

**Midwest American Society of
Biomechanics
Feb 23-24, 2017
Grand Valley State University**

Sponsors



Welcome!
**2017 Midwest Regional Meeting of the American Society of
Biomechanics**

Welcome to Grand Rapids, MI and Grand Valley State University! The emphasis of the meeting is to create a program that encourages student participation and networking across the Biomechanical disciplines of Engineering, Kinesiology, and Health Professions.

I would like to thank all conference participants, particularly our keynote speakers. I would also like to acknowledge and thank the American Society of Biomechanics, Tekscan, AMTI, and GVSU (CLAS Dean's Office and Movement Science Department) for their financial support to host the Regional Meeting and keep costs low for participants.

I hope that you support all of our presenters with your attendance, enjoy meeting new colleagues, visit the exhibitor tables, tour the GVSU Biomechanics Laboratory, and explore a bit of Grand Rapids, MI.

Welcome to Grand Valley State University!

Heather Gulgin, PhD, ATC

A handwritten signature in black ink that reads "Heather Gulgin". The signature is written in a cursive, flowing style.

Program & Meeting Chair

Special thanks to the abstracts reviewers, colleagues Gordon Alderink and Blake Ashby, and undergraduate student helpers (Robin Gessner and Nadine Karadsheh) for their assistance.

Thursday February 23, 2017

Time	Event	Event
8:00 am	Registration Eberhard 2 nd Floor East Lobby	Breakfast Eberhard 2 nd Floor East Lobby
8:45 am	Welcome by: Dr. Plotkowski Dean of College of Engineering Eberhard Rm 215 CDEF	
8:50 am	Keynote – Dr. Tamara Reid Bush (Michigan State University) Title: <i>Butts and Hands</i> Eberhard Rm 215 CDEF Moderator: Dr. Gordon Alderink	

	Podium Session 1A Eberhard Rm 215 AB (Tissue Mechanics) Moderator: Dr. Jessica Goetz	Podium Session 1B Eberhard Rm 215 GH (Ergonomics & Asst. Dev) Moderator: Dr. Tamara Reid Bush
10:00 am	Identifying the Spatial Tuning of Muscle Elasticity and EMG Activity for the Sternocleidomastoid Muscles Bhillie Luciani, David Desmet, Amani Akkayali, David Lipps (University of Michigan)	Using Postural Changes to Alter Loading Patterns for the Reduction of Pressure Ulcers Justin Scott, Kelly Patterson, Lindsay Hoard, Michael Drost, Tamara Reid Bush (Michigan State University)
10:15 am	Accurately Quantifying Cartilage Using Micro-CT and Magnetic Resonance Imaging David Heckelsmiller, Barbara Laughlin, Mothana Eldine, Dan Thedens, Douglas Pedersen, Douglas Fredericks, Jessica Goetz (University of Iowa)	Measuring Body Shape Under Clothing for Biomechanics Applications Using Low-Cost Sensors Matthew Reed and Byoung- Keon Park (University of Michigan)

<p>10:30 am</p>	<p>Evaluating the Effects of Simulating Pathological Verses Normal Gait on Hip Joint Mechanics in Dysplasia Patients</p> <p>Holly Thomas, Kevin Dibbern, Michael Willey, Jessica Goetz</p> <p>(University of Iowa)</p>	<p>Validation of a Passive Hydraulic Simulator for Spasticity Replication</p> <p>Yinan Pei, Jiahui Liang, Randy Ewoldt, Steven Tippet, Elizabeth Hsiao-Weckler</p> <p>(University of Illinois Urbana Champaign)</p>
<p>10:45 am</p>	<p>Soft Tissues in the Thigh and Gluteal Regions: Determining their Strain Energy Functions</p> <p>Zachary Sadler, Josh Drost, Wu Pan, Tamara Reid Bush</p> <p>(Michigan State University)</p>	<p>Analyzing the Use of Visual Feedback Provided by Limb Mounted Lasers for Improving Lower Extremity Movement in Individuals with Neurological Disorders</p> <p>Kevin Nowaki, Bridget Dues, Luke Schepers, Kurt Jackson, Megan Reissman, Kimberly Bigelow</p> <p>(University of Dayton)</p>
<p>11:00 am</p>	<p style="text-align: center;">BREAK</p>	

