Pilot study of the effect of residual limb compliance on gait in transtibial amputee subjects

RESEARCH TRAINING OF STUDENTS (cont'd)

<u>Date</u>	<u>Role</u>	<u>Student(s)</u>	<u>Degree</u>	<u>Project title</u>
2002	Advisor	G. Marecek	Undergrad	Study to determine effect of increased ankle compliance on transtibial amputee gait
2002-2005	Advisor	S. Koehler	M.S.	The effect of shock absorbing components on the gait of unilateral transfemoral amputees
2002-2005	Advisor	P. Su	M.S.	The effect of prosthetic ankle components on the gait of persons with bilateral trans-tibial amputations
2003	Advisor	T. Ring	M.S. (ind. study)	Determination of the relative translations between the segments of a multi-segment spine model during walking
2003-2008	Advisor	B. Johnson	M.S.	Preliminary quantitative gait analysis of reciprocating gait orthosis (RGO) users
2003-2006	Advisor	L. McNealy	M.S.	The effect of prosthetic ankle components on the gait of persons with bilateral trans-femoral amputations
2003-2008	Co-advisor	P. Sessoms	Ph.D.	Step by Step: A Study of Step Length in Able-bodied Persons, Race Walkers, and Persons with Amputation
2004-2006	Advisor	D. Saha	M.S.	The effect of kyphotic posture on balance, muscle activity, and energy expenditure
2004-2006	Advisor	K. Zissimopoulos	M.S.	The biomechanical and energetic effects of a stance-control orthotic knee joint
2004-2009	Advisor	B. Ruhe	Ph.D.	Investigations of Standing Balance Efficiency on Sloped Surfaces in Persons with Transfemoral Amputation

RESEARCH TRAINING OF STUDENTS (cont'd)

<u>Date</u>	<u>Role</u>	<u>Student(s)</u>	<u>Degree</u>	<u>Project title</u>
2005-2008	Advisor	P. Su	Ph.D.	An investigation of how prosthetic ankles and feet affect the gait of persons with transtibial amputations
2005-2012	Advisor	S. Koehler	Ph.D.	The effect of prosthetic alignment on walking performance in transfemoral amputees
2005-2007	Advisor	R. Williams	M.S.	Prosthetic foot and ankle mechanism capable of automatic adaptation to the walking surface
2006-2009	Advisor	E. Boutwell	M.S.	Study of residual limb-prosthetic socket compliance in transtibial amputees
2006-2010	Advisor	L. McNealy	Ph.D.	Investigation of stability during standing and walking in transtibial amputees
2006-2013	Advisor	K. Zissimopoulos	Ph.D.	An Investigation of Mediolateral Foot Placement during Post-Stroke Gait
2008-2012	Advisor	B. Johnson	Ph.D.	Design & analysis of an improved reciprocating gait orthosis (RGO)
2007-2010	Co-advisor	E. Nickel	M.S.	Development of an adaptable prosthetic ankle unit
2009-2014	Advisor	E. Boutwell	Ph.D.	Effect of Systematic Variation in Stiffness on Prosthetic Loading Mechanics
2010-2013	Advisor	M. Major	Postdoctoral Fellow	Amputee stability & falls / Prosthetic foot-ankle mechanisms
2014-2015	Advisor	E. Boutwell	Postdoctoral Fellow	Effect of Prosthesis Stiffness on Gait and Impact Loading
2015-2016	Advisor	T. Curran	M.S.	Optimization of Prosthetic Foot-Ankle Stiffness on Standing and Walking
2017	Advisor	S. Chang	Postdoctoral Fellow	Optimization of Prosthetic Foot-Ankle Stiffness on Standing and Walking

RESEARCH TRAINING OF STUDENTS (cont'd)

<u>Date</u>	<u>Role</u>	<u>Student(s)</u>	<u>Degree</u>	<u>Project title</u>
2017-2019	Advisor	M. Vaca Moran	M.S.	Optimization of Prosthetic Foot-Ankle Stiffness on Standing and Walking
2019-present	Advisor	M. Vaca Moran	Ph.D.	Optimal Selection of Prosthetic Knee and Foot Combination for Improving Walking and Standing Performance in Transfemoral Prosthesis Users
2020-2021	Advisor	S. Pinhey	M.S.	Are Women at Increased Risk of Developing Secondary Physical Conditions Associated with Lower-Limb Amputation and Long-Term Prosthesis Use?

RESEARCH GRANTS/CONTRACTS*Investigation of the Functional Biomechanics of Normal and Lower-Limb Amputee Gait*

Department of Veterans Affairs Career Development Award

January 1, 1998-December 31, 2000

Research preceptor: Dudley S. Childress, Ph.D.

Total direct cost: Salary + fringe benefits

VA R&D Research Equipment Purchase

Office of Research and Development special funding opportunity

Awarded: June 30, 1998

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$245,599

A Study to Determine the Biomechanical Effects of Shock-Absorbing Pylons

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

January 1, 1999-December 31, 2000

Co-principal Investigators: Steven A. Gard, Ph.D., and Dudley S. Childress, Ph.D.

Total direct cost: \$180,994

A Computerized Device for Fabricating Sockets with Variable Stiffness

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

April 1, 1999-March 31, 2002

Co-principal Investigators: Steven A. Gard, Ph.D., and Joshua S. Rolock, Ph.D.

Total direct cost: \$450,000

An Investigation of Shock-Absorbing Prosthetic Components

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

April 1, 2001-March 31, 2004

Co-principal Investigators: Steven A. Gard, Ph.D., and Dudley S. Childress, Ph.D.

Total direct cost: \$519,418

RESEARCH GRANTS/CONTRACTS (cont'd)*An Investigation of Foot Alignment and Support in Ankle Foot Orthoses (AFOs)*

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

July 1, 2001-June 30, 2004

Co-principal Investigators: Steven A. Gard, Ph.D., and Dudley S. Childress, Ph.D.

Total direct cost: \$426,278

A Comparison of Computer-Controlled and Passive Prosthetic Knee Joints

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

January 1, 2002-December 31, 2004

Co-principal Investigators: Steven A. Gard, Ph.D., and Dudley S. Childress, Ph.D.

Total direct cost: \$150,000

Influence of Ankle Motion on Bilateral Amputee Gait

National Institutes of Health (R01)

April 1, 2002-March 31, 2005

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$585,000 (Total cost: \$699,918)

Rehabilitation Engineering Research Center in Prosthetics and Orthotics

National Institute on Disability and Rehabilitation Research, Department of Education

October 1, 2003-September 30, 2008

Co-principal Investigators: Dudley S. Childress, Ph.D., and Steven A. Gard, Ph.D.

Total direct cost: \$3,979,600 (Total cost: \$4,750,000)

Rehabilitation Science for Basic Scientists & Engineers: An Advanced Training Program

National Institute on Disability and Rehabilitation Research, Department of Education

May 1, 2004-April 30, 2009

Principal Investigator: Zev Rymer, Ph.D.

Co-principal Investigators: Steven A. Gard, Ph.D. and Li-Qun Zhang, Ph.D.

Total direct cost: \$693,140 (Total cost: \$748,590)

Study of Residual Limb/Prosthetic Socket Compliance in Transtibial Amputees

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

August 1, 2004-July 31, 2007

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$505,825

An Investigation of Ankle Joints for Ankle Foot Orthoses (AFOs)

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

January 1, 2005-December 31, 2007

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$496,896

Effects of Prosthetic Foot Rocker Radius on Gait of Prosthesis Users

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

October 1, 2006-September 30, 2009

Co-principal Investigators: Andrew H. Hansen, Ph.D. and Steven A. Gard, Ph.D.

Total direct cost: \$356,431

RESEARCH GRANTS/CONTRACTS (cont'd)*Effect of Spine Surgery on Energy Expenditure of Walking*

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

October 1, 2006-September 30, 2010

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$367,784

Universal Prosthetic Monitoring System for Outcome Based Research and Clinical Application

NIH/NICHHD (R43)

September 1, 2008–March 31, 2009

Principal Investigator: Steven A. Gard, Ph.D. (on subaward)

Total direct cost: \$40,650

Rehabilitation Engineering Research Center for Prosthetics and Orthotics

National Institute on Disability and Rehabilitation Research, Department of Education

October 1, 2008-July 31, 2014

Co-principal Investigators: Steven A. Gard, Ph.D. and Stefania Fatone, Ph.D., BPO(Hons.)

Total direct cost: \$4,020,525 (Total cost: \$4,750,000)

A Quantitative Analysis of Transfemoral Prosthetic Alignment

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

July 1, 2010-June 30, 2014

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$541,409

Rehabilitation Sciences for Engineers and Basic Scientists: An Advanced Training Program

National Institute on Disability and Rehabilitation Research, Department of Education

October 1, 2011-September 30, 2017

Principal Investigator: Steven A. Gard, Ph.D.

Co-principal Investigator: Zev Rymer, Ph.D.

Total direct cost: \$689,770 (Total cost: \$749,750)

Validation and Critical Evaluation of the AOPA Prosthetic Foot Project Report

American Orthotic and Prosthetic Association (AOPA)

November 1, 2012-May 31, 2014

Co-principal Investigators: Steven A. Gard, Ph.D. and Matthew Major, Ph.D.

Total direct cost: \$25,000

Fall Risk and Prosthetic Influence on Gait Biomechanics in Upper Limb Amputees

Veterans Administration Rehabilitation Research and Development, SPiRE

January 1, 2014-December 31, 2015

Co-principal Investigators: Steven A. Gard, Ph.D. and Matthew Major, Ph.D.

