2011 AMERICAN SOCIETY OF BIOMECHANICS

35TH ANNUAL MEETING

August 10 - 13, 2011

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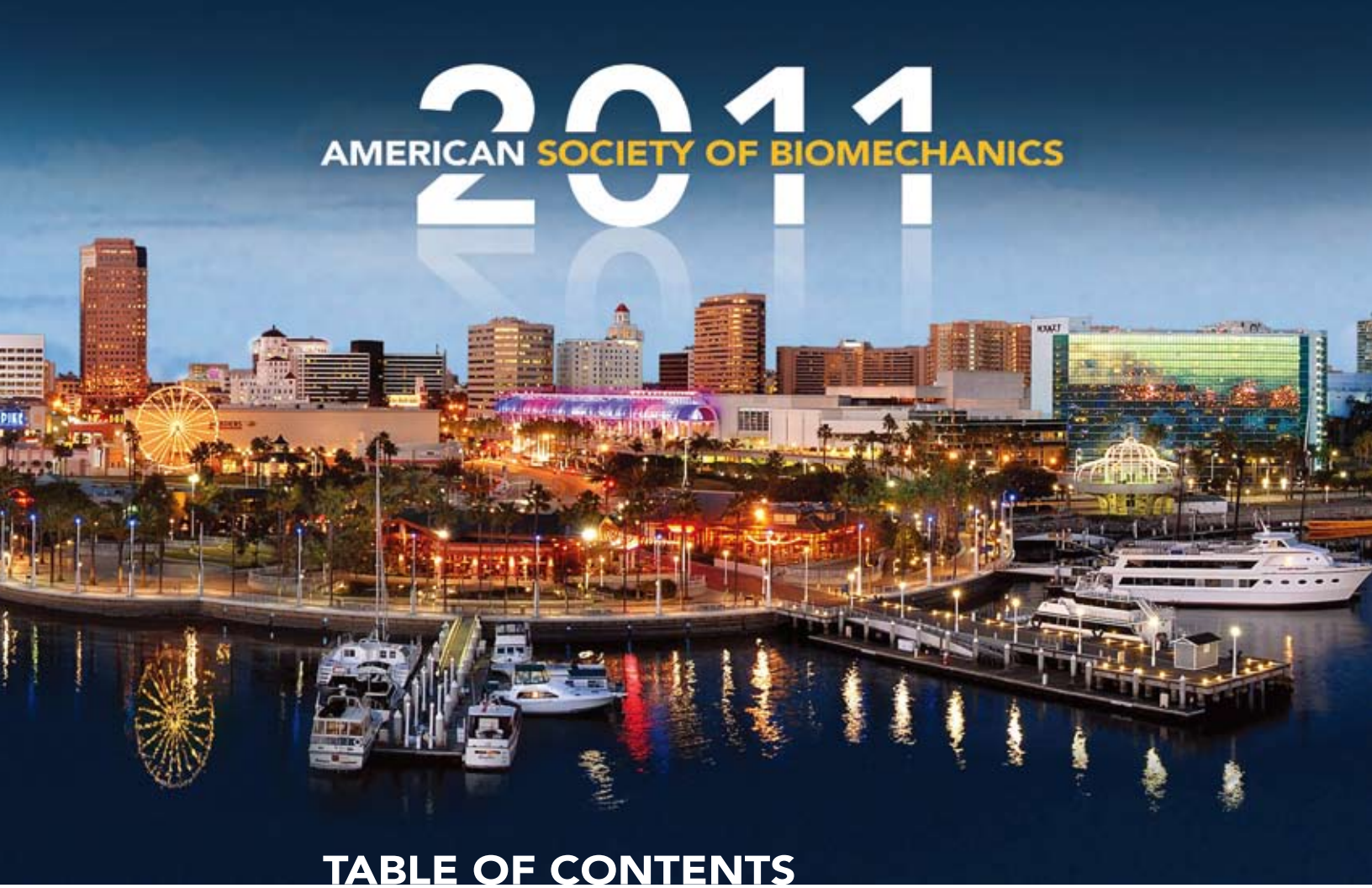

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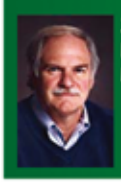

2011 James J. Hay Award Lecture
Professor Joe Hamill, University of Massachusetts

2011 Borelli Award Lecture
Professor Scott Delp, Stanford University

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35TH ANNUAL MEETING

AUGUST 10 - 13, 2011

Welcome Fellow Biomechanists

On behalf of the ASB executive board, the University of Southern California, and everyone who has contributed to the planning and execution of this meeting, we would like to enthusiastically welcome you to Long Beach, California. We are excited for the opportunity to host the 35th Annual Meeting of the American Society of Biomechanics.

We are pleased by the continued growth of the ASB annual meeting. In total, 488 abstracts were submitted to this year's meeting from across the United States and the world. Of the submitted abstracts, 100 were selected as podium presentations and 345 as poster presentations. In addition, the meeting will feature informative tutorials and symposia, engaging keynote lectures, award presentations, networking opportunities, and virtual lab tours. These opportunities will surely make for an enlightening, energizing, and productive meeting for all attendees.

The ASB and its Annual Meeting are run exclusively by volunteers. Each year, the tireless efforts of many make it possible for attendees to enjoy a first rate meeting experience. We would like to thank all of those who have contributed to the planning and implementation of this meeting. In particular, the ASB executive board and the representatives at the University of Southern California provided critical guidance and assistance in the planning and organization of the meeting. Abstract reviewers carefully evaluated submissions and many student volunteers donated their time prior to and during the meeting. We greatly appreciate these efforts.

Furthermore, financial support for the meeting has been provided by the following institutions: USC Division of Biokinesiology and Physical Therapy, USC Department of Kinesiology, USC Viterbi School of Engineering, National Skeletal Muscle Research Center, and the National Institute of Biomedical Imaging and Bioengineering at the National Institutes of Health.

And last, but certainly not least, we would like to thank you, the meeting participants, for making this event a worthwhile endeavor. We are confident you will enjoy Long Beach and the planned social activities. We are pleased to welcome you and wish you a wonderful stay.

Sincerely,

Christopher Powers
Meeting Co-Chair

George Salem
Meeting Co-Chair

Susan Sigward
Head Local Organizing Committee

Wendy Murray
Program Chair

THE MEETING AND PROGRAM COMMITTEES

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Susan Sigward (chair) • Robert Gregor • Kornelia Kulig • Gerald Loeb •Jill McNitt-Gray • Francisco Valero Cuevas

ASB Program Committee

Robert Gregor • Samuel Ward • Elizabeth Hsiao-Wecksler

Assistants to the Program Chair

Special thanks to Jen Nichols • Vikram Darbhe • Ben Binder-Macleod • Craig Goehler • Xiao Hu • Jeremy Mogk • Carrie Peterson • Mike Rehorn • Sarah Wohlman for assistance with program organization and website development.

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Division of Biokinesiology and Physical Therapy
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The Society gratefully acknowledges the support of the following Corporate Members

MEETING INFORMATION AT A GLANCE

Meeting Location

All of the academic meeting events (podium presentations, posters, mentoring sessions, etc.) will be held on the third level of the Westin Long Beach hotel. The welcome reception and banquet will be held off-site.

Registration

The registration desk is located on the third level of the Westin Long Beach, next to the escalators. The registration desk will be staffed on Wednesday from 12 pm to 6 pm, and Thursday and Friday from 7 am to 5 pm.

ASB Executive Board/ Exhibitor's Reception

Wednesday, August 10, 2011

6:00 - 6:30 pm, Ocean Terrace West

Attendance limited to ASB Executive Board, Exhibitor Representatives, and Organizers of the 2011 and 2012 Annual Meetings of the ASB.

General Opening Reception

Wednesday, August 10, 2011

6:30 - 8:30 pm, Aquarium of the Pacific in Long Beach

Attendance is open to all meeting delegates, staff and exhibitor representatives. *See Social Program for details.*

Exhibitor Booths

Exhibitor booths will be located in the Centennial Ballroom foyer and Ballroom A.

Poster Presentations

Thursday, from 2:30 pm to 6:30 pm, and Saturday, from 8:30 am to 12:30 pm.

There will be two formal poster sessions:

200 posters will be presented in Centennial Ballroom A. Posters scheduled for the Thursday session should be removed from display by 11:30am on Friday, August 12 so that the Saturday posters can be posted. The remaining 141 posters will be displayed in the Barcelona/Casablanca, Melbourne, Odessa, Tokyo/ Vancouver and Shanghai meeting rooms. Posters in these rooms will be presented during both poster sessions. At least one named author is required to be present at each poster during its designated poster session. Light refreshments will be served during both poster sessions. A drink ticket for the poster sessions is included in the registration materials and additional drinks may be purchased at the cash bar.

Podium Presentations

Presenters are allotted 10 minutes for the presentation and 5 minutes for discussion. Due to time constraints speakers will not be allowed to use their own computers for podium presentations. Speakers must upload their presentation to the conference computer in the Naples room on the day prior to their presentation. *Please see Instructions for Presenters for additional information.*

Breakfasts

7:00 am Thursday and Friday, 8:00 am Saturday

A light Continental Breakfast will be served daily.

Lunches

12:30 pm (Thursday, Friday and Saturday)

A choice of box lunches will be provided daily, including a vegetarian option. There will be sandwich boxes on Thursday and Saturday and salad boxes on Friday.

Banquet

Friday, August 12, 2011

6:30 – 10:00 pm, Queen Mary, Long Beach

The Meeting Banquet will be held aboard the historic Queen Mary *(see Social Program for more details).* The first bus will leave the Westin Long Beach at 5:45pm. The last bus will leave the Queen Mary at 10pm.

Internet Access

Free wireless internet access is available in the hotel lobby. You are encouraged to check and download updated meeting proceedings from the ASB 2011 website prior to the presentation sessions.

Meeting Proceedings

A thumb drive loaded with all meeting proceedings is included in the materials distributed at registration.

NETWORKING AND PROFESSIONAL DEVELOPMENT

Student Event

Wednesday, August 10, 2011, 5:00 - 6:00 pm

Tokyo/ Vancouver Rooms

This event will include tips and pointers on how to make the most of this year's ASB meeting. Irene Davis, Ajit Chaudhari, and several of your fellow student members, will be leading discussions about how to effectively network while at the meeting, how to deliver a good poster or podium presentation, and how to become more involved in ASB through regional meetings.

Diversity Luncheon

Thursday, August 11, 2011, 12:30 – 1:30 pm

Ballroom D

A discussion led by members of the Diversity Committee. A variety of topics relating to unique issues and opportunities for those of diverse backgrounds will be discussed. The luncheon is open to all students and professionals, but due to room size constraints, reservations will be required. *Please contact the Student Representative, Meghan Vidt (mvidt@wfubmc.edu) for more information.*

Student Night on the Town

Thursday, August 11, 2011, 6:30pm - ?

Rock Bottom Brewery

An informal opportunity for students to mix and mingle with other ASB student members. While students are on their own for dinner and drinks this evening, the Brewery provides students with a casual atmosphere to meet fellow ASB students and network with one another over a delicious microbrew. *Please contact the Student Representative, Meghan Vidt (mvidt@wfubmc.edu) for more information.*

Women in Science Breakfast

Friday, August 12, 2011, 7:00 – 8:00 am

Ballroom D

A roundtable discussion between students and members of ASB. The informal atmosphere allows students and professionals to network and discuss the experience of being a woman pursuing a career in a scientific field. This has been a very popular event in the past, so reservations are required. *Please contact the Student Representative, Meghan Vidt (mvidt@wfubmc.edu) for more information.*

SOCIAL PROGRAM

Opening Reception –

Wednesday, August 10, 2011 6:30 – 8:30 pm

Aquarium of the Pacific, Long Beach

The Aquarium of the Pacific is one of the largest aquariums in the United States. It features a collection of over 12,500 animals representing over 550 different species. The aquarium overlooks the Rainbow Harbor with beautiful views of the Long Beach Skyline. The Aquarium will be closed to the public during the reception, allowing meeting participants full access to many exhibits on two levels. A buffet-style meal will be served. One free drink is included in meeting registration and further drinks may be purchased at the cash bar. *The Aquarium of the Pacific is located at 100 Aquarium Way, in Long Beach,* a 10-15 minute walk from the Westin Long Beach meeting venue (0.6 miles). Transportation will be provided for those who are unable to walk to the Aquarium.