	<p>Podium Session 2A Eberhard Rm 215 AB (Tissue Mechanics)</p> <p>Moderator: Dr. Jessica Goetz</p>	<p>Podium Session 2B Eberhard Rm 215 GH (Balance & Motor Control)</p> <p>Moderator: Dr. Blake Ashby</p>
<p>11:15 am</p>	<p>Effect of Storage Condition, Orientation, Location and Gender on Rat Back Skin Mechanical Properties</p> <p>Sheng Chen and Sara Roccabianca</p> <p>(Michigan State University)</p>	<p>The Influence of Carbon Composite and Plastic Ankle Foot Orthoses on Balance, Gait and Fatigue in Individuals with Multiple Sclerosis</p> <p>Sarah Hollis, Hannah Clark, Paige Ingram, Tamara Erlich, Tessa Hill, Kurt Jackson, Kimberly Bigelow</p> <p>(University of Dayton)</p>
<p>11:30 am</p>	<p>Development of a Structural Finite Element Model of Trabecular Bone</p> <p>Saif Alrafeek and Peter Gustafson</p> <p>(Western Michigan University)</p>	<p>Nonlinear Dynamics of Cane-Assisted Upright Balance for Individuals with Neurological Impairment</p> <p>James Chagdes and Amit Shukla</p> <p>(Miami University)</p>

11:45 am	Mechanics Based Fracture-Risk Under Gait Cycle Loading Correlates Poorly with High Mirel's Scores in Metastatic Lesions to the Proximal Femur Palani Permeswaran, Benjamin Miller, Jessica Goetz (University of Iowa)	Modeling Function of the Hand and the Effect of Osteoarthritis on Force Joshua Drost and Tamara Reid Bush (Michigan State University)
12:00 pm	ASB Teaching Repository Overview Dr. Kim Bigelow (University of Dayton)	Gait Asymmetry During Uphill, Downhill and Level Walking While Outdoors Hye Young Cho, Nathaniel Romine, Junyoung Kim, Michel Heijnen, Babak Ziaie, Shirley Rietdyk (Purdue University)
12:15	Welcome by Dean Antczak	Welcome by Dean Antczak

12:15 -1:00 pm	LUNCH BREAK Eberhard 2nd Floor East Lobby
12:30 pm	Tekscan Product Presentation Eberhard Rm 215 AB
1:00-2:30 pm	Poster Presentations Eberhard 2nd Floor East Lobby
2:30-3:30 pm	Biomechanics Lab Tour (5 min bus ride)

Friday Feb 24, 2017

Time	Event	Event
8:00 am	Registration Eberhard 2 nd Floor East Lobby	Breakfast Eberhard 2 nd Floor East Lobby
8:50 am	Keynote – Dr. Kris O’Connor (University of Wisconsin- Milwaukee) Title: <i>Is Fatigue a Factor in Causing Sports Injuries?</i> Eberhard Rm 215 CDEF Moderator: Dr. Heather Gulgin	

	<p>Podium Session 3A Eberhard Rm 215 AB (Sport Biomechanics)</p> <p>Moderator: Dr. Heather Gulgin</p>	<p>Podium Session 3B Eberhard Rm 215 GH (Balance and Motor Control)</p> <p>Moderator: Dr. Kim Bigelow</p>
<p>10:00 am</p>	<p>The Heterogeneity of the Elastic Properties of the Pectoralis Major Fiber Regions Across Postures and Volitional Contractions</p> <p>David Desmet, Joshua Leonardis, David Lipps (University of Michigan)</p>	<p>Uncertain Motor Plans Lower Stability of Current Prehensile Behavior</p> <p>Michael Tillman and Satyajit Ambike (Purdue University)</p>
<p>10:15 am</p>	<p>What are the Most Effective Exercises to Prevent ACL Injuries? Meta-Analytic Evidence</p> <p>Grace Smith, Erich Petushek, Michael Stoolmiller (Kalamazoo College, Michigan State University)</p>	<p>Relationship Between Gaze Behavior and Failure to Cross a Stationary, Visible Object</p> <p>Samuel Pontecorvo, Michel Heijnen, Brittney Muir, Shirley Rietdyk (Purdue University, University of North Carolina-Wilmington, Sage College)</p>