Total direct cost: \$197,969

Improving Mobility for Bilateral Amputees with Coordinated Robotic Prostheses

NIH/NICHHD (R21)

January 1, 2014–December 31, 2015

Principal Investigator: Steven A. Gard, Ph.D. (on subaward)

Total direct cost: \$40,100 (Total cost: \$62,000)

RESEARCH GRANTS/CONTRACTS (cont'd)

Effect of Prosthesis Stiffness on Impact Force During In Vivo Step Loads and Gait

Veterans Administration Rehabilitation Research and Development, SPIRE

November 1, 2014-October 31, 2016

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$193,178

Optimization of Prosthetic Foot and Ankle Stiffness for Standing and Walking

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

February 1, 2016-February 15, 2021

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$663,852

Design of a Smart Prosthetic Liner Controlled by Muscle Activation Feedback

Veterans Administration Rehabilitation Research and Development, SPIRE

July 1, 2016-June 30, 2018

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$199,875

Rehabilitation Sciences for Engineers and Basic Scientists: An Advanced Training Program

National Institute on Disability, Independent Living and Rehabilitation Research, Department of Health and Human Services (DHHS)

October 1, 2016-December 31, 2022

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$739,061 (Total cost: \$750,000)

Evaluating the Effects of Hydraulic Ankle-Foot Prostheses on Standing and Walking in K2-Level Ambulators

American Orthotic and Prosthetic Association (AOPA)

September 1, 2017-December 31, 2022

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$15,000

A Preliminary Investigation to Determine the Effect of the Proteor Union on the Performance of Unilateral, Transfemoral Prosthesis Users

Proteor Group (St Apollinaire, France)

August 1, 2018-December 31, 2022

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$47,500

Optimal Selection of Prosthetic Knee and Foot Combination for Improving Walking and Standing Performance in Transfemoral Prosthesis Users

DoD CDMRP Orthotics and Prosthetics Outcomes Research Program (OPORP)

September 1, 2019-August 31, 2023

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$1,052,811 (Total cost: \$1,499,388)

RESEARCH GRANTS/CONTRACTS (cont'd)

Effect of Prosthetic Foot-Ankle Stiffness on Standing and Walking Performance in Transfemoral Prosthesis Users

Veterans Administration Rehabilitation Research and Development, Merit Review Grant

October 1, 2022-September 30, 2025

Principal Investigator: Steven A. Gard, Ph.D.

Total direct cost: \$654,012

SCHOLARLY BIBLIOGRAPHY**A. Original, peer-reviewed research articles**

1. **Gard, S.A.**, Childress, D.S. and Heckathorne, C.W. (1992). Micropower, Strain-Gauge Sampling Circuit for Prosthetic Limb Applications. *Medical & Biological Engineering & Computing*, 30, 243-247.
2. **Gard, S.A.**, Knox, E.H. and Childress, D.S. (1996). Two-Dimensional Representation of Three-Dimensional Pelvic Motion During Human Walking: An Example of How Projections Can Be Misleading. *Journal of Biomechanics*, 29(10), 1387-1391.
3. **Gard, S.A.**, Childress, D.S. and Uellendahl, J.E. (1996). The Influence of Four-Bar Linkage Knees on Prosthetic Swing-Phase Floor Clearance. *Journal of Prosthetics and Orthotics*, 8(2), 34-40.
4. **Gard, S.A.** and Childress, D.S. (1997). The Effect of Pelvic List on the Vertical Displacement of the Trunk During Normal Walking. *Gait & Posture*, 5(3), 233-238.
5. **Gard, S.A.** and Childress, D.S. (1999). The Influence of Stance-Phase Knee Flexion on the Vertical Displacement of the Trunk During Normal Walking. *Archives of Physical Medicine and Rehabilitation*, 80(1), 26-32.
6. Michaud, S.B., **Gard, S.A.** and Childress, D.S. (2000). A Preliminary Investigation of Pelvic Obliquity Patterns During Gait in Transtibial and Transfemoral Amputees. *Journal of Rehabilitation Research and Development*, 37(1), pp. 1-10.
7. **Gard, S.A.** and Childress, D.S. (2001). What Determines the Vertical Displacement of the Body During Normal Walking? *Journal of Prosthetics and Orthotics*, 13(3), 64-67.
8. **Gard, S.A.** and Konz, R.J. (2003). The Effect of a Shock Absorbing Pylon on the Gait of Persons with Unilateral Trans-Tibial Amputation. *Journal of Rehabilitation Research and Development*, 40(2), 109-124.
9. **Gard, S.A.**, Miff, S.C. and Kuo, A.D. (2004). Comparison of Kinematic and Kinetic Methods for Computing the Vertical Motion of the Body Center of Mass During Walking. *Human Movement Science*, 22(6), 597-610.
10. Hansen, A.H., Childress, D.S., Miff, S.C., **Gard, S.A.** and Mesplay, K.P. (2004). The Human Ankle During Walking: Implications for Design of Biomimetic Ankle Prostheses and Orthoses. *Journal of Biomechanics*, 37(10), 1467-1474.
11. Miff, S.C., Childress, D.S., **Gard, S.A.**, Meier, M.R. and Hansen, A.H. (2005). Temporal Symmetries During Gait Initiation and Termination in Non-Disabled Ambulators and in People with Unilateral Transtibial Limb Loss. *Journal of Rehabilitation Research and Development*, 42(2), 175-182.
12. Konz, R.J., Fatone, S. and **Gard, S.A.** (2006). The Effect of Restricted Spinal Motion on Gait in Able-bodied Persons. *Journal of Rehabilitation Research and Development*, 43(2), 161-170.

A. Original, peer-reviewed research articles (cont'd)

13. Moosabhoy, M.A. and **Gard, S.A.** (2006). Development and Analysis of Methodology for Determining the Sensitivity of Swing Leg Toe Clearance and Effective Leg Length to Swing Leg Joint Angles During Gait. *Gait & Posture*, 24(4), 493-501.
14. **Gard, S.A.** (2006). The Use of Quantitative Gait Analysis for the Evaluation of Prosthetic Walking Performance. *Journal of Prosthetics & Orthotics* supplement, Official Findings of the State-of-the-Science Conference on *Outcome Measures in Lower Limb Prosthetics* [Sept. 7-9, 2005, Chicago, IL], P93-P104.
15. Konz, R., Fatone, S.; Stine, R., Ganju, A., **Gard, S.A.** and Ondra, S. (2006). A Kinematic Model to Assess Spinal Motion During Walking. *Spine*, 31(24), E898-E906.
16. Saha, D., **Gard, S.A.**, Fatone, S., and Ondra, S. (2007). The Effect of Trunk-flexed Postures on Balance and Metabolic Energy Expenditure During Standing. *Spine*, 32(15), 1605–1611.
17. Zissimopoulos, A., Fatone, S. and **Gard, S.A.** (2007). The Biomechanical and Energetic Effects of a Stance-Control Orthotic Knee Joint. *Journal of Rehabilitation Research & Development* 44(4), 503-514.
18. Su, P., **Gard, S.A.**, Lipschutz, R.D. and Kuiken, T.A. (2007). Gait Characteristics of Persons with Bilateral Transtibial Amputations. *Journal of Rehabilitation Research & Development* 44(4), 491-502.
19. Miff, S.C., Hansen, A.H., Childress, D.S., **Gard, S.A.**, and Meier, M.R. (2008). Roll-over Shapes of the Ankle-Foot and Knee-Ankle-Foot Systems during Gait Initiation, Steady-state Walking, and Gait Termination. *Gait & Posture*, 27(2), 316-322.
20. McNealy, L.L. and **Gard, S.A.** (2008). Effect of Prosthetic Ankle Units on the Gait of Persons with Bilateral Transfemoral Amputations. *Prosthetics and Orthotics International*, 32(1), 111-126.
21. Saha, D.J., **Gard, S.A.** and Fatone, S. (2008). The Effect of Trunk Flexion on Able-bodied Gait. *Gait & Posture*, 27(4), 653-660.
22. Su, P., **Gard, S.A.**, Lipschutz, R.D. and Kuiken, T.A. (2008). Differences in Gait Characteristics Between Persons with Bilateral Transtibial Amputations, Due to Peripheral Vascular Disease and Trauma, and Able-bodied Ambulators. *Archives of Physical Medicine and Rehabilitation*, 89(7), 1386-1394.
23. Williams, R.J., Hansen, A.H. and **Gard, S.A.** (2009). Prosthetic Ankle-Foot Mechanism Capable of Automatic Adaptation to the Walking Surface, *ASME Journal of Biomechanical Engineering*, 131(3), 035002.
24. Fatone, S., **Gard, S.A.** and Malas, B.S. (2009). Effect of Ankle Foot Orthosis Alignment and Foot-Plate Length on the Gait of Adults with Post-Stroke Hemiplegia, *Archives of Physical Medicine and Rehabilitation*, 90(5), 810-818.