Banquet

Friday, August 12, 2011 6:30 – 10:00 pm

Queen Mary, Long Beach

At the time of her maiden voyage in 1936, the Queen Mary was considered the grandest ship ever built. She is now a Long Beach and Southern California attraction, popular with locals and tourists alike for historic guided and self-guided tours, paranormal experiences and tours, dining events, year-round festivals and entertainment. A buffet-style meal will be served in the Grand and Windsor Salons. One free drink is included in meeting registration and additional drinks may be purchased at the cash bar. *The Queen Mary is located at 1126 Queens Highway, Long Beach,* 1 mile from the Westin Long Beach meeting venue. The first bus will leave the Westin Long Beach at 5:45pm. The last bus will leave the Queen Mary at 10pm.

Beach Fun Run

Saturday August 13, 2011 7:00 – 8:00 am

Join us for an informal fun run. Please meet in the lobby of the Westin Long Beach at 7am. Course to be announced.

The Long Beach Area

Long Beach Restaurants

There are more than 100 restaurants within an 8-block area of downtown Long Beach, catering to all tastes and budgets. *See the visitor guide in the registration materials for more information.*

Area Attractions

All ASB meeting attendees can obtain a special $5 entrance rate to the Aquarium of the Pacific by showing their meeting badge at the Aquarium's ticket window after 2pm, or on the weekend after the meeting. *(see flyer in registration materials).*

INSTRUCTIONS FOR PRESENTERS

Poster Presentations

Posters will be mounted on free-standing poster boards with push pins. With the exception of awards posters, all posters can be a maximum of 36" wide x 48" tall.

There are two 4-hour time blocks dedicated to posters: **Poster Session I (Thursday afternoon, from 2:30 pm to 6:30 pm) and Poster Session II (Saturday morning, from 8:30 am to 12:30 pm).** All posters have been assigned at least one shorter, scheduled time block, during which time at least one named author is required to stand by the poster to interact with meeting attendees.

Logistics for poster display depend on where your poster has been assigned to be displayed.

With the exception of the finalists for the Journal of Biomechanics and Clinical Biomechanics Award, posters assigned to Centennial Ballroom A will be presented either during Poster Session I or Poster Session II, but not both

Posters assigned to Centennial Ballroom A

- Poster Session I should be mounted by 9:00 a.m. on Thursday, August 11 and removed by 11:30 am on Friday, August 12
- Poster Session II should be mounted by 12:30 pm on Friday, August 12 and removed by 1:00 pm on Saturday, August 13

The two finalists for the Journal of Biomechanics Award and the two finalists for the Clinical Biomechanics Award

- Presented during both Poster Session I and Poster Session II
- Should be mounted by 9:00 am on Thursday, August 11 and removed by 1:00 pm on Saturday, August 13
- Finalists for the Journal of Biomechanics and Clinical Biomechanics Awards (to be announced) can make posters a maximum of 72" wide x 48" tall

Posters assigned to the suite of Meeting Rooms (including Barcelona/Casablanca, Melbourne, Odessa, Tokyo/Vancouver, and Shanghai)

- Presented during both Poster Session I and Poster Session II
- Should be mounted by 9:00 am on Thursday, August 11 and removed by 1:00 pm on Saturday, August 13
- Meeting Rooms posters are located in the following rooms:

Poster #201-220 in Odessa
Poster #221-240 in Shanghai
Poster #241-280 in Tokyo/Vancouver
Poster #281-317 in Barcelona/Casablanca
Poster #318-341 in Melbourne

Podium Presentations

Presentation preparation:

- Presentation slides should be prepared with PowerPoint 2007 or higher.
- At the meeting, presentation files will be played with **MS Office 2010 on a Windows 7 PC**. Presenter's responsibility to ensure compatibility of the presentation file with **PowerPoint 2010**.
- Please save the PowerPoint (.pptx) file and all media files (include animation, video, audio, etc.) in a folder. The presentation folder and the PowerPoint file should be named in the format of *[session name]_[presenting time]_[first author's last name].* Please note that the presenting time should be in 24-hour format.
  - Ex. The first author of the talk in Rehabilitation is Wang M at 4:15 PM in the session Rehabilitation. The presentation folder and PowerPoint file should be named as 'Rehabilitation_1615_Wang (.pptx)'.
  - Suggestion: **'Publish'** function in PowerPoint is recommended to ensure all media files used in the slides are included.

Transferring presentation files:

- Please prepare a USB drive with a copy of the presentation FOLDER.
- All talks are to be transferred to the meeting computers in **Naples room**, at the Westin.
- Naples room will be open for 2.5 hour windows for presenters to upload their talks.
  - Thursday 8/11 Presentations: Load Wednesday 8/10, between 2:30-5:00pm
  - Friday, 8/12 *morning* presentations: Load Thursday 8/11, between 12:30-3:00pm
  - Friday, 8/12 *afternoon* presentations: Load Thursday 8/11, between 3:00-5:30pm
  - Saturday, 8/13 presentations: Load Saturday, 8/13, between 8:30-11:00am

- After uploading your talks to the meeting computer, you may have **up to 5 minutes** to check/run through your slides on that computer. No editing or other usage is allowed on the meeting computers.
- No internet access is available in Naples room. Please have your materials ready in a USB drive prior to uploading in Naples room.

TUTORIALS

Wednesday, August 10
1:00pm-3:00pm, Tokyo/Vancouver Room
Tutorial 1: Plasticity of Muscle Mechanics
Presenter: Richard Lieber, PhD

Wednesday, August 10
3:15pm-5:00pm, Tokyo/Vancouver Room
Tutorial 2: Visual3D: Inside the Black Box
Presenter: Tom Kepple, PhD and W. Scott Selbie, PhD

VIRTUAL LAB TOURS

Wednesday, August 10
3:00pm-5:00pm, Barcelona Room

Members of the USC Biomechanics community will be present to discuss the work in their lab and provide "virtual tours". Below is a list of the labs that will be represented:

Applied Mathematical Physiology Lab
Jason Kutch, PhD
pt.usc.edu

Brain-Body Dynamics Lab
Francisco Valero-Cuevas, PhD
bbdl.usc.edu

Development of Infant Motor Performance Lab
Linda Fetters, PhD, PT, FAPTA
pt.usc.edu

Engineering, Neuroscience & Health seminar series
bbdl.usc.edu/ENH

Health, Technology and Engineering program
hte.usc.edu

Human Performance Lab
Susan Sigward, PhD, PT, ATC
pt.usc.edu

John C. Wilson, Jr. Motion Analysis Laboratory
Tishya Wren, PhD
www.chla.org

Medical Device Development Facility
Gerald Loeb, MD
mddf.usc.edu

Motor Behavior and Neurorehabilitation Lab
Carolee Winstein, PhD, PT, FAPTA
pt2.usc.edu/labs/mbnl

Motor Control Development Lab
Nina S. Bradley, PhD, PT
pt.usc.edu/labs/mcdl

Musculoskeletal Biomechanics Research Lab
Christopher Powers, PhD, PT, FAPTA
George Salem, PhD
Kornelia Kulig, PhD, PT, FAPTA
www.usc.edu/go/mbrl

Rehabilitation Engineering Program
@ Rancho Los Amigos National Rehabilitation Center
Philip Requejo, PhD
www.ranchorep.org

Rehabilitation Engineering Research Center for
Technologies for Successful Aging with Disability
www.isi.edu/research/rerc

Sanger Lab
Terrance Sanger, MD, PhD
sangerlab.org

USC Biomechanics Research Lab
Jill McNitt-Gray, PhD
dornsife.usc.edu/kinesiology

PLENARY AND AWARDS SESSIONS

Thursday, August 11

11:30am-12:30pm

Ballroom B-D

Keynote Address

Natural Armor: Interdisciplinary Convergence Between Engineering, Evolutionary Biology and Architecture

Christine Ortiz, PhD, Massachusetts Institute of Technology

About the Speaker

Dr. Ortiz is a prolific scientist with over 100 publications in more than 20 different academic journals. Her research program focuses on the mechanics of structural biological materials, in particular musculoskeletal and exoskeletal tissues with the objective of obtaining a fundamental, mechanistic-based understanding of tissue function, quality, and pathology. Model systems include; articular cartilage, bone, natural flexible armor, transparent armor, and biological armor for extreme conditions (e.g. blast, heat, thermal). Dr. Ortiz's research employs novel experimental and theoretical methodologies across multiple scales, ranging from individual molecules to live animal biomechanics. Her work has relevance to medical and engineering fields, facilitating development of improved medical treatments for musculoskeletal disease and injury as well as providing guidance for improved materials for protective applications, such as armor for biochemical toxin resistance. Dr. Ortiz has numerous national and international honors including, the National Security Science and Engineering Faculty Fellow (NSSEFF) Award and the National Science Foundation Presidential Early Career Award for Scientists and Engineers (NSF-PECASE). In 2009, she was awarded the MIT Martin Luther King Jr. Leadership Award for her important and lasting impact on students, staff and faculty at MIT.

2:00pm-2:15pm

Ballroom B-D

Young Scientist Predoctoral Award

Effects of Crack Morphology on Local Cartilage Stresses

Curtis-Goreham-Voss, University of Iowa

2:15pm-2:30pm

Ballroom B-D

Young Scientist Postdoctoral Award

Effects of Anti-Whiplash Seats on Cervical Facet and Disc Kinematics During Simulated Rear Crashes

Paul Ivancic, PhD, Yale University

Friday, August 12

11:30am-12:30pm

Ballroom B-D

Borelli Award Lecture

Illuminating Muscle Function

Scott Delp, PhD, Stanford University

About the Speaker

Scott Delp graduated Sum Cum Laude with a B.S in Mechanical Engineering from Colorado State University in 1983. He worked in Hewlett Packard's computer graphics group before beginning graduate school at Stanford University in 1985. Delp received the M.S. and Ph.D. degrees from Stanford and in 1990 joined the faculty of Northwestern University. He returned to Stanford in 1999, and in 2002 became the founding Chairman of Stanford's Bioengineering Department. Professor Delp's work draws on computational mechanics, biomedical imaging, and neuromuscular biology to improve treatments for individuals with physical disabilities. He has led the development of software systems (SIMM and OpenSim) that enable simulation of human and animal movements; these software systems have become the platform for an international collaboration involving hundreds of research centers. Delp also developed fundamental patents in surgical navigation. Delp has received numerous awards for his work, including a National Young Investigator Award from NSF and a Technology Reinvestment Award for which he was honored by President Clinton at the White House. He is currently the James H. Clark Professor of Bioengineering, Mechanical Engineering, and Orthopaedic Surgery at Stanford.

Friday, August 12

5:00pm-6:00pm

Ballroom B-D

Keynote Address

Simulating Human Motion for Graphics and Robotics

Jessica Hodgins, PhD, Carnegie Mellon University

About the Speaker

Dr. Hodgins has had a significant impact on our understanding, simulation, and animation of movement. Her research lab has played a leadership role in the development of new techniques in simulation, control systems, and motion capture. Dr. Hodgins is best known for her work on animating humans; her papers from the early 1990s on legged motion and human athletics laid the groundwork for use of dynamics to simulate complex characters in computer graphics. Hodgins also applied physics to create realistic animations of inanimate objects, including the animation of brittle fracture, explosions, and the motion of complex media like sand, mud, and snow. Her work has resulted in improved techniques for capturing and modeling the deformable elements of human motion and she has made major contributions in the area of user control of complex, synthesized motions. Dr. Hodgins has received a NSF Young Investigator Award, a Packard Fellowship, and a Sloan Fellowship. She was editor-in-chief of ACM Transactions on Graphics from 2000-2002 and ACM SIGGRAPH Papers Chair in 2003. In 2010, she was awarded the ACM SIGGRAPH Computer Graphics Achievement Award.

Saturday, August 13

1:15pm-1:45pm

Ballroom B-D

James J. Hay Memorial Lecture

Coordinative Variability: An Indicator of Overuse Injury?