<p>10:30 am</p>	<p>Correlation Profiles Between Lower Extremity Net Joint Torques and Whole Body Power During the Power Clean</p> <p>Farbod Rohani and Antonie van den Bogert</p> <p>(Cleveland State University)</p>	<p>Studying Balance on an Active Balance Board with Controllable Stiffness and Time-Delay</p> <p>Denise Cruise, James Chagdes, Joshua Liddy, Shirley Rietdyk, Jeffrey Haddad, Howard Zelaznik, Arvind Raman</p> <p>(Purdue University, Miami University)</p>
<p>10:45 am</p>	<p>Kinematics of Sprinting After Adaptation to Speedmaker Resistance Harness in Track Athletes</p> <p>Mindie Clark, Randall Jensen, Sarah Clarke</p> <p>(Northern Michigan University)</p>	<p>Does Light Touch Enhance Motor Control?</p> <p>Hoda Salsabili, Joong Hyun Ryu, Jeffrey Haddad</p> <p>(Purdue University)</p>
<p>11:00 am</p>	<p>BREAK</p>	

	<p>Podium Session 4A Eberhard Rm 215 AB (Gait) Moderator: Dr. Krisanne Chapin</p>
11:15 am	<p>Better Safe than Sorry: Foot Clearance is Larger in Noisy Predictive Simulations of Gait</p> <p>Anne Koelewijn and Antonie van den Bogert (Cleveland State University)</p>
11:30 am	<p>Lower Extremity Gait Biomechanics in Individuals with Bipolar Disorder</p> <p>Gu Eon Kang, Brian Mickey, Melvin McInnis, Melissa Gross (University of Michigan, University of Utah)</p>
11:45 am	<p>Texting During Stair Negotiation and Implications for Fall Risk</p> <p>Rami Hashish, Megan Toney-Bolger, Sarah Sharpe, Ben Lester (National Biomechanics Institute, Exponent)</p>
12:00 pm	<p>Neuromuscular Reflex Control Can Describe Human Locomotion and Responses to Perturbation</p> <p>Sandra Hnat and Antonie van den Bogert (Cleveland State University)</p>
12:15 pm	<p>Presentation Awards</p>

Poster Session – Eberhard 2nd Floor East Lobby

<p>Evaluation of Using an Accelerometer to Assess Frontal Plane Knee Mechanics During a Drop Landing 1</p> <p>Alexander Morgan, Kristian OConnor</p> <p>(University of Wisconsin-Milwaukee)</p>	<p>Kinetic Differences During Stance Phase of Gait When Wearing an Orthopedic Walking Boot 2</p> <p>Heather Gulgin, Kerstyn Hall, Ashley Luzadre, Elizabeth Kayfish</p> <p>(Grand Valley State University)</p>
<p>Medial vs Lateral Hamstring Innervation Strategies 3</p> <p>Arden McMath, Eric Slattery, Justin Waxman, Mark Walsh</p> <p>(Miami University, Highpoint University)</p>	<p>Balance Characteristics of Hockey Players 4</p> <p>Audrey Hoffmeister, Caroline Church, Andrew Wallace, Joshua Haworth, Mark Walsh</p> <p>(Miami University, Whittier College)</p>
<p>Computational Model and Simulation of Rowing Exercise Machine 5</p> <p>Farbod Rohani and Antonie van den Bogert</p> <p>(Cleveland State University)</p>	<p>Comparison of the Bench Press Using a Standard Bar and Powerglide Bar 6</p> <p>Kelsey Loss, Ryan Shick, Brand'n Byrd, Mark Walsh</p> <p>(Miami University)</p>

<p>A Case Study of Adaptations to Activity after Inactivity 7</p> <p>Ryan Meidinger and Marisa Heckendorn (Northern Michigan University, University of Basel)</p>	<p>Biomechanics of Sterile Chevron-Style Pouch Opening in a Medical Setting 8</p> <p>Amber Cussen, Tony Trier, Laura Bix, Tamara Reid Bush (Michigan State University)</p>
<p>Design of Soft Robotic Upper-body Exoskeleton for Reducing Loads after Shoulder Injury in Manual Wheelchair Users, Preliminary Research 9</p> <p>Nicholas Thompson, Xiaotian Zhang, Girish Krishnan, Elizabeth Hsiao-Wecksler (University of Illinois-Urbana)</p>	<p>Medical Package Design and Biomechanical Opening Techniques as they Relate to Device Contamination 10</p> <p>Wu Pan, Paula Perez, Laura Bix, Larissa Miller, Tamara Reid Bush (Michigan State University & Lansing Community College)</p>