A. Original, peer-reviewed research articles (cont'd)

25. Johnson, W.B., Fatone, S. and **Gard, S.A.** (2009). Walking Mechanics of Persons Who Use Reciprocating Gait Orthoses, *Journal of Rehabilitation Research & Development*, 46(3), 435-446.
26. Su, P., **Gard, S.A.**, Lipschutz, R.D. and Kuiken, T.A. (2010). The Effects of Increased Prosthetic Ankle Motions on the Gait of Persons with Bilateral Transtibial Amputations. *American Journal of Physical Medicine and Rehabilitation*, 89(1), 34-47.
27. Hansen, A.H., Miff, S.C., Childress, D.S., **Gard, S.A.**, and Meier, M.R. (2010). Net External Energy of the Biologic and Prosthetic Ankle during Gait Initiation. *Gait & Posture*, 31, 13-17.
28. **Gard, S.A.**, Su, P.F., Lipschutz, R.D. and Hansen, A.H. (2011). The Effect of Prosthetic Ankle Units on Roll-Over Shape Characteristics During Walking in Persons with Bilateral Transtibial Amputations. *Journal of Rehabilitation Research & Development*, 48(9), 1037-1047.
29. Boutwell, E., Stine, R., Hansen, A., Tucker, K. and **Gard, S.A.** (2012). Effect of Prosthetic Gel Liner Thickness on Gait Biomechanics and Pressure Distribution Within the Transtibial Socket. *Journal of Rehabilitation Research & Development*, 49(2), 227-240.
30. Meier, M.R., Hansen, A.H., **Gard, S.A.**, and McFadyen, A.K. (2012). Obstacle course: Users' maneuverability and movement efficiency when using Otto Bock C-Leg, Otto Bock 3R60, and CaTech SNS prosthetic knee joints. *Journal of Rehabilitation Research & Development*, 49(4), 583-596.
31. Nickel, E.A., Hansen, A.H. and **Gard, S.A.** (2012). Prosthetic Ankle-Foot System That Adapts to Sloped Surfaces. *ASME Journal of Medical Devices* 6(1), 011006, DOI:10.1115/1.4005787.
32. Sensinger, J., Intawachirarat, N., and **Gard, S.A.** (2013). Contribution of Prosthetic Knee and Ankle Mechanisms to Swing-Phase Foot Clearance. *IEEE Transactions on Neural Systems & Rehabilitation Engineering*, 21(1), 74-80.
33. Major, M.J., Stine, R.L. and **Gard, S.A.** (2013). The Effects of Walking Speed and Prosthetic Ankle Adapters on Upper Extremity Dynamics and Stability-Related Parameters in Bilateral Transtibial Amputee Gait. *Gait & Posture*, 38(4), 858-863.
34. Johnson, W.B., Fatone, S. and **Gard, S.A.** (2013). Modeling the Effects of Hip Joint Stiffness on Reciprocating Gait Orthosis-Assisted Gait. *Journal of Rehabilitation Research & Development*, 50(10), 1449-1456.
35. Zissimopoulos, A., Fatone, S. and **Gard, S.A.** (2014). The Effect of Ankle-Foot Orthoses on Self-Reported Balance Confidence in Persons with Chronic Post-Stroke Hemiplegia. *Prosthetics & Orthotics International*, 38(2), 148-154.
36. Kluger, D., Major, M.J., Fatone, S. and **Gard, S.A.** (2014). The Effect of Trunk Flexion on Lower Limb Kinetics of Able-Bodied Gait. *Human Movement Science*, 33(2), 395-403.

A. Original, peer-reviewed research articles (cont'd)

37. Zissimopoulos, A., Stine, R., Fatone, S. and **Gard, S.A.** (2014). Mediolateral Foot Placement Accuracy During Ambulation in Individuals with Chronic Post-Stroke Hemiplegia. *Gait & Posture*, 39(4), 1097-1102.
38. Major, M.J., Stine, R.L., Heckathorne, C.W., Fatone, S. and **Gard, S.A.** (2014). Comparison of range-of-motion and variability in upper body movements between transradial prosthesis users and able-bodied controls when executing goal-oriented tasks. *Journal of Neuroengineering and Rehabilitation*, 11, 132.
39. Zissimopoulos, A., Fatone, S. and **Gard, S.A.** (2015). Effects of Ankle-Foot Orthoses on Mediolateral Foot Placement Ability During Post-Stroke Gait. *Prosthetics & Orthotics International*, 39(5), 372-379.
40. Boutwell, E., Stine, R., and **Gard, S.A.** (2015). A Novel In Vivo Impact Device for Evaluation of Sudden Limb Loading Response. *Medical Engineering & Physics*, 37(1), 151-155.
41. Major, M., Johnson, W. and **Gard, S.A.** (2015). Inter-rater Reliability of Mechanical Tests for Functional Classification of Prosthetic Components. *Journal of Rehabilitation Research & Development*, 52(4), 467-476.
42. Boutwell, E., Stine, R., and **Gard, S.A.** (2016). Impact Testing of the Residual Limb: System Response to Changes in Prosthetic Stiffness. *Journal of Rehabilitation Research & Development*, 53(3), 369-378.
43. Major, M.J., Raghavan, P. and **Gard, S.A.** (2016). Assessing a Low-Cost Accelerometer-Based Technique to Estimate Spatial Gait Parameters of Lower-Limb Prosthesis Users. *Prosthetics & Orthotics International*, 40(5), 643-648.
44. Boutwell, E., Stine, R., and **Gard, S.A.** (2016). Shock Absorption during Transtibial Amputee Gait: Does Longitudinal Prosthetic Stiffness Play a Role? *Prosthetics & Orthotics International*, 41(2), 178-185.
45. Koehler-McNicholas, S., Lipschutz, R. and **Gard, S.A.** (2017). The Biomechanical Response of Persons with Transfemoral Amputation to Variations in Prosthetic Knee Alignment during Level Walking. *Journal of Rehabilitation Research & Development*, 53(6), 1089-1106.
46. Reinkensmeyer D, Blackstone S, Bodine C, Brabyn J, Brienza D, Caves K, DeRuyter F, Durfee E, Fatone S, Fernie G, **Gard S**, Karg P, Kuiken TA, Harris GF, Jones M, Li Y, Maisel; Michael-McCue J, Meade MA, Mitchell H, Mitzner TL, Patton JL, Requejo P, Rimmer JH, Rogers WA, Rymer WZ, Sanford JA, Schneider L, Sliker L, Sprigle S, Steinfeld A, Steinfeld E, Vanderheiden G, Winstein C, Zhang LQ, Corfman T (2017). How a diverse research ecosystem generates rehabilitation technologies: Review of NIDILRR's Rehabilitation Engineering Research Centers. *Journal of NeuroEngineering and Rehabilitation*, 14:109, DOI: 10.1186/s12984-017-0321-3.
47. Nepomuceno A, Major MJ, Stine R, **Gard S** (2017). Effect of Ankle Immobilization on Able-Bodied Gait as a Model to Increase Understanding About Bilateral Transtibial Amputee Gait. *Prosthetics & Orthotics International*, 41(6), 556-563.

A. Original, peer-reviewed research articles (cont'd)

48. Major MJ, McConn S, Zavaleta JL, Stine R, **Gard SA** (2019). Effects of Upper Limb Loss and Prosthesis Use on Proactive Mechanisms of Locomotor Stability. *Journal of Electromyography and Kinesiology*, 48, 145-151.
49. Bertos GA, Childress DS, **Gard SA** (2019). A 2nd Order Model of the Vertical Impedance of the Locomotor System during Human Walking. *IEEE Transactions on Medical Robotics and Bionics*, 1(3), 169-176.
50. Major MJ, Zavaleta JL, **Gard SA** (2019). Does Decreasing Below-Knee Prosthesis Pylon Longitudinal Stiffness Increase Prosthetic Limb Collision And Push-Off Work During Gait? *Journal of Applied Biomechanics*, 35(5), 312-319.
51. Major MJ, Stine R, Shirvaikar T, **Gard SA** (2020). Effects of Upper Limb Loss or Absence and Prosthesis Use on Postural Control of Standing Balance. *American Journal of Physical Medicine & Rehabilitation*, 99(5), 366-371.
52. Pace A, Howard D, **Gard SA**, Major MJ (2020). A Simple Walking Model to Optimize Transfemoral Prostheses for Prosthetic Limb Stability. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 28(12). 3005-3012.
53. Block ZA, Brinkmann JT, **Gard SA** (2021). The Utilization of Consensus Techniques in Education and Research in Medical Professions. *Journal of Prosthetics and Orthotics*, 33(3), 175-183.
54. Armstrong K, Brinkmann JT, Stine R, **Gard SA**, Major MJ (2021). Do Upper Limb Loss and Prosthesis Use Affect Lower Limb Gait Dynamics? *Journal of Prosthetics and Orthotics*, 33(4), 249-254.
55. Maun JA, **Gard SA**, Major MJ, Takahashi KZ (2021). Reducing stiffness of shock-absorbing pylon amplifies damping from the prosthesis and redistributes mechanical work among intact joints during walking. *Journal of NeuroEngineering and Rehabilitation*, 18, 143.
56. Fatone S, Caldwell R, Angelico J, Stine R, Kim KY, **Gard SA**, Oros M. (2021). Comparison of Ischial Containment and Sub-Ischial Sockets on Comfort, Function, Quality-of-Life and Satisfaction with Device in Persons with Transfemoral Amputation: A Randomized Crossover Trial. *Archives of Physical Medicine and Rehabilitation*, 102(11), 2063-2073.
57. Vaca M, Stine R, Hammond II P, Cavanaugh M, Major MJ, **Gard SA**. (2022). The Effect of Prosthetic Ankle Dorsiflexion Stiffness on Gait Biomechanics and Standing Balance in Individuals with Unilateral Transtibial Amputations. *Journal of Prosthetics and Orthotics*, doi: 10.1097/JPO.0000000000000451.
58. Chang SR, Major MJ, Cavanaugh ML, **Gard SA** (2022). Systematic Mechanical Characterization of Prosthetic Feet to Estimate Roll-Over Shape Radii for Clinical Prescription. *Journal of Prosthetics and Orthotics* (Submitted for publication).

A. Original, peer-reviewed research articles (cont'd)

59. Fatone S, Caldwell R, Angelico J, Stine R, Kim KY, **Gard SA**, Oros M, Major MJ. (2022). Comparison of Ischial Containment and Sub-Ischial Sockets on Gait Biomechanics in Persons with Transfemoral Amputation: A Randomized Crossover Trial. *Archives of Physical Medicine and Rehabilitation*, 103(8), 1515-1523.
60. Kristal A, Gaunaud IA, Kirk-Sanchez NJ, **Gard SA**, Gailey RS (2023). The Development and Reliability Testing of the Functional Lower-limb Amputee Gait Assessment. *Clinical Rehabilitation* (Accepted for publication).