Joseph Hamill, PhD, University of Massachusetts

About the Speaker

Dr. Hamill received a B.A. (political science) from York University, Toronto, a B.S. from Concordia University (Science), Montreal, and both an M.S. and Ph.D. (biomechanics) from University of Oregon. Presently, he is a Professor in the Department of Kinesiology at the University of Massachusetts and has been the Director of the Biomechanics Laboratory for the past 25 years. He is also an Honorary Professor at the University of Edinburgh in Scotland, an Adjunct Professor at the university of limerick, Ireland and at Plymouth State University in New Hampshire, a Distinguished Research Professor at the Republic Polytechnic in Singapore and a Staff Scientist at the Shriner's Hospital for Children in Springfield, MA. He previously served as Chair of the department for 11 years and as Associate Dean of the School of Public Health and Health Sciences for 3 years. His research interests are focused on lower extremity biomechanics during normal and pathological locomotion and he has utilized modeling and dynamical systems to study optimization of human locomotion. He has authored or co-authored over 120 research papers, over 160 research proceedings, several book chapters and three books. During his academic career, Dr. Hamill has mentored over 45 doctoral and Master's students. He has served on the Executive Boards of the International Society of Biomechanics, the Footwear Biomechanics Group, the Internationals Society of Biomechanics in Sports, the New England Chapter of the American College of Sports Medicine and the Canadian Society of Biomechanics.

3:30pm-4:00pm

Ballroom B-D

Closing Ceremony and Awards

SYMPOSIA

Friday, August 12

9:45am-11:00am

Ballroom B

Teaching Biomechanics

Organized by Andrew Karduna, PhD, University of Oregon

ASB has traditionally been a venue where researchers can share their research with colleagues. However, for many of us, teaching is also a big part of our jobs. The goal of this symposium is to have faculty who are teaching biomechanics in different ASB disciplines share their experiences and elicit feedback from the audience. Hopefully this will start a conversation that can be continued on in future ASB meetings.

9:45 Clinical Biomechanics Instruction Using Active Learning and Context-Rich Laboratory Experiences
David Nuckley, PhD, University of Minnesota

10:05 Teaching Biomechanics with Just-in-Time Teaching (JiTT)
Jody Riskowski, PhD, University of Texas at El Paso

10:25 Teaching human movement to engineers: experiences from nine institutions
Kate Saul, Jeff Reinbolt, Silvia Blemker, Blake Ashby, Scott Delp, Saryn Goldberg, Rob Siston, Darryl Thelen, Joshua Webb, Wake Forest, U. Tennessee, University of Virginia, Grand Valley State University, Stanford University, Hofstra University, Ohio State University, University of Wisconsin, Latournea University

10:45 Panel Discussion

1:30pm-3:00pm

Ballroom B

Upper Extremity Symposium on Wheelchair Biomechanics

Organized by Philip S. Requejo, PhD, Rancho Los Amigos National Rehabilitation Center

There have been many improvements in the design and function of wheelchairs and seating systems that have maximized independence of wheelchair users. Yet upper extremity pain and dysfunction resulting from wheelchair use are still prevalent. Creation of evidence-based strategies aimed at maintaining a maximal level of independence must address multiple factors related to ergonomics and equipment selection, performance techniques, and load-bearing capability of the musculoskeletal system. This symposium will bring together experts in the field to discuss their recent accomplishments and outline how major challenges can be overcome in the near future. This symposium will complement ongoing research at Rancho Los Amigos National Rehabilitation Center and Rehabilitation Engineering Research Center on Aging with Disability, in collaboration with the University of Southern California

1:30 Toward An Understanding of Shoulder Demands in Manual Wheelchair Users
Kenton Kaufman, Melissa Morrow, Wendy Hurd, Kristin Zhao, Meegan Van Straaten, Duane Morrow, Brian Kotajarvi, Lan-Yuen Guo, Michelle Sabick, Fong-Chin Su, Jeffrey Basford, Kai-Nan An.

1:45 Insight into Wheelchair Biomechanics Using Musculoskeletal Modeling and Simulation Techniques
Richard R. Neptune, Jeffery W. Rankin and W. Mark Richter

2:00 Biofeedback Propulsion Training
W. Mark Richter, Ph.D.

2:15 Biomechanical Analysis of Sitting Pivot Wheelchair Transfers
Alicia Koontz, Padmaja Kankipati, Chung-Ying Tsai, Yen-Sheng Lin

2:30 Biomechanics of the Shoulder Joint During Manual Wheelchair Propulsion in Persons With Paraplegia
Sara Mulroy, Philip Requejo, Puja Ruparel, Patricia Hatchet, Lisa Lighthall Haubert, Valerie Eberly, Carmen Muller-Karger

2:45 Panel Discussion

PODIUM SESSIONS

THURSDAY, AUGUST 11, 8:00 AM – 9:15 AM

	Bone Centennial Ballroom B	Neuromechanics Centennial Ballroom C	Gait Centennial Ballroom D
Session Chair	**Ron Zernicke, PhD** *University of Michigan*	**Francisco Valero-Cuevas, PhD** *USC*	**Kenton Kaufman, PhD** *Mayo Clinic*
8:00 AM	**Altering Joint Loading Direction in the Sheep Generates Trabecular Orientation Adjustment** Barak M, Hublin J, Lieberman D *Max Planck Institute for Evolutionary Anthropology; Harvard University*	**Isokinetic Strength and Power Deficits in the Hand Following Stroke** Conrad M, Kamper D *Rehabilitation Institute of Chicago*	**Gait Adaptations When Walking on a Destabilizing Rock Surface** Gates D, Wilken J, Scott S, Sinitski E, Dingwell J *Brooke Army Medical Center*
8:15 AM	**Validation of a 3-Pt Bending Technique for Small Bone Specimens** Albert C, Jameson J, Smith P, Harris G *Marquette University*	**Variability of Gait is Dependent on Direction of Motion** Wurdeman S, Huben N, Stergiou N *Nebraska Biomechanics Core Facility, University of Nebraska at Omaha*	**The Effects of Aging on the Metabolic Cost of Supporting Body Weight During Walking** Musolf S, Ortega J *Humboldt State University*
8:30 AM	**Age Differences in Femoral Neck Strains During Gait** Anderson D, Madigan M *Beth Israel Deaconess Medical Center*	**To What Extent Can Posture-Related Changes in Corticomotor Excitability Be Explained by Muscle Biomechanics?** Mogk J, Rogers L, Murray W, Perreault E, Stinear J *Rehabilitation Institute of Chicago*	**Effect of Incline on Walking Mechanics, Energetics and Neuromuscular Control** Silder A, Delp S, Besier T *Stanford University*
8:45 AM	**Effect of Strain Gauge Size and Placement During the Mouse Axial Ulnar Loading Protocol Calibration** Wagner D, Beaupre G *VA Palo Alto Health Care System*	**Velocity Dependency of Parkinsonian Rigidity Assessed at the Wrist** Powell D, Muthumani A, Hanson N, Threlkeld A, Xia R *Creighton University*	**Comparison of Automated Event Detection Algorithms in Pathological Gait** Bruening D, Standifird T, Denning M, Trager Ridge S *Shriners Hospitals for Children - Erie*
9:00 AM	**Image Segmentation and Registration Algorithm for Quantification of Rib Morphology Across Ages and Genders** Weaver A, Stitzel J *Virginia Tech-Wake Forest University Center for Injury Biomechanics*	**Lower Extremity Joint Moment Asymmetry During Split-Belt Treadmill Walking** Roemmich R, Hass C *University of Florida*	**BMI, Body Volume Distribution, and Sagittal Plane Gait Parameters** Blazek K, Asay J, Erhart J, Andriacchi T *Stanford University*

PODIUM SESSIONS

THURSDAY, AUGUST 11, 9:45 AM – 11:00 AM

	Imaging Centennial Ballroom B	Tendon and Ligament Centennial Ballroom C	Upper Extremity Centennial Ballroom D
Session Chair	**J. J. Trey Crisco, PhD** *Brown University*	**Walter Herzog, PhD** *University of Calgary*	**Kate Saul, PhD** *Wake Forest School of Medicine*
9:45 AM	**Vastus Lateralis:Vastus Medialis Activation Ratio Correlates with Vastus Medialis Activation Delay and Patellar Maltracking in Patellofemoral Pain Patients** Pal S, Besier T, Draper C, Fredericson M, Gold G, Beaupre G, Delp S *Stanford University*	**Achilles Tendon Strain Distributions During Cyclic Inertial Loading of the Plantar Flexors** Chernak L, Bunger D, Thelen D *University of Wisconsin-Madison*	**Typing Style Affects Arm Kinetics, Kinematics and Muscle Activation** Trudeau M, Asundi K, Dennerlein J *Harvard School of Public Health*
10:00 AM	**Short Term Mechanical Loading Increases Trabecular Bone Mineral Content and Moments of Inertia in the Radius of Young Women** Edwards W, Troy K *University of Illinois at Chicago*	**ACL Cross-Sectional Area and Medial Tibial Plateau Geometry Provide Insights on the Gender Differnce in Peak ACL Strain** Lipps D, Oh Y, Wojtys E, Ashton-Miller J *University of Michigan*	**Multi-Digit Coordination and Adaptation to Object Mass Distribution in Carpal Tunnel Syndrome** Zhang W, Johnston J, Smith A, Ross M, Coakley B, Gleason E, Dueck A, Santello M *Arizona State University*
10:15 AM	**In Vivo Chondrocyte Mechanics in the Intact Mouse Knee Joint** Abusara Z, Herzog W *University of Calgary*	**Effect of Prior Testing on the Plantar Soft Tissue Shear Properties** Pai S, Vawter P, Ledoux W *VA Puget Sound and University of Washington*	**Changes in the Thumb Carpo-Metacarpal Joint Space During High-Demand Functional Tasks** Halilaj E, Rainbow M, Moore D, Got C, Crisco J *Brown University*
10:30 AM	**The Effect of Elevated Vacuum Suspension on Axial Bone-Socket Displacement in Persons with a Traumatic Transtibial Amputation** Darter B, Sinitski K, Wilken J *Brooke Army Medical Center*	**How Flatfoot Deformity Affects Moment Arms** Choisne J, Ringleb S, McCullough M, Bawab S, Kaufman K, Kitaoka H *Old Dominion University*	**Upper Limb Muscle Volume and Strength, and Their Relationship in Older Adults** Vidt M, Daly M, Miller M, Davis C, Marsh A, Saul K *Wake Forest University*
10:45 AM	**A Markerless Radiosterometric Analysis (Rsa) System for Measuring Glenohumeral Translation: Details and Validation** Fox A, Kedgley A, Jenkyn T *The University of Western Ontario*	**Identifying Factors That Affect Changes in Peak Achilles Tendon Strain Over 6 Months in Youth 10-14 Years Old** Neugebauer J, Hawkins D *University of California - Davis*	**Influence of Index Finger Joint Fusion on Precision Pinch Kinematics** Domalain M, Li Z *Cleveland Clinic*

PODIUM SESSIONS

FRIDAY, AUGUST 12, 8:00 AM – 9:15 AM

	Joint Mechanics Centennial Ballroom B	Injury Centennial Ballroom C	Muscle Centennial Ballroom D
Session Chair	**Peter Cavanagh, PhD** *University of Washington*	**Irene Davis, PhD** *University of Delaware*	**Bob Gregor, PhD** *USC*
8:00 AM	**Validation of Video-Based Motion Analysis of Scapular and Humeral Rotational Kinematics During Simulated Throwing** Chu Y, Akins J, Lovalekar M, Tashman S, Lephart S, Sell T *University of Pittsburgh*	**Mechanical Properties of Human Craniovertebral Ligaments** Mattucci S, Cronin D, Chandrashekar N, Moulton J *University of Waterloo*	**Sarcomere Behaviour in Myofibrils During Local Deactivation** Leonard T, Herzog W *University of Calgary*
8:15 AM	**The Mechanics & Energetics of Human Walking & Running: A Joint Level Perspective** Farris D, Sawicki G *North Carolina State University*	**Effects of Stroke-Induced Sensory and Motor Deficit on Phalanx Force Magnitude and Angular Deviation During Power Grip** Enders L, Seo N *University of Wisconsin-Milwaukee*	**Automated Methods for Determination of 3D Muscle Fascicle Orientation in Human Muscle Using Free Hand Ultrasound** Rana M, Wakeling J *Simon Fraser University*
8:30 AM	**Load Transfer Across the Pelvic Bone During Normal Walking** Ghosh R, Pal B, Ghosh D, Gupta S *Indian Institute of Technology Kharagpur*	**Tibial Geometry, Joint Compression, and Their Effects on Anterior Cruciate Ligament Strain: An In-Vitro Study** Breighner R, Hashemi J, Chandrashekar N, Slauterbeck J *Texas Tech University*	**Skeletal Muscle Fibrosis in Response to Compliant Muscle Fibers** Meyer G, Smith L, Lieber R *University of California, San Diego*
8:45 AM	**Influence of a Fixed Ankle on Joint Mechanics and Metabolic Cost of Walking** Wutzke C, Sawicki G, Lewek M *University of North Carolina at Chapel Hill*	**Do Knee Eccentric Strength and Knee Joint Kinetrics Differ Between Jumpers and Non-Jumpers in Landing Activities?** Wu X, Zhang S, Zhang D, Xie C *The University of Tennessee*	**Muscle and Fascicle Excursions in Children with Cerebral Palsy** Matthiasdottir S, Hahn M, Yaraskavitch M, Herzog W *University of Calgary*
9:00 AM	**Transducer and Base Compliance Alter the in Situ 6 Dof Force Measured from Muscle During an Isometric Contraction in a Multi-Joint Limb** Sandercock T, Yeo S, Pai D, Tresch M *Northwestern University*	**Does Foot Strike Pattern Predict Loading Rates During Shod Or Barefoot Running?** Becker J, Sinsurin K, Pisciotta E, James S, Osternig L, Chou L *University of Oregon*	**The Mechanical Effect of Rat FCU Muscle After Tendon Transfer** Maas H, Huijing P *VU University Amsterdam*