<p>Comparative Analysis of the Center of Mass and Center of Pressure Relationship in a Pirouette Performed by an Amateur and Professional Dancer 11</p> <p>Mackenzie Blust and Gordon Alderink (Grand Valley State University)</p>	<p>A Proposed Study of Core Shift in Human Walking 12</p> <p>U. Huzaifa and A. LaViers (University of Illinois-Urbana)</p>
<p>Integrated Kinematic Stability Relationship with Standing Duration between Subjects with and without Recurrent Low Back Pain 13</p> <p>Paul Sung and Pamela Danial (Central Michigan University)</p>	<p>Asymmetry of Postural Steadiness with Lumbar Spine Rotation in Subjects with Low Back Pain 14</p> <p>Paul Sung, Alexander Gates, Sravani Kadiyala (Central Michigan University)</p>
<p>Kinematic Chain Reactions on Trunk and Dynamic Postural Steadiness in Subjects with Recurrent Low Back Pain 15</p> <p>Paul Sung, Sravani Kadiyala, Alexander Gates (Central Michigan University)</p>	<p>Ageing Effect on Step Adjustments and Stability Control in Visually Perturbed Gait Initiation 16</p> <p>Ruopeng Sun, Chuyi Cui, John Shea (University of Illinois Urbana Champaign, Purdue University, Indiana University)</p>

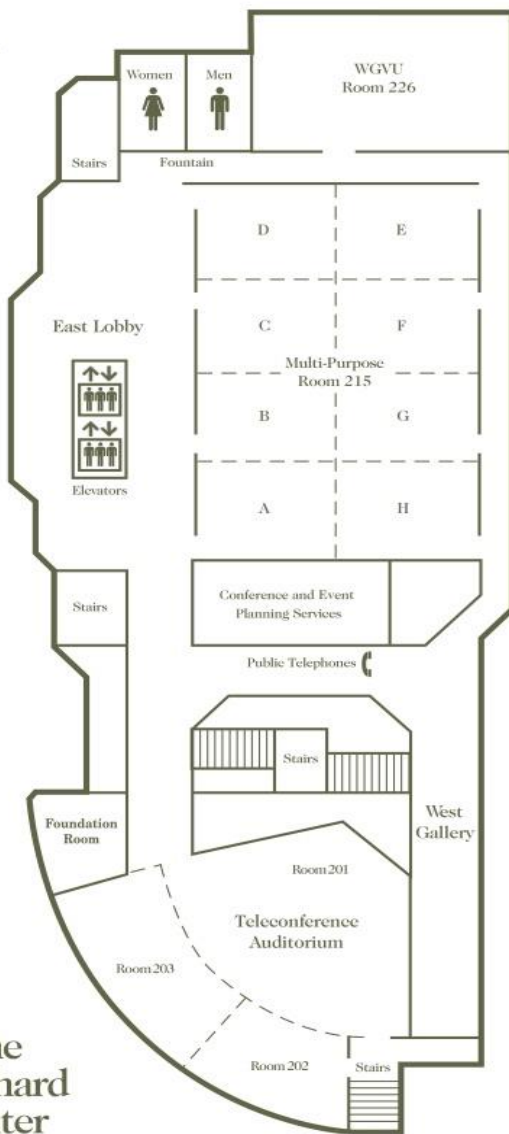
<p>An Investigation of the Effect of Gear Ratio on Manual Wheelchair Kinetics 17 -</p> <p>Elizabeth Gacek, Abby Pakeltis, Omid Jahanian, Alan Gaglio, Scott Daigle, Ian Rice, Brooke Slavens, Elizabeth Hsiao-Wecksler (University of Illinois Urbana Champaign, University of Wisconsin-Milwaukee)</p>	<p>Minimum Detectable Change of an Instrumented Senior Fitness Test 18</p> <p>Samuel Todd, Meghan Hess, Morgan Kiser, Megan Salvatore, Nathan Saudners (Mt. Union University)</p>
<p>Validity of Wireless Sensors for Assessing Senior Fitness Test Measures 19</p> <p>Kennady Miller, Abigail Matsushima, Uriel Ibarra-Moreno, Megan Salvatore, Nathan Saunders (Mt. Union University)</p>	<p>Cross Sectional Analysis of Senior Fitness Testing 20</p> <p>Alyssa Braun, Alexandra Colacino, Megan Salvatore, Nathan Saunders (Mt. Union University)</p>
<p>A Comparison of Preferred and Requested Step Landing Strategies 21</p> <p>Emily Gerstle, Kazandra Rodriguez, Stephen Cobb (Western Michigan University)</p>	

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The
Eberhard
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Second Floor