B. Editorials, Reviews, Chapters, Books, Commentaries

1. Hansen, A.H., **Gard, S.A.** and Childress, D.S. (2000). The Determination of Foot/Ankle Roll-Over Shape: Clinical and Research Applications. Chapter from *Pediatric Gait: A New Millennium in Clinical Care and Motion Analysis Technology*, pp 159-165.
2. **Gard, S.A.** and Fatone, S. (2004). Biomechanics of Lower Limb Function and Gait. *Report of a Consensus Conference on the Orthotic Management of Stroke Patients*, ISPO (International Society for Prosthetics and Orthotics), Copenhagen, Denmark, 55-61.
3. **Gard, S.A.** (2006). Prosthetic Devices/Methods. Entry in *Wiley Encyclopedia of Biomedical Engineering*, John Wiley & Sons, Inc., Hoboken, NJ.
4. Childress, D.S. and **Gard, S.A.** (2006). Commentary on the Six Determinants of Gait. Addendum to Chap. 1 of *Human Walking* (3rd ed.), Lippincott Williams & Wilkins, Philadelphia, PA., pp. 19-21.
5. Hansen, A.H., **Gard, S.A.** and Childress, D.S. (2007). Quasi-Stiffness of the Ankle During Able-Bodied Walking at Different Speeds: Implications for Design of Prostheses. *Foot and Ankle Motion Analysis: Clinical Treatment and Technology*, CRC Press, Boca Raton, FL, pp. 599-612.
6. **Gard, S.A.** (2013). Swing Phase Control—From Fluid Mechanics to Microprocessors. Invited commentary, *Journal of Rehabilitation Research & Development*, 50(3), xvii.
7. **Gard, S.A.** (2018). The Influence of Prosthetic Knee Joints on Gait. Chapter from *Handbook of Human Motion* (Eds: B. Müller & S. Wolf), Springer Publishing Co., New York, NY. doi:10.1007/978-3-319-30808-1_75-1.
8. Heinemann AW, Feuerstein M, Frontera WR, **Gard SA**, Brown J, Kaminsky LA, Negrini S, Richards LG, Vallee C (2020). Rehabilitation is a Global Health Priority (Editorial). *Journal of Prosthetics and Orthotics*, 32(2), 78-80.

C. Invited lectures

1. **Gard, S.A.** (1996). The Influence of Four Bar Linkage Knees on Prosthetic Swing Phase Floor Clearance. Invited Speaker for the *Fall Scientific Seminar of the Midwest Chapter of the American Academy of Orthotists and Prosthetists (AAOP)*, Northwestern University Medical School, Chicago, IL, September 28th.

C. Invited lectures (cont'd)

2. **Gard, S.A.** (1997). Vertical Displacement of the Trunk During Normal Walking. Invited Speaker for *Children's Memorial Hospital Visiting Professor Conference*, Children's Memorial Hospital, Division of Pediatric Orthopaedic Surgery, Chicago, IL, December 5.
3. **Gard, S.A.** (1997). Investigation of Foot Clearance Issues in Normal and Amputee Gaits. Invited Speaker for *Northwestern University Biomedical Engineering Department Graduate Student Seminar*, Northwestern University, Evanston, IL, February 28.
4. **Gard, S.A.** (1998). Investigation of the Biomechanics of Normal Human Walking, With Implications for the Design of Lower-Limb Prostheses. Invited Speaker for the *Marquette University Biomedical Engineering Graduate Student Seminar*, Milwaukee, WI, December 11th.
5. **Gard, S.A.** (1999). Functional Considerations for the Design and Evaluation of Lower-Limb Prostheses. Invited Speaker at Shriners Hospital for Children, Oak Park, IL, November 1st.
6. **Gard, S.A.** (1999). Investigation of the Biomechanics of Normal Human Walking, With Implications for Lower-Limb Prosthetic Design. Invited Speaker for the *Texas A&M University Biomedical Engineering Graduate Student Seminar*, College Station, TX, March 9th.
7. **Gard, S.A.** (2000). Ingredients for Success in VA Rehabilitation R&D Career Development: An Awardee's Perspective. Invited speaker for the *2nd National VA Rehabilitation Research & Development Conference*, Arlington, VA, Feb 20-22.
8. **Gard, S.A.** and Fatone, S. (2003). Biomechanics of Lower Limb Function and Gait. Invited speaker for the *ISPO Consensus Conference on "Orthotic Management of Stroke Patients"*, Ellecom, The Netherlands, September 21-26.
9. **Gard, S.A.** (2003). Overview of Lower Limb Prosthetics Research. Invited speaker for the *WRAMC and the VA Orthopedic & Prosthetic Workshop*, Arlington, VA, Nov. 17-18.
10. **Gard, S.A.** (2004). The Northwestern Experience: Making Ph.D.'s Clinically Savvy. Invited speaker for the *American Academy of Orthotists and Prosthetists (AAOP) Meeting on Advanced Education for Prosthetists & Orthotists*, Seattle, WA, March 18-19.
11. **Gard, S.A.** (2004). Methods for the Assessment of Prosthetic and Orthotic Devices. Invited speaker for the workshop "Prosthetics and Orthotics: Innovative Design Strategies and Clinical Solutions" held in conjunction with the *XVth Congress of the International Society of Electrophysiology & Kinesiology (ISEK)*, Boston, MA, June 18-21.
12. **Gard, S.A.** (2006). A Review of Smart Prosthetics: Exploring Assistive Devices for the Body and Mind. Invited speaker for the *O&P Leadership Conference: Developing a Shared Vision*, Chicago, IL, November 15-17.
13. **Gard, S.A.** (2007). An Overview of Research: The Northwestern University Prosthetics Research Laboratory & Rehabilitation Engineering Research Program. Invited speaker for the *AAOP Midwest Chapter Spring Meeting*, Lisle, IL, May 31-June 2.

C. Invited lectures (cont'd)

14. **Gard, S.A.** (2007). The State-of-the-Art in Rehabilitation Engineering Research and Application. Invited speaker for the *Rehabilitation Engineering Society of North America (RESNA) Annual Conference*, Phoenix, AZ, June 15-19.
15. **Gard, S.A.** (2007). Functional Biomechanics of Gait, With Implications for Prosthetics Research. Invited speaker for the *UK International Society for Prosthetics and Orthotics (ISPO) Annual Scientific Meeting*, Moat House Hotel, Stoke-On-Trent, England, Nov. 2-3.
16. **Gard, S.A.** (2008). Does Quantitative Gait Analysis Provide Useful Information in Prosthetics Research and Development? Invited speaker for the *17th Annual Meeting of the European Society of Movement Analysis for Adults and Children (ESMAC)*, Antalya, Turkey, September 8-13.
17. **Gard, S.A.** (2010). The Academic Researcher Perspective. Special symposium on "Perspectives on O&P Research: Finding Common Ground." Invited speaker for the *36th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP)*, Chicago, IL, February 24-27.
18. **Gard, S.** (2014). What is 3-Dimensional Gait Analysis and What Does It Mean to the Orthotist/Prosthetist? Special symposium on "Using Gait Analysis to Improve O&P Prescription and Function." Invited speaker for *The 40th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP)*, February 26-March 1, Chicago, Illinois.
19. **Gard, S.** (2014). Special symposium on "How to Become a Better Consumer of Research." Invited symposium organizer for *The 40th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP)*, February 26-March 1, Chicago, Illinois.
20. **Gard SA, Major M, Johnson W** (2015). Mechanical Characteristics of Prosthetic Feet: Forefoot Stiffness and Damping. Special symposium on "Evidence-Based Practice for Prosthetic Foot Prescription." Invited speaker for the *15th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Lyon, France, June 22-25.
21. **Gard SA** (2015). Sensitivity of Biomechanical Gait Outcomes to Component-Specific Changes in Prosthesis Properties. Special symposium on "Exploring the relationship between lower-limb prosthesis mechanical properties and user performance for clinical prescription and prosthesis design optimization." Invited speaker for the *15th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Lyon, France, June 22-25.
22. **Gard SA** (2015). Contemporary Models of Gait. Invited speaker for the American Academy of Orthotists and Prosthetists (AAOP) One-Day Seminar Certificate Program entitled, "Clinical Applications of Gait Assessment", November 13, Chicago, Illinois.

C. Invited lectures (cont'd)

23. **Gard SA** (2015). Features of Gait – The Gait Lab Perspective. Invited speaker for the American Academy of Orthotists and Prosthetists (AAOP) One-Day Seminar Certificate Program entitled, “Clinical Applications of Gait Assessment”, November 13, Chicago, Illinois.
24. **Gard SA** (2018). Do Persons with Transtibial Amputations Require Prosthetic Shock Absorbing Components During Gait? Orthopaedic and Rehabilitation Engineering Center (OREC), Marquette University, September 17, Milwaukee, WI.
25. **Gard SA** (2018). Medical Device Studies: Significant Risk, Nonsignificant Risk, or Exempt? IRB Member Retreat, Northwestern University, October 19, Chicago, IL.
26. **Gard SA** (2019). Do Persons with Transtibial Amputations Require Prosthetic Shock Absorbing Components During Gait? The Ohio Chapter—AAOP2019 Annual Spring Technical Meeting, Columbus, OH.
27. **Gard SA** (2022). Normal Human Walking. Lecture provided for residents at the Shirley Ryan AbilityLab, October 4, Chicago, IL.
28. **Gard SA** (2023). A Functional Model of the Foot-Ankle Mechanism During Walking. Special symposium on “Foot-Ankle Biomechanics & Pedorthic Program.” Invited speaker for the 49th Academy Annual Meeting & Scientific Symposium, March 1-4, Nashville, TN.