PODIUM SESSIONS

FRIDAY, AUGUST 12, 9:45 AM – 11:00 AM

	Teaching Symposium Centennial Ballroom B	Methods Centennial Ballroom C	Sports Centennial Ballroom D
Session Chair	**Andrew Karduna, PhD** *University of Oregon*	**James Ashton-Miller, PhD** *University of Michigan*	**Jill McNitt-Gray, PhD** *USC*
9:45 AM	**9:45 am – 10:05 am** **Clinical Biomechanics Instruction Using Active Learning and Context-Rich Laboratory Experiences** Nuckley D *University of Minnesota*	**A Method of Normalization for CT-Based Texture Analysis in Fracture Severity Assessment** Kilburg A, Thomas T, Anderson D, Brown T *University of Iowa*	**Biomechanics of Head Impacts in American Football Players** Crisco J, Wilcox B, Beckwith J, Chu J, Duhaime A, Rowson S, Duma S, Maerlander A, Greenwald R *Brown University*
10:00 AM	**10:05 am – 10:25 am** **Teaching Biomechanics with Just-in-Time Teaching (JiTT)** Riskowski J *University of Texas at El Paso*	**An Instrumented Split-Belt Treadmill System Using Commercial Part** Rich K, Prince J, Qiao M, Jindrich D *Arizona State University*	**Dynamic Sagittal-Plane Trunk Control During ACL-Injury** Sheehan F, Sipprell W, Boden B *National Institute of Health*
10:15 AM	**10:25 am – 10:45 am** **Teaching Human Movement to Engineers: Experiences from Nine Institutions** Reinbolt J, Saul K *University of Tennessee & Wake Forest University*	**Kinematic Methods for Determining Gait Events During Level and Slope Walking in the Cat** Pantall A, Prilutsky B *Georgia Institute of Technology*	**Effects of a Fatiguing Run on Lower Extremity Mechanics in Female Runners** Truebenbach C, Earl-Boehm J, Huddleston W, Swartz A, O'Connor K *UW-Milwaukee*
10:30 AM		**Reliability of Medial and Lateral Forefoot Segment Kinematics During Shod Treadmill Running** Ford K, Masters T, Carson D *Cincinnati Children's Hospital Medical Center*	**Quadriceps Activation Predicts Knee Kinetics During Single-Leg Landings** Brown T, McLean S, Palmieri-Smith R *University of Michigan*
10:45 AM	**Panel Discussion**	**Dynamic Control of Fingertip Forces: Development in Childhood and Decline with Aging** Dayanidhi S, Hedberg A, Hagg I, Lilja N, Forssberg H, Valero-Cuevas F *University of Southern California*	**Dynamic Effect of Lacrosse Stick Shape on Ball Speed During Throwing** Sheets A, Hubbard M *The Ohio State University*

PODIUM SESSIONS

FRIDAY, AUGUST 12, 1:30 PM – 3:00 PM

	Wheelchair Symposium Centennial Ballroom B	Knee Centennial Ballroom C	Posture and Balance Centennial Ballroom D
Session Chair	**Phil Requejo, PhD** *Rancho Los Amigos*	**Ajit Chaudhari, PhD** *Ohio State University*	**Melissa Gross, PhD** *University of Michigan*
1:30 PM	**Toward an Understanding of Shoulder Demands in Manual Wheelchair Users** Kaufman K *Mayo Clinic*	**Does Knee Extensor Muscle Imbalance Cause Changes in Patellar Tracking?** Sawatsky A, Leonard T, Herzog W *University of Calgary*	**Age-Related Changes in Control of Center of Mass in Response to Support Surface Perturbations** Hsu W, Chou L, Woollacott M *National Taiwan University*
1:45 PM	**Insight into Wheelchair Biomechanics Using Musculoskeletal Modeling and Simulation Techniques** Neptune R *The University of Texas at Austin*	**Differences in External Knee Adduction Moment Between ACL Reconstructed and Contralateral Knees** Zabala M, Scanlan S, Donahue J, Andriacchi T *Stanford University*	**Altered Neuromuscular Control After Anterior Cruciate Ligament Injury** MacLeod T, Manal K, Snyder-Mackler L, Buchanan T *University of Delaware*
2:00 PM	**Biofeedback Propulsion Training** Richter WM *MAX Mobility LLC*	**Comparing Knee Joint Kinematics, Kinetics and Cumulative Load Between Healthy-Weight and Obese Young Adults** MacLean K, Maly M, Callaghan J *University of Waterloo*	**Balance During Rotations in Dance** Lott M, Laws K *Bryn Mawr College*
2:15 PM	**Biomechanical Analysis of Sitting Pivot Wheelchair Transfers** Koontz A *University of Pittsburgh*	**Knee Osteoarthritis Results in Asymmetric Joint Moment Distribution During Gait** Richardson T, Higginson J *University of Delaware*	**Postural Responses to Translational and Rotational Perturbations in Young and Older Adults** Roche J, Redfern M *University of Pittsburgh*
2:30 PM	**Biomechanics of the Shoulder Joint During Manual Wheelchair Propulsion in Persons with Paraplegia** Mulroy S *Rancho Los Amigos National Rehabilitation Center*	**Knee Extensor and Flexor Torque - Angle - Angular Velocity Profiles from Maximal Voluntary and Electrically Stimulated Efforts** Pain M, Kim J, Young F, Forrester S *Loughborough University*	**Are Age-Related Modifications During Squatting Task Implemented by Working-Age Men?** DiDomenico A, McGorry R, Banks J *Liberty Mutual Research Institute for Safety*
2:45 PM	**Panel Discussion** Special Guests: Jacquelin Perry, MD, Robert Waters, MD; Charles Whitehead (consumer)	**Influence of Axial Rotation Moments on ACL Strain: A Cadaveric Study of Single- and Multi-Axis Loading of the Knee** Kiapour A, Quatman C, Ditto R, Levine J, Wordeman S, Hewett T, Goel V, Demetropoulos C *University of Toledo*	**Weakness in Ankle Dorsiflexors Reduces Balance Recovery Ability During a Stance Disturbance in the Elderly** Fujimoto M, Hsu W, van Donkelaar P, Woollacott M, Chou L *University of Oregon*

PODIUM SESSIONS

FRIDAY, AUGUST 12, 3:15 PM – 4:30 PM

	Motor Control Centennial Ballroom B	Orthopedics Centennial Ballroom C	Rehabilitation Centennial Ballroom D
Session Chair	**Mark Grabiner, PhD** *University of Illinois-Chicago*	**Tom Brown, PhD** *University of Iowa*	**Margaret Finley, PhD** *University of Indianapolis*
3:15 PM	**Effect of Walking Speed on Inter-Joint Coordination Differs Between Young and Elderly Adults** Chiu S, Chou L *University of Oregon*	**Dislocation in the Morbidly Obese Total Hip Patient** Elkins J, Pedersen D, Singh B, Yack J, Callaghan J, Brown T *University of Iowa*	**Joint Specific Toy Controller for Pediatric Upper Extremity Rehabilitation** Wilcox B, Kerman K, Crisco J *Brown University*
3:30 PM	**Voluntarily Changing Step Width and Step Length Affects Dynamic Stability of Human Walking** McAndrew Young P, Dingwell J *University of Texas at Austin*	**Effect of Loading Direction on Force to Dislocate in Reverse Shoulder Arthroplasty** Clouthier A, Hetzler M, Fedorak G, Bryant T, Deluzio K, Bicknell R *Queen's University*	**Finite State Control of a Variable Impedance Knee Mechanism for Restoration of Stance Phase Knee Flexion After Spinal Cord Injury** Bulea T, Kobetic R, Triolo R *Case Western Reserve University*
3:45 PM	**The Human Splenius Capitis Muscle is Primarily a Head-Neck Rotator** Siegmund G, Vasavada A, Blouin J *MEA Forensic Engineers & Scientists*	**Moment Arms of Middle Deltoid and Rotator Cuff with Alterations in Glenoid and Humeral Head Inclination** Langenderfer J, Faber N *Central Michigan University*	**Identification and Improvement of Difficult Hand Grip Movement Components for Stroke Survivors Using the Box and Block Test** Scott J, Brandenburg A, Allard B, Seo N *University of Wisconsin-Milwaukee*
4:00 PM	**Fascicle Length Changes in Denervated Feline Soleus During Walking** Maas H, Gregor R, Prilutsky B *VU University Amsterdam*	**Helical Axis Approach to Aberrant Motion Identification in Patients with Chronic Neck Pain** Ellingson A, Schulz C, Bronfort G, Nuckley D *University of Minnesota*	**Biomechanical Demands of Therapeutic Hatha Yoga Poses in Older Adults: Modified Chair and Downward Facing Dog** Wang M, Yu S, Hashish R, Samarawickrame S, Haines M, Mulwitz L, Kazadi L, Greendale G, Salem G *University of Southern California*
4:15 PM	**Recruitment of Musculature During Extension from Full Trunk Flexion is Altered in People Who Develop Low Back Pain During Prolonged Standing** Nelson-Wong E, Alex B, Csepe D, Lancaster D, Callaghan J *Regis University*	**A Finite Element Simulation of Anterior Cruciate Ligament Reconstruction with a Patella Tendon Graft** Kwon T, Schroeder M, Dhaher Y *Rehabilitation Institute of Chicago*	**The Influence of Hallux Valgus Surgery on Pelvis and Lower Extremities Movement During Gait** Kozakova J, Janura M, Sos Z, Svoboda Z *Palacky University in Olomouc*

PODIUM SESSIONS

SATURDAY, AUGUST 13, 2:00 PM – 3:30 PM

	Prosthetics Centennial Ballroom B	Computational Modeling Centennial Ballroom C	Ergonomics Centennial Ballroom D
Session Chair	**Gerald Loeb, PhD** *USC*	**Donald Anderson, PhD** *University of Iowa*	**Angela DiDomenico, PhD** *Liberty Mutual Research Institute for Safety*
2:00 PM	**Evaluation of the Biomimetic Properties of a New Powered Ankle-Foot Prosthetic System** Ferris A, Aldridge J, Sturdy J, Wilken J *Brooke Army Medical Center*	**Paretic Muscle Work is Increased in Pre-Swing During Hemiparetic Walking** Peterson C, Kautz S, Neptune R *Rehabilitation Instititue of Chicago*	**Energy Expenditure and Muscular Activation Patterns Through Active Sitting on Compliant Surfaces** Surowiec R, Wang H, Hite A, Dickin D *Ball State University*
2:15 PM	**Bionic Leg Prosthesis Emulates Biological Ankle Joint During Walking** Grabowski A, D'Andrea S, Herr H *Dept. of Veterans Affairs & Mass. Institute of Technology*	**Impact of Anatomical Adhesions on Stress Distribution Within the Extensor Hood of the Index Finger** Ellis B, Lee S, Traylor K, Weiss J, Kamper D *Illinois Institute of Technology*	**Effects of Exercise-Induced Low Back Pain on Intrinsic Trunk Stiffness** Miller E, Bazrgari B, Nussbaum M, Madigan M *Virginia Tech - Wake Forest*
2:30 AM	**Changes to Energy Storage and Return Foot Stiffness Alter the Walking Mechanics of Below-Knee Amputees** Fey N, Klute G, Neptune R *The University of Texas at Austin*	**Incorporation of Dynamic X-Ray Based Knee Kinematics Improves Quadriceps Force Prediction in Musculoskeletal Modeling** Shetye S, Li K, Tashman S, Harner C, Zhang X *University of Pittsburgh*	**Joint Loading of the Thumb while Operating a Mechnical Pipette–an Inverse Dynamic Analysis** Wu J, Sinsel E, Gloekler D, Wimer B, Zhao K, An KN, Buczek F *National Institute for Occupational Safety and Health*
2:45 PM	**Ankle and Knee Muscle Co-Contraction Differences in Trans-Tibial Amputee Residual and Intact Limbs and Matched Controls During Gait** Seyedali M, Morgenroth D, Czerniecki J, Hahn M *VA Puget Sound*	**Biomechanics to Brain: Unraveling the Complex Neural Connectivity of Multi-Muscle Control** Kutch J *University of Southern California*	**Ergonomic Application of Hand Model: Tendon Excursion** Bae S, Armstrong T *University of Michigan*
3:00 PM	**Asymmetry in Amputee Gait: The Propagating Effects of Weak Push-Off** Adamczyk P, Kuo A *Intelligent Prosthetic Systems, LLC*	**Combining Musculoskeletal Modeling and Optimization to Estimate Muscle Forces at the Ankle** Crowell H, Davis I, Higginson J, Manal K, Wang L *U.S. Army Research Laboratory*	**Effects of Glove and Ladder Rung Design on Prevention of Ladder Fall** Hur P, Motawar B, Seo N *University of Wisconsin-Milwaukee*
3:15 PM	**A Unified Deformable Segment Model of the Combined Ankle-Foot System That Does Work** Takahashi K, Razzook A, Guinn L, Schrank E, Kepple T, Stanhope S *University of Delaware*	**The Effect of Independent Manipulations of Body Weight and Mass on Instantaneous Metabolic Power During Walking** McGowan C, Neptune R, Kram R *University of Idaho*	**Local Dynamic Stability of the Lower Limb Kinematic Chain During Symmetric Lifting** Graham R, Costigan P, Sadler E, Almosnino S, Stevenson J *Queen's University*