D. Proceedings and non-refereed papers

1. **Gard, S.A.**, Childress, D.S. and Heckathorne, C.W. (1992). A Micropower, Strain Gauge Sampling Circuit for Use in Prosthetic Limbs. *Proceedings of 7th World Congress of the International Society for Prosthetics and Orthotics (ISPO)*, Chicago, IL, June 28-July 3.
2. **Gard, S.A.** and Childress, D.S. (1995). Sensitivity Analyses of Swing-Leg Length and Toe Clearance. *The 2nd Annual North American Clinical Gait Symposium*, University of Waterloo, Waterloo, Ontario, June 1-3.
3. Childress, D.S., **Gard, S.A.** and Uellendahl, J.E. (1995). An Investigation of 4-Bar Linkage Knees as an Aid to Floor Clearance During Swing. *Proceedings of 8th World Congress of the International Society for Prosthetics and Orthotics (ISPO)*, Melbourne, Australia, April 2-7, 1995.
4. **Gard, S.A.** (1996). The Effect of Pelvic Obliquity on the Vertical Excursion of the Trunk During Normal Walking. *Children's Memorial Hospital Annual Gait Symposium*, Children's Memorial Hospital, Chicago, IL, November 7.
5. **Gard, S.A.** and Childress, D.S. (1996). The Effect of Pelvic List on the Vertical Displacement of the Trunk During Normal Walking. *The 1st Annual North American Society for Gait and Clinical Movement Analysis Conference*, Birmingham, AL, April 20-23.
6. **Gard, S.A.** (1997). Vertical Displacement of the Body During Normal Walking—Effect of Pelvic Obliquity and Stance-Phase Knee Flexion. *The Rehabilitation Institute of Chicago and Northwestern University Medical School Department of Rehabilitation Medicine Grand Rounds Series*, Rehabilitation Institute of Chicago, Chicago, IL, November 26.

D. Proceedings and non-refereed papers (cont'd)

7. **Gard, S.A.** (1997). The Effect of Stance-Phase Knee Flexion on the Vertical Displacement of the Trunk During Normal Walking. *Children's Memorial Hospital Annual Gait Symposium*, Children's Memorial Hospital, Chicago, IL, November 6.
8. **Gard, S.A.** and Childress, D.S. (1997). The Effect of Stance-Phase Knee Flexion on the Vertical Displacement of the Trunk During Normal Walking. *The 21st Annual Meeting of the American Society of Biomechanics*, Clemson University, Clemson, SC, September 24-27.
9. Childress, D.S. and **Gard, S.A.** (1997). Investigation of Vertical Motion of the Human Body During Normal Walking. *Gait & Posture*, 5(2), 161 [*The 2nd Annual North American Society of Gait and Clinical Movement Analysis*, Chicago, IL, April 9-12].
10. **Gard, S.A.** and Childress, D.S. (1997). How Two-Dimensional Representations of Three-Dimensional Human Movements Can Be Misleading. *Gait & Posture*, 5(2), 185 [*The 2nd Annual North American Society of Gait and Clinical Movement Analysis*, Chicago, IL, April 9-12.]
11. **Gard, S.A.** and Childress, D.S. (1998). Mechanical Characterization of Vertical Shock-Absorbing Pylons for Lower-Limb Prostheses. *1st Annual Meeting of the VA Rehabilitation Research & Development Service: "Enabling Veterans: Meeting the Challenge of Rehabilitation in the Next Millennium"*, Washington, D.C., Oct. 1-3.
12. **Gard, S.A.** (1998). Mechanical Characterization of Vertical Shock-Absorbing Pylons for Lower-Limb Prostheses. *North American Congress on Biomechanics (NACOB)*, Waterloo, ON, Canada, August 14-18.
13. **Gard, S.A.** and Childress, D.S. (1999). What Causes Vertical Movement of the Body During Normal Walking? *Children's Memorial Hospital Motion Analysis Center's Annual Gait Symposium*, Children's Memorial Hospital, Chicago, IL, November 11th.
14. Childress, D.S. and **Gard, S.A.** (1999). Vertical Movement of the Trunk in Human Walking. *XVIIth Congress of the International Society of Biomechanics (ISB)*, Calgary, Canada, August 8-13th.
15. Miff, S.C., **Gard, S.A.** and Childress, D.S. (2000). The Effect of Step Length, Cadence, and Walking Speed on the Trunk's Vertical Excursion. *World Congress on Medical Physics and Biomedical Engineering*, Chicago, IL, July 23-28th.
16. Miff, S.C., Childress, D.S. and **Gard, S.A.** (2000). The Effect of Step Length and Cadence on the Instantaneous Forward Velocity of Walking. *24th Annual Meeting of the American Society of Biomechanics*, Chicago, IL, July 19-22nd.
17. **Gard, S.A.**, Hansen, A.H., and Childress, D.S. (2000). The Determination of Foot/Ankle Roll-Over Shape: Clinical and Research Applications. *IEEE-EMBS/Shriner's Hospital Workshop on Pediatric Gait: A New Millenium in Clinical Care and Motion Analysis Technology*, Chicago, IL, July 22nd.

D. Proceedings and non-refereed papers (cont'd)

18. **Gard, S.A.** and Childress, D.S. (2000). What Determines Vertical Motion of the Human Body During Normal Gait? *5th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Rochester, MN, April 12-15.
19. **Gard, S.A.**, Childress, D.S., Konz, R.J. and Grahn, E.C. (2000). The VA Chicago Motion Analysis Research Laboratory: A Tool for Studying Human Movement and Evaluating Prosthetic and Orthotic Performance. *2nd National VA Rehabilitation Research & Development Conference*, Arlington, VA, Feb 20-22.
20. **Gard, S.A.** and Konz, R.J. (2001). The Influence of Prosthetic Shock Absorbing Pylons on Transtibial Amputee Gait. *6th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Sacramento, CA, April 25th-28th.
21. Miff, S.C., Childress, D.S. and **Gard, S.A.** (2001). Vertical Excursion of the Trunk During Gait is Determined by Step Length. *6th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Sacramento, CA, April 25th-28th.
22. **Gard, S.A.** and Childress, D.S. (2001). What Determines the Vertical Displacement of the Body During Normal Walking? *2001 Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP)*, Dallas, TX, March 7-10.
23. **Gard, S.A.** and Konz, R.J. (2001). The Influence of Prosthetic Shock Absorbing Pylons on Transtibial Amputee Gait. *2001 Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP)*, Dallas, TX, March 7-10.
24. **Gard, S.A.** and Konz, R.J. (2002). The Effect of Shock Absorbing Prosthetic Components on the Gaits of Persons with Lower-Extremity Amputations. *2nd Joint Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) and Biomedical Engineering Society (BMES)*, Houston, TX, October 23rd-26th.
25. Ruhe, B.L., Childress, D.S. and **Gard, S.A.** (2002). Compensatory Pelvic Motions Employed by Persons Who Walk With Bilateral Trans-femoral Prostheses. *7th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Chattanooga, TN, April 17th-20th.
26. **Gard, S.A.** and Konz, R.J. (2002). The Effect of Prosthetic Shock Absorbing Pylons on Gait of Persons with Trans-Tibial Amputations. *Department of Veterans Affairs 3rd National Rehabilitation Research and Development Conference*, Arlington, VA, February 10th-12th.
27. Fatone, S., **Gard, S.A.**, Childress, D.S. and Malas, B.S. (2002). An Investigation of Foot Alignment and Support in Ankle Foot Orthoses (AFOs). *Department of Veterans Affairs 3rd National Rehabilitation Research and Development Conference*, Arlington, VA, February 10th-12th.
28. Konz, R., Stine, R., Fatone, S., **Gard, S.A.**, Childress, D., Ganju, A. and Ondra S. (2003). An Advanced Biomechanical Model to Assess How Spinal Motion Contributes to Gait: Preliminary Data. *8th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Wilmington, DE, May 7-10.

D. Proceedings and non-refereed papers (cont'd)

29. Miff, S.C., Childress, D.S., **Gard, S.A.**, Meier, M. and Hansen, A. (2003). Initiation of Walking: Passive or Active? *8th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Wilmington, DE, May 7-10.
30. Konz, R., Stine, R., Fatone, S., Ganju, A., Jorge, A., **Gard, S.A.**, Childress, D. and Ondra S. (2003). Development of An Advanced Biomechanical Spine Model to Assess the Effect of Surgical Stabilization and Alignment on Gait. *10th International Meeting on Advanced Spine Techniques*, Rome, Italy, July 10-12.
31. Meier, M-R, **Gard, S.A.**, Hansen, A.H. and Childress, D.S. (2003). A Comparison Of The C-Leg And The 3R60 Prosthetic Knee Joint. *Salford's 2nd International Conference on Biomechanics of the Lower Limb in Health, Disease and Rehabilitation*, Manchester, England, UK, September 1-3.
32. Bertos, G.A., Childress, D.S., and **Gard, S.A.** (2003). Mechanical Impedance Identification of the Human Locomotor System During Able-Bodied Walking. *Annual Meeting of the American Society of Biomechanics (ASB)*, Toledo, OH, USA, September 25-27.
33. Childress, D.S., Miff, S.C. and **Gard, S.A.** (2003). When Some Gait Determinants Fail, Some Equations Can Eventuate. *Annual Meeting of the American Society of Biomechanics (ASB)*, Toledo, OH, USA, September 25-27.
34. Meier, M-R, **Gard, S.A.**, Hansen, A.H. and Childress, D.S. (2003). A Comparison Of The C-Leg And 3R60 Prosthetic Knee Joint Performance. *Annual Meeting of the American Society of Biomechanics (ASB)*, Toledo, OH, USA, September 25-27.
35. Fatone, S., **Gard, S.A.**, Childress, D.S. and Malas, B. (2003). An Investigation of Foot Alignment and Support in Ankle Foot Orthoses (AFOs). *American Congress of Rehabilitation Medicine*, Tucson, AZ, October 23-26.
36. Konz, R., Stine, R., Ganju, A., Fatone, S., Jorge, A., **Gard, S.A.**, Childress, D. and Ondra S. (2003). Development of An Advanced Biomechanical Spine Model to Assess the Effect of Surgical Stabilization and Alignment on Gait. *Congress of Neurological Surgeons 53rd Annual Meeting*, Denver, CO, October 18-23.
37. Hansen, A.H., Childress, D.S., Miff, S. and **Gard, S.A.** (2003). Quasi-stiffness of the Ankle During Walking At Different Speeds -Implications for Design of Prostheses and Orthoses. *Pediatric and Adult Foot and Ankle Workshop: New Horizons in Clinical Treatment and Innovative Technology*, Bethesda, MD, November 15.
38. Konz, R., Fatone, S. and **Gard, S.A.** (2004). The Effect of Thoraco-Lumbo-Sacral Orthoses on Gait. *9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Lexington, KY, April 21-24.
39. Miff, S., Childress, D., Hansen, A., **Gard, S.A.** and Meier, M. (2004). The Behavior of the Knee-Ankle-Foot System During Gait Initiation, Steady-State Walking and Gait Termination. *9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Lexington, KY, April 21-24.

D. Proceedings and non-refereed papers (cont'd)

40. Miff, S., Childress, D., Hansen, A., **Gard, S.A.** and Meier, M. (2004). Temporal-spatial Symmetries During Gait Initiation and Termination. *9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Lexington, KY, April 21-24.
41. Fatone, S., **Gard, S.A.**, Childress, D.S. and Malas, B.S. (2004). An Investigation of Foot Alignment and Support in Ankle Foot Orthoses (AFOs). *9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Lexington, KY, April 21-24.
42. Koehler, S.R., **Gard, S.A.**, Meier, M.R., Cassar, M. and Lipschutz, R. (2004). Stance-Phase Knee Flexion in Persons with Unilateral Transfemoral Amputations Walking on an Otto Bock 3R60 EBS Knee: A Preliminary Report. *9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Lexington, KY, April 21-24.
43. Koehler, S.R., **Gard, S.A.** and Meier, M.R. (2004). An Investigation of Shock Absorbing Components in Persons with Unilateral Transfemoral Amputations. *The 11th World Congress of the International Society of Prosthetics and Orthotics*, Wanchai, Hong Kong, China, August 1-6.
44. Ruhe, B.L., **Gard, S.A.** and Childress, D.S. (2004). Walking Characteristics of Persons with Bilateral Transfemoral Amputations. *The 11th World Congress of the International Society of Prosthetics and Orthotics*, Wanchai, Hong Kong, China, August 1-6.
45. **Gard, S.A.** and Konz, R.J. (2004). The Effect of a Shock-Absorbing Pylon on the Gait of Persons with Transtibial Amputation. *The 11th World Congress of the International Society of Prosthetics and Orthotics*, Wanchai, Hong Kong, China, August 1-6.
46. Konz, R.J., Fatone, S. and **Gard, S.A.** (2004). The Effect of a Thoraco-Lumbo-Sacral Orthosis on Gait. *The 11th World Congress of the International Society of Prosthetics and Orthotics*, Wanchai, Hong Kong, China, August 1-6.
47. Fatone, S., Hansen, A.H., **Gard, S.A.** and Malas, B.S. (2004). The Effect of Ankle Foot Orthosis Alignment on the Knee During Gait in Post-Stroke Hemiplegia. *The 11th World Congress of the International Society of Prosthetics and Orthotics*, Wanchai, Hong Kong, China, August 1-6.
48. Ruhe, B.L. and **Gard, S.A.** (2005). Gait Characteristics of Persons with Bilateral Transfemoral Amputations. *The 31st Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP) and the Association of Children's Prosthetic-Orthotic Clinics (ACPOC)*, Orlando, FL, March 16-19.
49. Koehler, S., **Gard, S.A.** and Meier, M.R. (2005). An Investigation of Shock-Absorbing Components in Persons with Unilateral Transfemoral Amputations. *The 31st Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP) and the Association of Children's Prosthetic-Orthotic Clinics (ACPOC)*, Orlando, FL, March 16-19.

D. Proceedings and non-refereed papers (cont'd)

50. Konz, R.J., Fatone, S. and **Gard, S.A.** (2005). The Effect of a Thoraco-Lumbo-Sacral Orthosis on Gait. *The 31st Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP) and the Association of Children's Prosthetic-Orthotic Clinics (ACPOC)*, Orlando, FL, March 16-19.
51. McNealy, L., **Gard, S.A.**, Lipschutz, R. and Kuiken, T. (2005). Quantitative Evaluation to Determine the Effect of Increased Ankle Motion in Persons with Bilateral Transfemoral Amputations. *The 31st Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP) and the Association of Children's Prosthetic-Orthotic Clinics (ACPOC)*, Orlando, FL, March 16-19.
52. Su, P.F., **Gard, S.A.**, Lipschutz, R. and Kuiken, T. (2005). Investigation to Determine the Effect of Increased Ankle Motion in Persons with Bilateral Transtibial Amputations. *The 31st Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP) and the Association of Children's Prosthetic-Orthotic Clinics (ACPOC)*, Orlando, FL, March 16-19.
53. Meier, M.R., Hansen, A.H. and **Gard, S.A.** (2005). Performance on an Obstacle Course: Otto Bock C-Leg vs. Otto Bock 3R60 vs. Catech SNS. *The 31st Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP) and the Association of Children's Prosthetic-Orthotic Clinics (ACPOC)*, Orlando, FL, March 16-19.
54. Fatone, S., Hansen, A.H., **Gard, S.A.** and Malas, B.S. (2005). Effects on Gait of Ankle Alignment and Foot-Plate Length in Ankle Foot Orthoses (AFOs). *The 31st Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists (AAOP) and the Association of Children's Prosthetic-Orthotic Clinics (ACPOC)*, Orlando, FL, March 16-19.
55. Koehler, S., **Gard, S.A.** and Meier, M.R. (2005). The Effect of Shock-Absorbing Prosthetic Components on Ground Reaction Force Profiles in Persons with Transfemoral Amputations. *The 10th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Portland, OR, April 6-9.
56. Su, P.F., **Gard, S.A.**, Lipschutz, R. and Kuiken, T. (2005). The Effect of Prosthetic Ankle Motion on the Gait of Persons with Bilateral Transtibial Amputations. *The 10th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Portland, OR, April 6-9.
57. Sessoms, P.H., Hansen, A.H., Meier, M.M., **Gard, S.A.** and Childress, D.S. (2005). Effective Foot Length Ratios for Sound and Prosthetic Ankle Foot Systems of Unilateral Transtibial Prosthesis Users. *The 10th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS)*, Portland, OR, April 6-9.
58. Fatone S., **Gard, S.A.** (2006) Biomechanics of Lower Limb Function and Gait. AAOP Certificate Course on "Orthotic Management of the CVA/Stroke Patient." *American Academy of Orthotists and Prosthetists Annual Meeting*, Chicago, Illinois, March 1-4.

D. Proceedings and non-refereed papers (cont'd)

59. Fatone S., **Gard, S.A.**, Heckathorne C. (2006) Research in P&O: Are We Addressing Clinically Relevant Problems. Special Event, *American Academy of Orthotists and Prosthetists Annual Meeting*, Chicago, Illinois, March 1-4.
60. Saha, D., **Gard, S.A.** and Fatone, S. (2006). Vertical Ground Reaction Force During Trunk-Flexed Gait. *Annual Meeting of the American Society of Biomechanics*, Blacksburg, VA, Sept. 6-9.
61. Saha D., **Gard, S.A.**, Fatone S. and Ondra S. (2006) The Effect of Trunk Posture on Global Balance. *56th Annual Congress of Neurological Surgeons*, Chicago, IL, October 7-12.
62. **Gard, S.A.** and Koehler, S.R. (2006). An Investigation of Shock-Absorbing Components in Persons With Transfemoral Amputations. *4th Annual National Academies Keck Futures Initiative: Smart Prosthetics: Exploring Assistive Devices for the Body and Mind*, Irvine, CA, November 9-11.
63. Fatone S., **Gard, S.A.** and Malas B. (2007). Effect of Ankle Foot Orthosis (AFO) foot plate length on plantar pressures in adults with hemiplegia. *33rd Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, San Francisco, CA, March 21-24.
64. Zissimopoulos A., Fatone S. and **Gard, S.A.** (2007). The Biomechanical and Energetic Effects of a Stance-Control Orthotic Knee Joint. *33rd Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, San Francisco, CA, March 21-24.
65. Sorci E., Fatone S., Hansen A. and **Gard, S.A.** (2007). Pilot Study Evaluating Ankle Foot Orthoses using Roll-over Shapes. *33rd Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, San Francisco, CA, March 21-24.
66. Johnson, B., Fatone S. and **Gard, S.A.** (2007). Preliminary Results for a Dynamic Analysis of RGO Users. *The 12th Annual Meeting of the Gait and Clinical Movement Analysis Society*, Springfield, MA, April 11-14.
67. Sessoms, P.H., Hansen, A.H., Meier, M.R. and **Gard, S.A.** (2007). Effects of Prosthetic Foot Roll-over Shape Arc Length on Gait of People with Bilateral Transtibial Amputations. *The 12th World Congress of the International Society for Prosthetics and Orthotics (ISPO)*, Vancouver, British Columbia, Canada, July 29 – August 3.
68. Fatone, S., **Gard, S.A.** and Malas, B.S. (2007). Effect of AFO Alignment on Plantar Pressures During Walking in Adults with Hemiplegia. *The 12th World Congress of the International Society for Prosthetics and Orthotics (ISPO)*, Vancouver, British Columbia, Canada, July 29 – August 3.
69. Hansen, A.H., **Gard, S.A.**, Childress, D.S., Ruhe, B. and Williams, R. (2007). Automatically-adapting Ankle-foot Prosthesis Concept. *The 12th World Congress of the International Society for Prosthetics and Orthotics (ISPO)*, Vancouver, British Columbia, Canada, July 29 – August 3.