POSTER SESSION I

ORGANIZED BY TOPIC – THURSDAY 2:30 PM – 6:30 PM

Posters 1-100, 201-341

See Poster Listings for Specific Presentation Times

Topic	Poster #	Location
J Biomech Award Finalist	**JB1, JB 2**	**Centennial Ballroom A**
Clin Biomech Award Finalist	**CB 1, CB 2**	**Centennial Ballroom A**
Best Computational Paper*	**SBCP**	**Odessa**
Student Computational Modeling**	**1-16, 51-66**	**Centennial Ballroom A**
Clinical	296-309	Barcelona/Casablanca
Computational Modeling	67-74	Centennial Ballroom A
Ergonomics	75-76	Centennial Ballroom A
	329-332	Melbourne
Gait	17-19, 77-78	Centennial Ballroom A
	268-280	Tokyo/Vancouver
	281-295	Barcelona/Casablanca
	333-341	Melbourne
Lower Extremity	20-23, 79-80	Centennial Ballroom A
	310-317	Barcelona/Casablanca
	318-325	Melbourne
Methods	24-30	Centennial Ballroom A
Motor Control	226-231	Shanghai
Muscle	81-84	Centennial Ballroom A
	221-225	Shanghai
Popular Choice***	201-220	Odessa
Posture and Balance	31-34, 85-87	Centennial Ballroom A
	241-256	Tokyo/Vancouver
Prosthetics	232-236	Shanghai
Running	88-89	Centennial Ballroom A
	326-328	Melbourne
Spine	35-37, 90-92	Centennial Ballroom A
Sports	38-40, 93-96	Centennial Ballroom A
	237-240	Shanghai
Tissue Mechanics	41-45	Centennial Ballroom A
Upper Extremity	46-50, 97-100	Centennial Ballroom A
	257-267	Tokyo/Vancouver

**Simulia Best Computational Paper Award. Award winner selected by 2011 Awards Committee before the meeting based on abstract review.*

***Simulia Student Poster Competition Session. Award winners to be selected by 2011 Awards Committee during the meeting based on first author student poster presentation.*

****Interactive session where meeting attendees select award winners from a group of abstracts representative of the highest scored abstracts from the peer-review process.*

POSTER SESSION II

ORGANIZED BY TOPIC – SATURDAY, AUGUST 13, 8:30 AM – 12:30 PM

Posters 101-341

See Poster Listings for Specific Presentation Times

Topic	Poster #	Location
J Biomech Award Finalist	**JB1, JB 2**	**Centennial Ballroom A**
Clin Biomech Award Finalist	**CB 1, CB 2**	**Centennial Ballroom A**
Best Computational Paper*	**SBCP**	**Odessa**
Student Computational Modeling**	**101-116**	**Centennial Ballroom A**
Clinical	160-162	Centennial Ballroom A
	296-309	Barcelona/Casablanca
Computational Modeling	151-159	Centennial Ballroom A
Ergonomics	163-165	Centennial Ballroom A
	329-332	Melbourne
Gait	117-123, 166-170	Centennial Ballroom A
	268-280	Tokyo/Vancouver
	281-295	Barcelona/Casablanca
	333-341	Melbourne
Lower Extremity	124-128	Centennial Ballroom A
	310-317	Barcelona/Casablanca
	318-325	Melbourne
Methods	129-137	Centennial Ballroom A
Motor Control	171-174	Centennial Ballroom A
	226-231	Shanghai
Muscle	175-176	Centennial Ballroom A
	221-225	Shanghai
Popular Choice***	201-220	Odessa
Posture and Balance	138-142, 177-179	Centennial Ballroom A
	241-256	Tokyo/Vancouver
Prosthetics	232-236	Shanghai
Running	143-147, 180-188	Centennial Ballroom A
	326-328	Melbourne
Spine	148-150, 189-190	Centennial Ballroom A
Sports	191-195	Centennial Ballroom A
	237-240	Shanghai
Upper Extremity	196-200	Centennial Ballroom A
	257-267	Tokyo/Vancouver

**Simulia Best Computational Paper Award. Award winner selected by 2011 Awards Committee before the meeting based on abstract review.*

***Simulia Student Poster Competition Session. Award winners to be selected by 2011 Awards Committee during the meeting based on first author student poster presentation.*

****Interactive session where meeting attendees select award winners from a group of abstracts representative of the highest scored abstracts from the peer-review process.*

POSTER SESSION I
ORGANIZED BY TIME & LOCATION

Posters 1-100
Centennial Ballroom A

Thursday: 2:30 pm - 4:00 pm

Topic	Poster #
J Biomech Award Finalist	JB 1
Clin Biomech Award Finalist	CB 1
Student Computational Modeling*	1-16
Gait	17-19
Lower Extremity	20-23
Methods	24-30
Posture and Balance	31-34
Spine	35-37
Sports	38-40
Tissue Mechanics	41-45
Upper Extremity	46-50

**Simulia Student Poster Competition Session*

Thursday: 5:00 pm - 6:30 pm

Topic	Poster #
J Biomech Award Finalist	JB 2
Clin Biomech Award Finalist	CB 2
Student Computational Modeling*	51-66
Computational Modeling	67-74
Ergonomics	75-76
Gait	77-78
Lower Extremity	79-80
Muscle	81-84
Posture and Balance	85-87
Running	88-89
Spine	80-82
Sports	93-96
Upper Extremity	97-100

**Simulia Student Poster Competition Session*

Posters 201-341
Meeting Rooms

"Cardinal", "Gold", and "Gray" topics are distributed throughout the meeting rooms so that a comparable number of posters are presented in each room during each hour. Refer to following page for presentation times.

Cardinal

Topic	Poster #
Best Computational Paper*	SBCP
Popular Choice	201-220
Muscle	221-225
Posture and Balance	241-256
Lower Extremity	310-325

**Simulia Best Computational Paper Award*

Gold

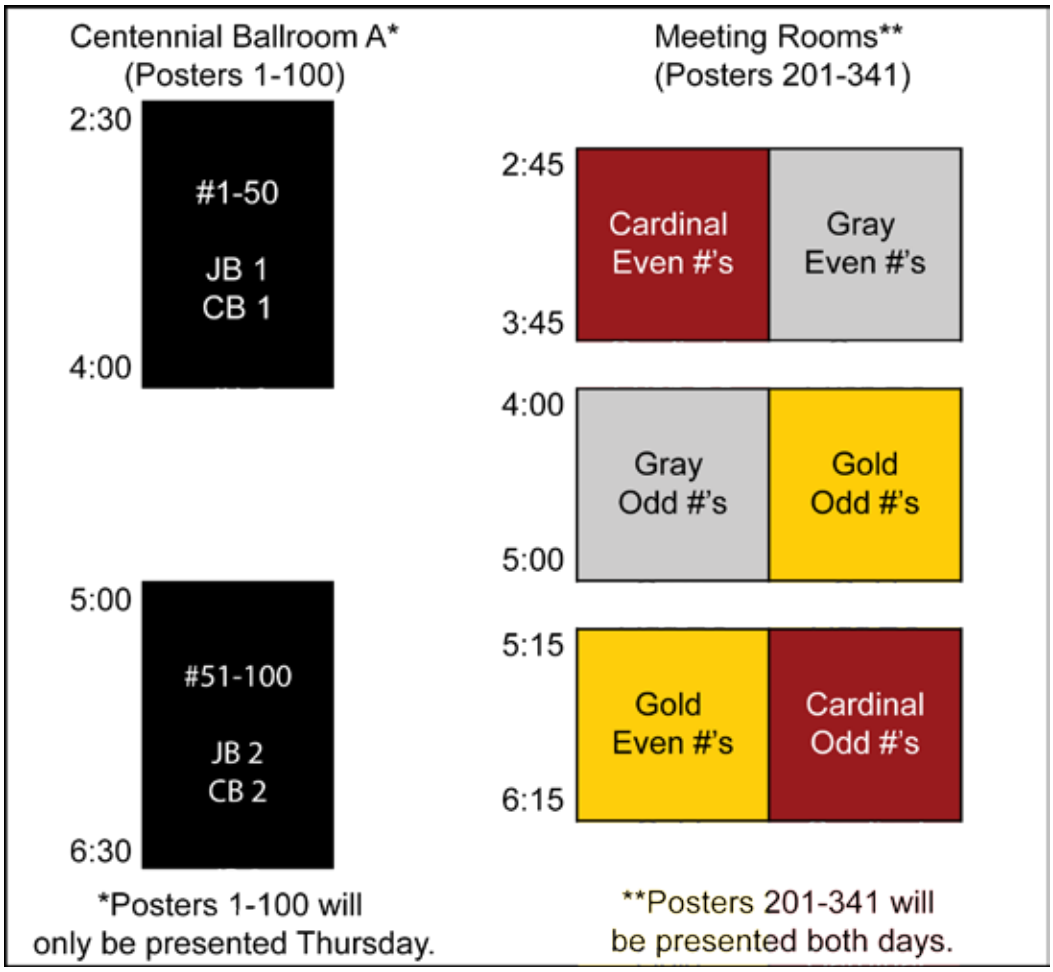
Topic	Poster #
Motor Control	226-231
Upper Extremity	257-267
Clinical	296-309
Running	326-328
Ergonomics	329-332

Gray

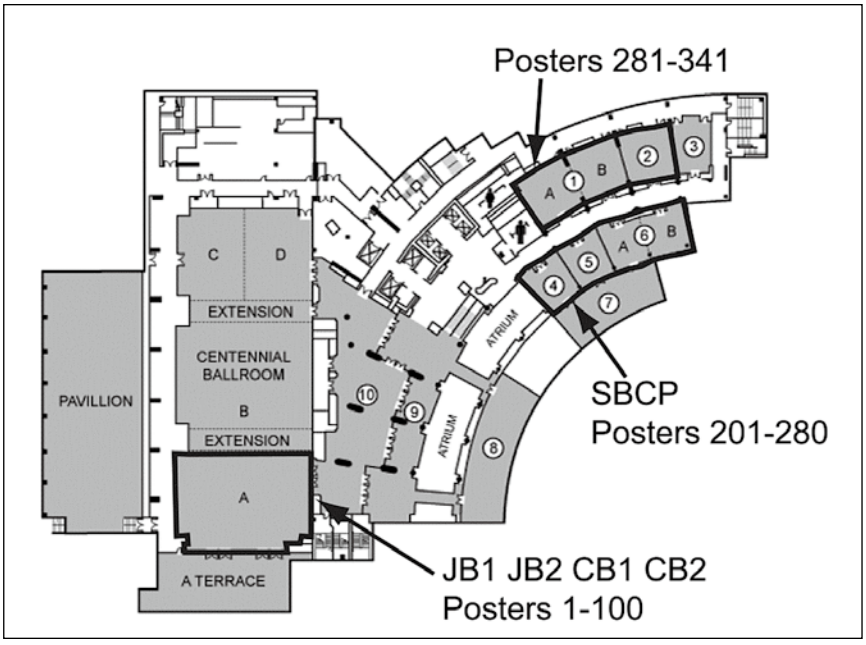
Topic	Poster #
Prosthetics	232-236
Sports	237-240
Gait	268-295
Gait	333-341

POSTER SESSION I
ORGANIZED BY TIME & LOCATION

Authors will present their posters at the following times:



Posters are located on the third level in the following locations:



"Cardinal", "Gold", and "Gray" topics are distributed throughout the meeting rooms so that a comparable number of posters are presented in each room during each hour.

Poster # range in each meeting room:
201-220 in (4) Odessa
221-240 in (5) Shanghai
241-280 in (6) Tokyo/Vancouver
281-317 in (1) Barcelona/Casablanca
318-341 in (2) Melbourne

POSTER SESSION II
ORGANIZED BY TIME & LOCATION

Posters 101-200
Centennial Ballroom A

Saturday: 8:30 am - 10:00 am

Topic	Poster #
J Biomech Award Finalist	JB 1
Clin Biomech Award Finalist	CB 2
Student Computational Modeling*	101-116
Gait	117-123
Lower Extremity	124-128
Methods	129-137
Posture and Balance	138-142
Running	143-147
Spine	148-150

**Simulia Student Poster Competition Session*

Saturday: 11:00 am - 12:30 pm

Topic	Poster #
J Biomech Award Finalist	JB 2
Clin Biomech Award Finalist	CB 1
Computational Modeling	151-159
Clinical	160-162
Ergonomics	163-156
Gait	166-170
Motor Control	171-174
Muscle	175-176
Posture and Balance	177-179
Running	180-188
Spine	189-190
Sports	191-195
Upper Extremity	196-200

**Simulia Student Poster Competition Session*

Posters 201-341
Meeting Rooms

"Cardinal", "Gold", and "Gray" topics are distributed throughout the meeting rooms so that a comparable number of posters are presented in each room during each hour. Refer to following page for presentation times.

Cardinal

Topic	Poster #
Best Computational Paper*	SBCP
Popular Choice	201-220
Muscle	221-225
Posture and Balance	241-256
Lower Extremity	310-325

**Simulia Best Computational Paper Award*

Gold

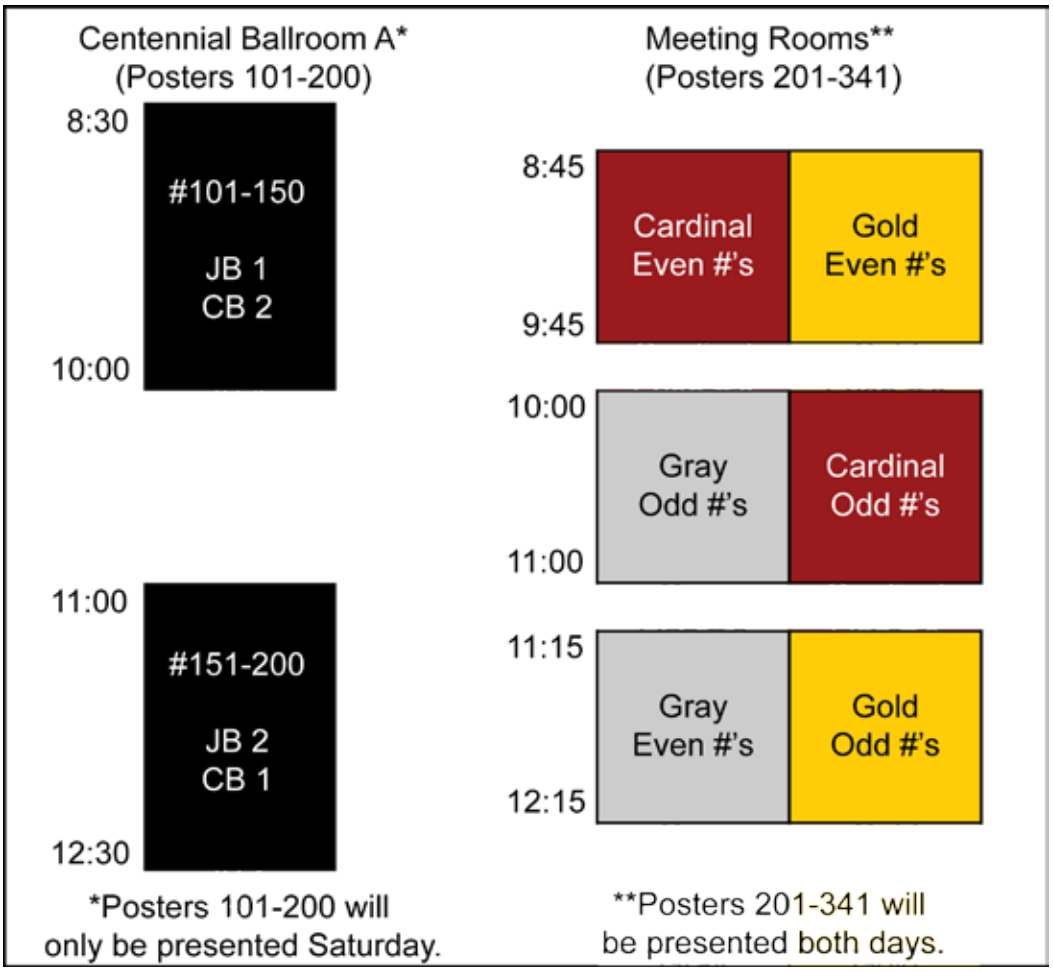
Topic	Poster #
Motor Control	226-231
Upper Extremity	257-267
Clinical	296-309
Running	326-328
Ergonomics	329-332

Gray

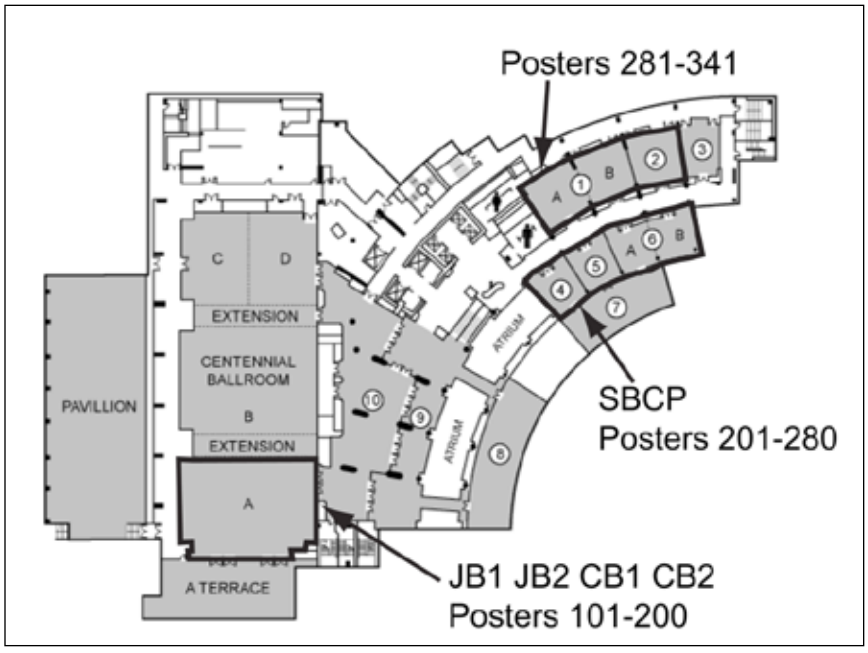
Topic	Poster #
Prosthetics	232-236
Sports	237-240
Gait	268-295
Gait	333-341

POSTER SESSION II
ORGANIZED BY TIME & LOCATION

Authors will present their posters at the following times:



Posters are located on the third level in the following locations:



"Cardinal", "Gold", and "Gray" topics are distributed throughout the meeting rooms so that a comparable number of posters are presented in each room during each hour.

Poster # range in each meeting room:
201-220 in (4) Odessa
221-240 in (5) Shanghai
241-280 in (6) Tokyo/Vancouver
281-317 in (1) Barcelona/Casablanca
318-341 in (2) Melbourne

POSTER SESSION I
THURSDAY 2:30 PM – 6:30 PM

Posters 1-50 (2:30pm-4:00pm) & Posters 51-100 (5:00pm-6:30pm)
Centennial Ballroom A

Thursday, August 11, 2:30 pm - 4:00 pm

Award Finalists

JB1. Measuring Subject Specific Muscle Model Parameters of the First Dorsal Interosseous in Vivo
Infantolino B, Challis J
Penn State University - Berks

CB1. Mechanical Properties of Muscle in Hamstring Contractures of Children with Spastic Cerebral Palsy
Smith L, Lee K, Carr A, Ward S, Chambers H, Lieber R
University of California, San Diego

Student Computational Modeling

1. **Development and Validation of a Pediatric Head and Neck Musculoskeletal Model**
Cochenour C, Mehta H, Peterson T, Nuckley D
University of Minnesota, Twin Cities

2. **Moving Muscle Points Provide Accurate Curved Muscle Paths in a Model of the Cervical Spine**
Suderman B, Vasavada A
Washington State University

3. **Quantitative Prediction of Grasp Impairment Following Peripheral Neuropathies of the Hand**
Inouye J, Kutch J, Valero-Cuevas F
University of Southern California

4. **Preliminary Comparisons of Experimental and Computational Knee Loading Conditions Simulating Daily Loading Scenarios**
Hale R, Gonzalez R
LeTourneau University

5. **Estimation of Articular Contact Loads in Total Knee Replacement Using a Dual-Joint Modeling Paradigm**
Hast M, Piazza S
The Pennsylvania State University

6. **Motion Analysis of Simulated Minimally Invasive Surgery**
Ohu I, Cho S, Awad M, Matthews B
Southern Illinois University Edwardsville

7. **Why Does the Pubovisceral Muscle Fail at Its Enthesis, and Not Elsewhere, During the Second Stage of Labor? A Computational Study**
Kim J, DeLancey J, Ashton-Miller J
University of Michigan

8. **An Evaluation of Phenomenological Models of the Force-Velocity Relationship of Shortening Muscle**
Yeo S, Lappin A, Nishikawa K, Pai D
University of British Columbia

9. **Module Control of Walking: A 3D Simulation Study**
Allen J, Kautz S, Neptune R
The University of Texas at Austin

10. **EMG-Driven Muscle Activations Tune Post-Stroke Computed Muscle Control Simulations**
Ramsay J, Buchanan T, Higginson J
University of Delaware

11. **Comparing Filter Cutoff Frequency Effects on Lower Extremity Joint Moments Calculated for Use in Musculoskeletal Modeling**
Laughlin W, Weinhandl J, O'Connor K
University of Wisconsin-Milwaukee

12. **Derivation of the Equation of Motion for the Alveolar Spring-Hinge Model**
Lee J, Ahn J, Kim D, Park Y, Kim I
Hanyang University

13. **An Optimization Algorithm to Improve Computed Muscle Control**
Weinhandl J, Laughlin W, O'Connor K
University of Wisconsin - Milwaukee

14. **Estimation of Curvature Feature Using a Biomimetic Tactile Sensor**
Su Z, Li Y, Loeb G
University of Southern California

15. **Abstract Withdrawn**

16. **Abstract Withdrawn**

POSTER SESSION I
THURSDAY 2:30 PM – 6:30 PM

Posters 1-50 (2:30pm-4:00pm) & Posters 51-100 (5:00pm-6:30pm)
Centennial Ballroom A

Gait

17. Gait in Patients with Copd is Mainly Affected in Proximal Musculature
Yentes J, Rennard S, Stergiou N
University of Nebraska at Omaha
2010 Grant-in-Aid Recipient

18. Heel Height Affects Lower Extremity Frontal Plane Joint Moments During Walking
Barkema D, Derrick T, Martin P
Iowa State University

19. Comparison of Objective Measures of Foot Structure and Function in the Population-Based Framingham Foot Study
Hagedorn T, Riskowski J, Dufour A, Hillstrom H, Lenhoff M, Frey J, Casey V, Hannan M
Institute for Aging Research at Hebrew SeniorLife

Lower Extremity

20. Understanding Contact Pressure Distribution in the Ankle and Subtalar Joint During Motion in the Sagittal Plane
Choisne J, Ringleb S, Paranjape R, Bawab S, Anderson C
Old Dominion University