D. Proceedings and non-refereed papers (cont'd)

70. Koehler, S.R., **Gard, S.A.** and Meier, M.R. (2007). Limb-compliance and Shock-absorbing Pylons in Persons with Transfemoral Amputations. *The 12th World Congress of the International Society for Prosthetics and Orthotics (ISPO)*, Vancouver, British Columbia, Canada, July 29 – August 3.
71. Hansen, A.H., **Gard, S.A.**, Childress, D.S., Ruhe, B., Williams, R. (2008). Conceptual Design of an Ankle-Foot Prosthesis that Automatically Adapts to Ramped Walking Surfaces. *American Academy of Orthotists and Prosthetists 34th Annual Meeting and Scientific Symposium*, Orlando, FL, February 27–March 1.
72. Meier, M.R., **Gard, S.A.**, Hansen, A.H. (2008). Performance on an obstacle course without and with a mental loading task: A comparison between the C-leg, the 3R60 and the SNS Mauch. *5th Regional Central European ISPO Conference (ISPO)*, Portorož-Portorose, Slovenia, September 19-21.
73. Ruhe, B.L., **Gard, S.A.** (2009). Effect of prosthetic foot/ankle alignment on balance efficiency while standing on sloped surfaces in persons with transfemoral amputations. *The 35th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Atlanta, GA, March 4-7.
74. Fatone, S., **Gard, S.A.** (2009). Special Forum: The NIDRR Rehabilitation Engineering Research Center for P&O at Northwestern University. *The 35th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Atlanta, GA, March 4-7.
75. Fatone, S., **Gard, S.A.** and Stine, R. (2009). Randomized cross-over study of AFO ankle components in adults with post-stroke hemiparesis: Preliminary results. *The 35th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Atlanta, GA, March 4-7.
76. Johnson, W.B., Fatone, S. and **Gard, S.A.** (2009). Dynamic analyses of the gait of RGO users.. *The 35th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Atlanta, GA, March 4-7.
77. Fatone, S., Stine, R. and **Gard, S.A.** (2010). Randomized cross-over study of AFO ankle components in adults with post-stroke hemiplegia. *The 36th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Chicago, IL, February 24-27.
78. Robinson, C., Fatone, S. and **Gard, S.A.** (2010). Role of journal club for professional development facilitating knowledge translation. *The 36th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Chicago, IL, February 24-27.
79. Boutwell, E., Hansen, A., Tucker, K., Stine, R. and **Gard, S.A.** (2010). Study of residual limb/prosthetic socket compliance in transtibial amputees. *The 36th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Chicago, IL, February 24-27.

D. Proceedings and non-refereed papers (cont'd)

80. Boutwell, E.V., Stine, R.L., Hansen, A.H., Tucker, K.A., and **Gard, S.A.** (2010). Study of Residual Limb/Prosthetic Socket Compliance in Transtibial Amputees. *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
81. Fatone, S., Stine, R.L., and **Gard, S.A.** (2010). Randomized Cross-over Study of AFO Ankle Components in Adults with Post-Stroke Hemiplegia. *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
82. **Gard, S.A.**, Su, P.F., Lipschutz, R.L., and Kuiken, T.A. (2010). The Effect of Prosthetic Ankle Units on the Gait of Persons with Bilateral Transtibial Amputations. *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
83. McNealy, L.L. and **Gard, S.A.** (2010). Do Prosthetic Ankle Units Benefit Persons with Bilateral Transfemoral Amputations? *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
84. Ruhe, B.L., **Gard, S.A.**, and Hansen, A.H. (2010). Investigation of the Effect of Prosthetic Foot/Ankle Properties on Balance Efficiency While Standing on Inclined, Declined, and Level Surfaces. *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
85. Zissimopoulos, A. and **Gard, S.A.** (2010). Pilot Investigation of Movement Smoothness in Post-stroke Hemiplegia: Evaluations with and without Ankle-Foot-Orthoses. *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
86. Zissimopoulos, A., Fatone, S. and **Gard, S.A.** (2010). Effects of a Stance-Control Knee-Ankle-Foot Orthosis on the Gait of Able-Bodied Subjects. *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
87. Johnson, B., **Gard, S.A.** and Fatone, S. (2010). Dynamics of Reciprocating Gait Orthosis (RGO) Assisted Gait. *The 13th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Leipzig, Germany, May 10-15.
88. Stine, R.L., Hansen, A.H., Boutwell, E.V., Tucker, K.A., Edwards, M.L., and **Gard, S.A.** (2010). A Study of the Effects of Gel Liner Thickness on In Socket Residual Limb Pressures in Trans-Tibial Prosthesis Users. *The 2nd joint meeting of the Gait and Clinical Movement Analysis Society (GCMAS) and the European Society of Movement Analysis in Adults and Children (ESMAC)*, held in Miami, Florida, May 12-15.
89. Stine, R.L., Hansen, A.H., Tucker, K.A., Boutwell, E.V., Edwards, M.L., and **Gard, S.A.** (2010). A Study of the Effects of Gel Liner Thickness on In Socket Residual Limb Pressures in Trans-Tibial Prosthesis Users. *The 12th Biennial ESM2010 Conference on Dynamic Load Distribution in Biomechanics*, held in Providence, RI, August 14-17.

D. Proceedings and non-refereed papers (cont'd)

90. **Gard, S.A.**, Su, P.F., Lipschutz, R., and Hansen, A. (2011). The Effect of Prosthetic Ankle Units on Roll-Over Shape Characteristics During Walking in Persons with Bilateral Transtibial Amputations. *The 37th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Orlando, FL, March 16-19.
91. Nickel, E.A., Hansen, A.H. and **Gard, S.A.** (2011). Prosthetic Ankle-Foot System That Adapts to Sloped Surfaces. *Proceedings of the 10th Annual Design of Medical Devices Conference*, April 12-14, Minneapolis, MN.
92. Johnson, W.B., Fatone, S. and **Gard, S.A.** (2011). Modeling the Walking Patterns of Reciprocating Gait Orthosis Users with a Novel Lower Limb Paralysis Simulator, *The 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, Boston, MA, August 30 - September 3.
93. Koehler, S.R., Lipschutz, R.D., Stine, R.L. and **Gard, S.A.** (2012). The Effect of Transfemoral Prosthesis Alignment Perturbations on Gait. *The 38th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Atlanta, GA, March 22-25.
94. Zissimopoulos, A., **Gard, S.A.**, Stine, R.L. and Fatone, S. (2012). Effects of an Ankle-Foot Orthosis on Foot Placement Post-Stroke: Balance Implications. *The 38th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Atlanta, GA, March 22-25.
95. Rodriguez, A.G., Fatone, S., Stine, R.L. and **Gard, S.A.** (2012). Spinal Motion During Walking in Persons with Transfemoral Amputation with and without Low Back Pain. *The 38th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Atlanta, GA, March 22-25.
96. Major, M.J., Stine, R.L., Hodgson, M. and **Gard, S.A.** (2012). Upper Body Kinematics of Bilateral Transtibial Prosthesis Users During Gait. *The 36th Annual Meeting of the American Society of Biomechanics (ASB)*, Gainesville, FL, August 15-18.
97. Wu, Y., Robinson, C., Casanova, H., Michael, J. and **Gard S.** (2012). The Low-Cost Dilatancy System for Orthotics. *The Midwest Chapter of the Academy Fall Education Symposium*, Lake Geneva, WI, September 26.
98. Boutwell, E. and **Gard, S.A.** (2013). Investigation of In Vivo Prosthesis/Residual Limb Stiffness Using a Novel Impact Test Apparatus. *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.
99. Fatone, S., Stine, R., Rodriguez and **Gard, S.A.** (2013). Spinal Motion During Walking in Persons with Transfemoral Amputation With and Without Low Back Pain. *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.

D. Proceedings and non-refereed papers (cont'd)

100. **Gard, S.A.**, Su, P-F, Lipschutz, R. and Hansen, A. (2013). Effect of Prosthetic Ankle Units on Roll-Over Shape Characteristics During Walking in Persons with Bilateral Transtibial Amputations. *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.
101. Gottipati, P., Major, M. and **Gard, S.A.** (2013). Dynamic Stability of Individuals With Transfemoral Amputations: Walking With Varying Prosthetic Knee Alignment. *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.
102. Koehler, S., Lipschutz, R., Stine, R. and **Gard, S.A.** (2013). Does a Mechanically-Demanding Task Exaggerate the Effect of Prosthetic Alignment for Persons With Transfemoral Amputation? *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.
103. Major, M., Stine, R. and **Gard, S.A.** (2013). Lateral Trunk Flexion During Bilateral Transtibial Amputee Gait. *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.
104. Wu, Y., Robinson, C., Casanova, H., Michael, J. and **Gard, S.A.** (2013). Development of a Low-Cost Dilatancy-Based Casting System for Fabrication of Ankle-Foot Orthoses: A Preliminary Report. *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.
105. Zissimopoulos, A., **Gard, S.A.**, Stine, R. and Fatone, S. (2013). Mediolateral Foot Placement During Post-Stroke Ambulation With and Without An Ankle-Foot Orthosis. *The 14th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, held in Hyderabad, India, Feb. 4-7.
106. Fatone, S., Schweitzer, J. and **Gard, S.A.** (2013). Perceptions of Prosthetics and Orthotics Research within the Prosthetics and Orthotics Community. *The 39th Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists*, Orlando, FL, February 20-23.
107. Wu Y, Robinson C, Casanova H, Michael J, Conner L, **Gard S.** (2013). Demonstration of Dilatancy Casting for Transtibial Socket and Foot Orthosis. *The Midwest Chapter of the AAOP Annual Meeting and Scientific Symposium*, Lake Geneva, WI, June 1.
108. Kluger, D., Major, M.J., Fatone, S. and **Gard, S.A.** (2013). The effect of trunk flexion on lower limb kinetics of able-bodied gait. *The 37th Annual Meeting of the American Society of Biomechanics (ASB)*, Omaha, NE, Sep. 4-7.
109. Heckathorne, C., Stine, R., Major, M., **Gard, S.** and Fatone, S. (2014). Investigating the effects of prosthetic hand design on performance. *The 40th American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, February 26-March 1, Chicago, Illinois.

D. Proceedings and non-refereed papers (cont'd)

110. Boutwell E, Stine R and **Gard S** (2015). Influence of Longitudinal Prosthetic Stiffness Modification on Ground Reaction Forces during Transtibial Gait. *The 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, February 18-21, New Orleans, Louisiana.
111. Boutwell E, Stine R and **Gard S** (2015). Influence of Longitudinal Stiffness Modification on Impact Forces within the Transtibial Prosthesis. *The 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, February 18-21, New Orleans, Louisiana.
112. **Gard S**, Nepomuceno A, Major M and Stine R (2015). Effect of Ankle Immobilization on Able-Bodied Gait as a Model for Understanding Bilateral Transtibial Amputee Gait. *The 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, February 18-21, New Orleans, Louisiana.
113. Boutwell E., Stine R., **Gard S** (2015) The Effect of Prosthetic Stiffness on Shock Absorption during Transtibial Gait. Annual Meeting of the *Gait and Clinical Movement Analysis Society*, March 18-21, Portland, OR.
114. **Gard SA**, Nepomuceno T, Major M, Stine R (2015). Effect of Ankle Immobilization on Able-Bodied Gait to Model Bilateral Transtibial Amputee Gait. *The 15th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, June 22-25, Lyon, France.
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118. **Gard SA** (2016). Features of Gait – The Gait Lab Perspective. *The 42nd American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, March 9-12, Orlando, FL.
119. Major MJ, Zavaleta JL, Boutwell E, **Gard SA** (2016). Decreasing Below-Knee Prosthesis Longitudinal Stiffness Increases Prosthetic-Side Push-Off and Collision Work During Gait. *The 40th Annual Meeting of the American Society of Biomechanics (ASB)*, August 2-5, Raleigh, NC.
120. Leister K, Stine R and **Gard S** (2017). The Effect of Cleat Placement on Force Generation in a Cyclist with a Transtibial Amputation: A Pilot Study. *The 43rd American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, March 1-4, Chicago, IL.

D. Proceedings and non-refereed papers (cont'd)

121. Major MJ, McConn S, Stine R, **Gard SA** (2017). Pilot Study on the Effects of Upper-Limb Loss and Prosthesis Use on Locomotor Stability. *The 43rd American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, March 1-4, Chicago, IL.
122. **Gard SA**, Nepomuceno A, Stine R, Boutwell E, Brinkmann J (2017). A Model to Explain the Effect of Shock Absorbing Pylons on Gait. *The 16th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, May 8-11, Cape Town, South Africa.
123. Stine R, Major MJ, McConn S, **Gard SA** (2017). Pilot Study on the Effects of Upper-Limb Loss and Prosthesis Use on Locomotor Stability. Annual Meeting of the *Gait and Clinical Movement Analysis Society*, May 23-26, Salt Lake City, UT.
124. **Gard SA**, Nepomuceno A, Stine R, Boutwell E, Brinkmann J (2018). A Model to Explain the Effect of Shock Absorbing Pylons on Gait. *The 44th American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, February 14-17, New Orleans, LA.
125. Chang SR, Major MJ, **Gard SA** (2018). Mechanical Characterization of Prosthetic Feet to Predict Effective Ankle Joint Stiffness. *The 44th American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, February 14-17, New Orleans, LA.
126. **Gard SA**, Nepomuceno A, Stine R, Boutwell E, Brinkmann J (2018). A Model to Explain the Effect of Shock Absorbing Pylons on Gait. *Annual Meeting of the Gait and Clinical Movement Analysis Society*, May 22-25, Indianapolis, IN.
127. **Gard SA**, Stine R (2018). Tutorial: An Overview of Lower-Limb Prosthetic Components and Their Effect on Gait. *Annual Meeting of the Gait and Clinical Movement Analysis Society*, May 22-25, Indianapolis, IN.
128. Major MJ, Shirvaikar T, Stine R, **Gard SA** (2018). Effects of Upper Limb Loss and Prosthesis Use on Standing Balance. *The 42nd Annual Meeting of the American Society of Biomechanics*, August 8-11, Rochester, MN.
129. Major MJ, Shirvaikar T, Stine R, **Gard SA** (2019). Effects of Upper Limb Loss and Prosthesis Use on Standing Balance. *The 45th American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, March 6-9, Orlando, FL.
130. **Gard SA**, Chang SR, Major MJ, Cavanaugh ML, Hammond II P, Stine RL (2019). Characterization of Prosthetic Feet to Estimate Roll-Over Shape Radii for Clinical Prescription. *The 45th American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, March 6-9, Orlando, FL.
131. **Gard SA**, Geil MD (2019). The “3 R’s” of the JPO: Reading, wRiting and Reviewing Scientific Papers. *The 45th American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium*, March 6-9, Orlando, FL.

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132. Major MJ, Stine R, **Gard SA** (2019). Falls and Balance Control of Persons with Upper Limb Loss. *Annual Meeting of the Gait and Clinical Movement Analysis Society*, March 26-29, Dallas, TX.
133. Maun JA, **Gard SA**, Major MJ, Takahashi KZ (2019). The Effect of Shock-Absorbing Pylon Stiffness on Prosthetic Mechanical Work During Walking. *Rocky Mountain American Society of Biomechanics Conference*, April 5-6, Estes Park, CO.
134. Maun JA, **Gard S**, Major M, Takahashi KZ (2019). The Effects of a Shock-Absorbing Pylon on Mechanical Work. *Human Movement Variability Conference*, May 16, Omaha, NE.
135. **Gard SA**, Chang SR, Major MJ, Cavanaugh ML, Hammond II P, Stine RL (2019). Characterization of Prosthetic Feet to Estimate Roll-Over Shape Radii for Clinical Prescription. *The 17th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, October 5-8, Kobe, Hyogo, Japan.
136. Pace A, Howard D, **Gard S**, Major M (2020). A Simple Walking Model to Optimize Prosthetic Knee and Foot Combinations for Prosthetic Limb Stability. *Virtual 44th Meeting of the American Society of Biomechanics*, August 4-7.
137. Vaca M, Stine R, Hammond II P, Major M, Cavanaugh M, **Gard S** (2021). The Effect of Prosthetic Ankle Stiffness Changes on Gait and Standing in People with Unilateral Transtibial Amputations. *The 47th American Academy of Orthotists and Prosthetists (AAOP) Annual Meeting & Scientific Symposium*, May 4-7.
138. Fatone S, Caldwell R, Angelico J, Stine R, Kim K-Y, Major M, **Gard S**, Oros M (2021). Comparative Effectiveness of NU-FLexSIV and Ischial Containment Sockets. *American Orthotic & Prosthetic Association (AOPA) National Assembly*, September 9-11, Boston, MA.
139. Kristal A, Gailey R, **Gard S**, Kirk-Sanchez N, Gaunard I (2021). The Development of the Functional Lower-Limb Amputee Gait Assessment (FLAG Assessment): A New Observational Gait Analysis Tool for People with Unilateral Lower Limb Amputation. *American Orthotic & Prosthetic Association (AOPA) National Assembly*, September 9-11, Boston, MA.
140. Kristal A, Gailey R, **Gard S**, Kirk-Sanchez N, Gaunard I (2021). Validity Testing of the Functional Lower-Limb Amputee Gait Assessment (FLAG Assessment): A New Observational Gait Analysis Tool for People with Unilateral Lower Limb Amputation. *American Orthotic & Prosthetic Association (AOPA) National Assembly*, September 9-11, Boston, MA.
141. Fatone S, Caldwell R, Angelico J, Stine R, Kim K-Y, Major M, **Gard S**, Oros M (2021). Comparative Effectiveness Trial of NU-FLexSIV and Ischial Containment Sockets. *The 18th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, November 1-4.

D. Proceedings and non-refereed papers (cont'd)

142. Vaca M, Stine R, **Gard S** (2021). How a Systematic Variation of Prosthetic Foot-Ankle Stiffness Affect Gait and Balance in People with Unilateral Transtibial Amputations. *The 18th World Congress of the International Society of Prosthetics and Orthotics (ISPO)*, November 1-4.
143. Vaca M, Stine R, **Gard S** (2021). The Effect of Prosthetic Ankle Stiffness Changes on Gait and Standing in People with Unilateral Transtibial Amputations. *The Virtual 45th Meeting of the American Society of Biomechanics*, August 10-13.
144. Kristal A, Gailey R, **Gard S**, Kirk-Sanchez N, Gaunaud IA (2022). Reliability testing of the Functional Lower-limb Amputee Gait Assessment (FLAG Assessment). Federal Section Platform Presentation, *APTA Combined Sections Meeting*, February 2-5, San Antonio, TX.
145. Kristal A, Kirk-Sanchez N, Gaunaud IA, **Gard S**, Gailey R (2022). Validity testing of the Functional Lower-limb Amputee Gait Assessment (FLAG Assessment). Federal Section Platform Presentation, *APTA Combined Sections Meeting*, February 2-5, San Antonio, TX.
146. Kristal A, Gailey R, **Gard S**, Kirk-Sanchez N, Gaunaud IA (2022). Reliability testing of the Functional Lower-limb Amputee Gait Assessment (FLAG Assessment). A new observational gait analysis tool for people with unilateral lower limb amputation. *The 48th American Academy of Orthotists and Prosthetists (AAOP) Annual Meeting & Scientific Symposium*, March 2-5, Atlanta, GA.
147. Kristal A, Kirk-Sanchez N, Gaunaud IA, **Gard S**, Gailey R (2022). Validity testing of the Functional Lower-limb Amputee Gait Assessment (FLAG Assessment). A new observational gait analysis tool for people with unilateral lower limb amputation. *The 48th American Academy of Orthotists and Prosthetists (AAOP) Annual Meeting & Scientific Symposium*, March 2-5, Atlanta, GA.
148. Fatone S, Stine R, Hammond P, Carnahan K, **Gard S** (2022). Effect of Ankle-Foot Orthoses (AFOs) on Longer Duration Walking in Persons with Post-Stroke Hemiplegia. *The 105th Annual American Orthotic & Prosthetic Association (AOPA) National Assembly*, September 28-October 1, San Antonio, TX.

E. Patents

1. Hansen A, **Gard SA**, Childress D, Ruhe B, Williams R (2013). Equilibrium-Point Prosthetic and Orthotic Ankle-Foot Devices. United States Patent 8,597,369.