21. Effects of Towing a Weighted Sled with Different Loads and Attachment Points on Lower Limb Moments
Lawrence M, Hartigan E, Tu C
University of New England

22. Effect of a Neuromuscular Dentistry-Designed Mouthguard on Peak Knee Valgus Moments During Single Leg Landing
Chaudhari A, Cotter J, Jamison S, Mossad D
The Ohio State University

23. Sex Differences in Plantar Flexion Strength May Predispose Middle Age Females to Falls
Chimera N, Manal K
Northern Arizona University

Methods

24. A Technique for Dynamic Marker Identification to Locate Occluded Anatomical Landmarks
Yoo B, Kim S, Merryweather A
University of Utah

25. Effects of Locomotor Task and Marker Placement on Minimum Foot Clearance
Loverro K, Greaves N, Hamel K
Oak Ridge Institute for Science and Education (ORISE)/NSRDEC

26. Force Platform Center of Pressure Measures Used to Predict Nintendo Wii Fit Balance Scores During Yoga Poses
Heise G, Smith J, Leich A, Kneisel K, Hoke M
University of Northern Colorado

27. Markerless Tracking Error of a Bi-Planar X-Ray Motion Capture System
Miranda D, Schwartz J, Dawson M, Fleming B, Crisco J
Brown University

28. Experimental Validation of a Finite Element Model of the Composite Pelvis Using Digital Image Correlation
Ghosh R, Gupta S, Dickinson A, Browne M
Indian Institute of Technology, Kharagpur

29. A Novel Device for Physiologic Mr Imaging of the Patellofemoral Joint Cartilage Under Controlled Loads
Chehab E, Brown S, Ward S
University of California, San Diego

30. Estimating Ground Reaction Forces During Locomotion in Adults from Actigraph Activity Monitor Data
Collins K, Neugebauer J, Hawkins D
University of California - Davis

POSTER SESSION I
THURSDAY 2:30 PM – 6:30 PM

Posters 1-50 (2:30pm-4:00pm) & Posters 51-100 (5:00pm-6:30pm)
Centennial Ballroom A

Posture and Balance

31. Obesity Does Not Influence the Ability of Young Adults to Recover Balance from a Forward Fall with a Single Step
Matrangola S, Costello K, Madigan M
Virginia Tech

32. Incremental Training: Reducing Challenges to Balance Control while Learning a Novel Locomotor Task
Sawers A, Hahn M
University of Washington

33. Does the Development of Transient Low Back Pain Affect Postural Changes During Prolonged Standing?
Gallagher K, Nelson-Wong E, Callaghan J
University of Waterloo

34. Wii Fit Training to Improve Balance in Older Adults: a Feasibility Study
Bieryla K, Dold N
Bucknell University

Spine

35. Considerations for the Use of C7 Translaminar Screws in Cervicothoracic Instrumentation
Gandhi A, Kode S, Ilgenfritz R, Smucker J, Fredericks D, Grosland N
University of Iowa

36. Anticipated Walking Turns in People with Recurrent Low Back Pain: A Kinematic Study
Armour Smith J, Beneck G, Kulig K
University of Southern California

37. Trunk Neuromuscular Control is Reduced in Patients with Clinical Lumbar Instability
Silfies S, Cannella M, Sung W, Wattananon P, Mehta R
Drexel University

Sports

38. Cyclic Compressive Loading Facilitates Acute and Accumulated Recovery of Viscoelastic Properties of Skeletal Muscle Following Eccentric Exercise
Haas C, Zhao Y, Butterfield T, Best T
The Ohio State University

39. Kinetics and Kinematics of Swimming Push-Off Strategies
Weimar W, Sumner A, Patel J, Romer B, Fox J, Snead J, Shroyer F
Auburn University

40. Improvements in Joint Kinetics in Return to Competition from ACL Injury and Reconstruction: A Case Study
Chiu L, Bryanton M, Moolyk A, Newstead L, Kennedy M
University of Alberta

Tissue Mechanics

41. Effects of Bifurcation Angle on the Wall Shear Stress in Stenosed Coronary Artery Bifurcation
Molavi Zarandi M, Mongrain R, Bertrand O
McGill University

42. Radiolucent Composites Providing High Resistance Against Sterilization Decomposition
Sedlacek R, Suchy T, Sochor M, Balik K, Sucharda Z, Benes J
Czech Technical University in Prague, Faculty of Mechanical Engineering

43. Passive Elastic Properties of the Rat Ankle
Wu M, Tresch M, Pai D, Sandercock T
Northwestern University

44. Mechanotransduction of External Load to the Brain: The Effect of Trabecular Architecture
Saboori P, Sadegh A
The City College of the City University of New York

45. Investigation on Individual Collagen Fibrils of Osteoarthritic Cartilage with Atomic Force Microscopy
Wu C, Tang B, Wen C, Lu W, Yan C, Chiu K
The University of Hong Kong

POSTER SESSION I
THURSDAY 2:30 PM – 6:30 PM

Posters 1-50 (2:30pm-4:00pm) & Posters 51-100 (5:00pm-6:30pm)
Centennial Ballroom A

Upper Extremity

46. Force Sharing Among Fingers During Multi-Finger Pressing in Different Finger Configurations
Martin J, Latash M, Zatsiorsky V
Pennsylvania State University

47. Interrater and Intrarater Reliability of the Functional Movement Screen
Smith C, Chimera N, Wright N, Warren M
Northern Arizona University

48. Humeral Head Translations and Subacromial Pressure After Shrinking the Posterior Glenohumeral Joint Capsule
Borstad J, Dashottar A
Ohio State University

49. Elbow Extensor Torque As a Function of Vibration Frequency
Friesenbichler B, Coza A, Nigg B
University of Calgary

50. Reaching Kinematics of the "Less Affected" Upper Extremity in Individuals with Chronic Stroke and Healthy Controls
Finley M, Combs S, Carnahan K, Peacock S, Van Buskirk A
University of Indianapolis

Thursday, August 11, 5:00 pm - 6:30 pm

Award Finalists

JB2. The Viscoelasticity of Chondrocytes in Situ
Han S, Herzog W
University of Calgary

CB2. Loss of Vasti Medialis Function Alters in Vivo Knee Joint Kinematics: Implications for Patellofemoral Pain Syndrome
Sheehan F, Behnam A, Borotikar B, Alter K
National Institutes of Health

Student Computational Modeling

51. Spatiotemporal Contact Properties of the Tibiofemoral Joint Following ACL-Reconstruction Schroeder M, Kwon T, Dhaher Y
Northwestern University

52. A Dynamic Simulation Approach to Evaluating Nerve Transfer Strategies Following C5-C6 Brachial Plexus Injury
Crouch D, Li Z, Barnwell J, Daly M, Li Z, Saul K
Department of Biomedical Engineering, Wake Forest University School of Medicine

53. A Novel Methodology to Compare Grasp Quality: Application to Two Dominant Tendon-Driven Designs
Inouye J, Kutch J, Valero-Cuevas F
University of Southern California

54. A Comprehensive Experimental Evaluation of Existing Models of the Extensor Mechanism Calls for Novel Data-Driven Models
Kurse M, Lipson H, Valero-Cuevas F
University of Southern California

55. Evaluating a Biomechanical Model of the Thumb for Simulation of Both Individual and Coordinated Muscle Actions
Wohlman S, Murray W
Northwestern University

56. Controlling Compliance: Feed-Forward Stimulation Pattern Influences Elastic Tuning During Cyclic Muscle-Tendon Contractions
Robertson B, Sawicki G
UNC-Chapel Hill/NC State University

57. Mammalian Muscle Model for Predicting Force and Energetics During Physiological Behaviors
Tsianos G, Rustin C, Loeb G
University of Southern California

58. Simulations of Optimal Reweighting of Muscle Coordination Reveal Important Benefits of Muscle Redundancy
Racz K, Valero-Cuevas F
University of Southern California

POSTER SESSION I
THURSDAY 2:30 PM – 6:30 PM

Posters 1-50 (2:30pm-4:00pm) & Posters 51-100 (5:00pm-6:30pm)
Centennial Ballroom A

59. Identifying the Criterion Spontaneously Minimized During Sub-Maximal Movements Through Optimal Synthesis
Jackson M, Benkhemis I, Thouze A, Sardain P, Begon M
Universite de Montreal

60. Compensatory Muscle Control Strategies When Walking with a Customized Pd-Afo
Schrank E, Higginson J, Stanhope S
University of Delaware

61. Estimation of Patella Bone Stress: A Comparison of Homogeneous and Heterogeneous Finite Element Models
Ho K, Mokarram N, Yang N, Vaziri A, Powers C,
University of Southern California

62. Optimal Control and Forward Dynamics of Periodic Forearm Motions Using Fourier Series for Muscle Excitations
Sharif Shourijeh M, McPhee J, Azad N
University of Waterloo

Student Computational Modeling Cont'd

63. Force-Based Index Finger Biomechanical Model
Qiu D, Kamper D
Illinois Institute of Technology

64. A Probabilistic Approach to Feedforward Fes Control in the Rat Hindlimb
Jarc A, Berniker M, Tresch M
Northwestern University

65. The Measurement Setup for Online Biomechanical Analysis of Rowing on an Ergometer
Cerne T, Kamnik R, Munih M
Alpineon d.o.o.

66. Wrist Kinematics Following Scaphoid-Excision Four Corner Fusion
Nichols J, Bednar M, Balaram A, Havey R, Murray W
Northwestern University

Computational Modeling

67. Load Variation Influences on Joint Work During Squat Exercise in Reduced Gravity
De Witt J, Fincke R, Logan R, Guilliams M, Ploutz-Snyder L
Wyle Integrated Science and Engineering

68. Glenohumeral Joint Force Estimations During Shoulder Exertions Using Forward Dynamics Simulations
Sasaki K
Boise State University

69. Comparing Surface-Marker Based and X-Ray Based Knee Joint Kinematics During Functional Activities
Li K, Shetye S, Tashman S, Zhang X
University of Pittsburgh

70. Surgical Impaction of Ceramic Femoral Resurfacing Heads
Dickinson A, Taylor A, Browne M
University of Southampton

71. A Model of Chimpanzee Hindlimb Musculoskeltal Geometry
Umberger B, O'Neill M, Larson S, Demes B, Stern J
University of Massachusetts Amherst

72. Hamstring Contributions to Knee Motion During Terminal Swing in Crouch Gait
Yong J, Steele K, Hicks J, Schwartz M, Delp S
Stanford University

73. Optimization of Shift Lever Position
Vilimek M, Horak Z, Kubovy P
Czech Technical University in Prague

74. A Time-Efficient Method for Analyzing Bone Strain with Large Subject Pools
Leib D, Dugan E, Wang H
Boise State University

Ergonomics

75. Affect of Weight and Type of Jackhammer on Vibration and Grip Pressure
Singh G, Campbell-Kyureghyan N, Strobel D, Cooper K
Department of Industrial Engineering, University of Wisconsin-Milwaukee

76. Workday Arm Elevation Exposure, a Comparison Between Two Professions.
Ettinger L, Kincl L, Karduna A
University of Oregon

POSTER SESSION I
THURSDAY 2:30 PM – 6:30 PM

Posters 1-50 (2:30pm-4:00pm) & Posters 51-100 (5:00pm-6:30pm)
Centennial Ballroom A

Gait

77. Leg Stiffness Increases with Speed to Modulate Gait Frequency and Propulsion Energy
Kim S, Park S
KAIST

78. Mechanical Impulse During Step-To-Step Transition Balances Propulsion Energy and Collision Loss
Kim S, Park S
KAIST

Lower Extremity

79. Altered Stair Climbing Mechanics in Subjects Wth Femoroacetabular Impingement
Rylander J, Shu B, Asay J, Safran M, Andriacchi T
VA Hospital Bone and Joint RR&D, Palo Alto, CA

80. Kinematic Model for Total Knee Replacement Surgical Training and Planing
Moonjaita P, Suthakorn J
Mahidol University

Muscle

81. Effects of Cyclic Compressive Loading on Ed1+ and Ed2+ Macrophages in Healthy Skeletal Muscle in Vivo
Waters C, Dupont-Versteedgen E, Butterfield T
University of Kentucky

82. A Nonlinear Model of Passive Skeletal Muscle Viscosity
Meyer G, McCulloch A, Lieber R
University of California, San Diego

83. Scaling of Passive Tension in Skeletal Muscle
Winters T, Takahashi M, Lieber R, Ward S
University of California, San Diego

84. Knee Angle-Spastic Gracilis Muscle Force Relationship Measured Intraoperatively Shows No Abnormal Muscular Mechanics
Ates F, Ayturk O, Temelli Y, Yucesoy C
Bogazici University

Posture and Balance

85. Comparison of Trunk Kinematics Between Experimental Tripping Protocols
Caudle S, Matrangola S, Madigan M
Virginia Tech

86. Age-Related Differences in Center of Mass Control During Sit-To-Walk
Chen C, Chou L
University of Oregon

87. Postural Training in a Non-Threatening Environment Results in Limited Transfer During Induced Postural Anxiety
Sessford D, Doan J, Weeks D, Brown L
University of Lethbridge

Running

88. Ground Reaction Forces & Joint Moments in Habitual Versus Converted Forefoot Strike Runners
Rooney B, Derrick T
Iowa State University

89. Experimental Knee Joint Pain Affects Certain Running Kinematics
Seeley M, Park J, King D, Hopkins J
Brigham Young University

Spine

90. Adolescent Idiopathic Scoliosis Rib Hump: A First Biomechanical Study
Berteau J, Lasaygues P, Follet H, Pithioux M, Chabrand P
Institute of Movement Sciences UMR 6233

91. Influence Lumbar Support Prominece Magnitude on Body Posture and Subjective Comfort During Prolonged Driving.
De Carvalho D, Callaghan J
University of Waterloo

POSTER SESSION I
THURSDAY 2:30 PM – 6:30 PM

Posters 1-50 (2:30pm-4:00pm) & Posters 51-100 (5:00pm-6:30pm)
Centennial Ballroom A

92. Accurate Prediction of Neck Muscle Volumes Using a Two-Step Process
Zheng L, Siegmund G, Vasavada A
Washington State University

Sports

93. Deceleration and Redirection Mechanics During a Cutting Maneuver
Havens K, Sigward S
University of Southern California

94. Relationship Between Torso Rotation and Gluteal Muscle Group Activation in Baseball and Softball Catchers: Skeletally Immature and Mature
Oliver G, Plummer H, Dwelly P
University of Arkansas

95. An Improved Method for Quantifying the Stiffness of Running Shoes
Ballun M, Williams B, Goehler C, Sevener K
Valparaiso University

96. Effects of Cut Angle and Online Processing on Cutting Maneuvers
Cesar G, Havens K, Chang Y, Sigward S
University of Southern California

Upper Extremity

97. Force Changes During Passive Finger Movement
Georgeson A, Martin J
Pennsylvania State University

98. Lack of Modulation of Maximum Pinch Force Depending on Grip Surface in Stroke Survivors
Pounds C, Enders L, Seo N
University of Wisconsin-Milwaukee

99. A Novel Technique for Measurement of Ulnar Collateral Ligament Strain
Weisenbach C, Rosch J, Corbiere N, Cowgill M, Miller M, Kuxhaus L
Clarkson University

100. Abstract Withdrawn

POSTER SESSION II
SATURDAY 8:30 AM – 12:30 PM

Posters 101-150 (8:30am-10:00am) & Posters 151-200 (11:00am-12:30pm)
Centennial Ballroom A

Saturday, August 13, 8:30 am - 10:00 am

Award Finalists

JB1. Measuring Subject Specific Muscle Model Parameters of the First Dorsal Interosseous in Vivo
Infantolino B, Challis J
Penn State University - Berks

CB2. Loss of Vasti Medialis Function Alters in Vivo Knee Joint Kinematics: Implications for Patellofemoral Pain Syndrome
Sheehan F, Behnam A, Borotikar B, Alter K
National Institutes of Health

Student Computational Modeling

101. Increased Tibiofemoral Compressive Loads in Females Who Have Undergone Anterior Cruciate Ligament Reconstruction
Tsai L, McLean S, Colletti P, Powers C
University of Southern California

102. A Finite Element Analysis of the Moment Arm Hypothesis for Modulating Ultimate Vertebral Shear Failure Tolerance
Howarth S, Karakolis T, Callaghan J
University of Waterloo, Rochon Engineering

103. Evaluating the Accuracy of a Cyberglove Motion Capture Protocol with Computed Tomography Data
Buffi J, Crisco J, Murray W
Northwestern University

104. A Finite Element Model of Two Surgical Procedures for Correcting the Clawed Hallux Deformity
Isvilanonda V, Dengler E, Ledoux W
VA Puget Sound and University of Washington

105. Biomechanical Simulation of the Passive Mechanical Coupling in the Hand and Wrist
Binder-Macleod B, Dewald J, Murray W
Northwestern University

106. Which Muscle Data Set to Use in a Finite Element Model of the Knee? an Rms-Based Method to Identify Mean, Maximum, and Minimum
Boyd J, Gill H, Zavatsky A
University of Oxford, Dept of Engineering Science

107. Simulation of Non-Periodic Gait Optimized for Traversing a Specified Distance in Minimum Time
Celik H, Piazza S
The Pennsylvania State University

108. Maximising Post-Flight Height in Gymnastics Vaulting: The Influence of the Table Contact Phase
Jackson M, Yeadon M, Hiley M
Universite de Montreal

109. Insights into the Role of Proactive Strategies in Postural Responses to Slips Using Gait Simulations
Chambers A, Cham R, Mahboobin A
University of Pittsburgh

110. The Influence of Ball Mass on Youth Baseball Injury Potential - a Simulation Study
Matta P, Myers J, Sawicki G
University of North Carolina - Chapel Hill & North Carolina State University

111. Achilles Tendon Forces in Forefoot and Rearfoot Running
Gruber A, Umberger B, Jewell C, Del Pilar S, Hamill J
Univeristy of Massachusetts

112. Expedited Evaluation of Contact Stress in the Human Ankle Joint
Kern A, Anderson D, Brown T
University of Iowa

113. Antagonistic Co-Contraction in Optimization Prediction of Knee Contact Forces
Brandon S, Thelen D, Deluzio K
Queen's University

114. Identification of Muscle Contributions to a Forward Reaching Task Using an Induced Acceleration Analysis
Daly M, Vidt M, Marsh A, Saul K
Wake Forest University

115. Predicting Fracture Initiation, Propagation and Diversion in Long Bones Under Impact Using Drucker-Prager Plastic Model and Damage Modeling
Arun M, Chawla A, Mukherjee S
Indian Institute of Technology, Delhi

116. Abstract Withdrawn

POSTER SESSION II
SATURDAY 8:30 AM – 12:30 PM

Posters 101-150 (8:30am-10:00am) & Posters 151-200 (11:00am-12:30pm)
Centennial Ballroom A

Gait

117. Are Knee and Hip Joint Motions Affected by a Newly Designed Curved-Bottom Shoe During Level-Walking?
Paquette M, Zhang S, Milner C, Westlake C, Byrd E
Biomechanics/Sports Medicine Lab, The University of Tennessee, Knoxville

118. Leg Stiffness Increased with Gait Speed in the Elderly
Hong H, Kim S, Park S
Korea Advanced Institute of Science and Technology

119. Empirical Evaluation of Soleus and Gastrocnemius Function During Walking: Implications for Equinus Gait
Lenhart R, Francis C, Lenz A, Thelen D
University of Wisconsin - Madison

120. Long-Term Changes in Stair Negotiation and Walking Post-ACL Surgery
Hall M, Stevermer C, Gillette J
Iowa State University

121. Frontal Joint Dynamics When Initiating Stair Ascent with and Without Gait Speed
Vallabhajosula S, Yentes J, Tan C, Siu K, Stergiou N
University of Nebraska at Omaha

122. Effects of Obesity on the Biomechanics of Uphill Walking
Browning R, Reynolds M, Board W, Massie C
Colorado State University

123. Changes in Foot Bony Motion Under Different Loading Conditions Using a Cadaveric Robotic Gait Simulator
Whittaker E, Aubin P, Ledoux W
VA Puget Sound and University of Washington

Lower Extremity

124. Longitudinal Changes in Muscle Strength, Flexibility and Knee Laxity During Puberty in Girls
Wild C, Steele J, Munro B
University of Wollongong

125. Quantitative Comparison of Knee Joint Angles and Moments Between Two Different Marker Representations of the Proximal Shank
Petit D, Willson J, Barrios J
University of Dayton

126. The Influence of Patellofemoral Kinematics on the Effective Quadriceps Moment Arm: A Dynamic in Vivo Study
Goltzer O, Sheehan F
National Institutes of Health

127. Cartilage Contact Centers Calculated Using Proximity Weighting Are Insensitive to Threshold Distance Used to Define Contact Region
Barrance P, Gade V, Allen J
Kessler Foundation Research Center

128. Predicting Structural Properties of the Anterior Cruciate Ligament: A Multiple Linear Regression Approach
Hashemi J, Mansouri H, Chandrashekar N, Slauterbeck J, Beynnon B
Texas Tech University

Methods

129. The Development of a Method to Induce Injurious Hyperextension of the First Metatarsophalangeal Joint
Frimenko R, Lievers W, Riley P, Crandall J, Bolton J, Kent R
University of Virginia

130. Assessing Accuracy of a 3D Cancellous Bone Quantifying Algorithm
Corbiere N, Sonar A, Issen K, Carroll J, Kuxhaus L
Clarkson University

POSTER SESSION II
SATURDAY 8:30 AM – 12:30 PM

Posters 101-150 (8:30am-10:00am) & Posters 151-200 (11:00am-12:30pm)
Centennial Ballroom A

131. Waveform Consistency-Based Decision Rules for Discriminating Between Types and Levels of Musculature Efforts
Almosnino S, Dvir Z, Bardana D, Graham R, Stevenson J
Queen's University

132. Problem-Based Learning and Interactive White Board Technology Compared to Traditional Lecture for Undergraduate Student Learning in Biomechanics
Mandeville D, Yun K, Imamura R, Neide J
California State University, Sacramento

133. A Novel Method to Predict Posture of Human Model When Designing Resistance Training Machines Using Musculoskeletal Analysis
Jung M, Kim Y, Cho K, Lee K
Seoul National University

134. Determing Body Segment Pose for a Deformable Marker Configurations
Challis J
Penn State University

135. Is Humeral Motion More Accurate Using Data from Forearm and Scapular Sensors?
Lin Y, Karduna A
University of Oregon

136. A Sub-Maximal Treadmill Protocol to Assess Vo2
Tulchin K, Jeans K
Texas Scottish Rite Hospital for Chlidren

137. Does Tester Experience Influence the Reliability of 3D Gait Analysis? A Comparison of the Functional and Predictive Approaches
Leigh R, Pohl M, Lloyd C, Ferber R
The University of Calgary

Posture and Balance

138. Prediction of Frontal Plane Hip & Ankle Kinematics During Uni-Pedal Stance Using a Dual-Segment, Center of Pressure-Based Postural Model
Lee S, Powers C
University of Southern California

139. Abstract Withdrawn

140. Strength Decreases Postural Variability in Obese Adolescents
King A, Challis J, Bartok C, Costigan F, Newell K
Pennsylvania State University

141. Effects of Deceptive Behavior on Biomechanical Measures of Standing Posture
Mullin D, King G, Derakshani R, Lovelace C
University of Missouri- Kansas City

142. Why Do Older Women Utilize Slower Volitional Center of Pressure Movements When Accuracy is Constrained? The Role of the Primary Submovement
Hernandez M, Ashton-Miller J, Alexander N
University of Michigan

Running

143. Ground Reaction Forces in Barefoot Running Before and After Exertion
Hashish R, Samarawickrame S, Salem G
University of Southern California

144. Center of Pressure Trajectory Differences Between Shod and Barefoot Running
Pisciotta E, Becker J, Sinsurin K, James S, Osternig L, Chou L
University of Oregon

145. Association of Overstriding and Injury Status in Runners with and Without Iliotibial Band Syndrome
Hafer J, Brown A, Maschi R, Kirane Y, Hillstrom H
Hospital for Special Surgery

146. Human Sprinters Have Longer Forefeet and Shorter Plantarflexor Moment Arms
Baxter J, Novack T, Pennell D, Piazza S
The Pennsylvania State University

POSTER SESSION II
SATURDAY 8:30 PM – 12:30 PM

Posters 101-150 (8:30am-10:00am) & Posters 151-200 (11:00am-12:30pm)
Centennial Ballroom A

Running Cont'd

147. The Mechanical Determinants of Energetic Cost in Backward Running
Conti C, Musolf S, Ortega J
Humboldt State University

Spine

148. Inter-Rater Reliability of Rating Kinematic Plots of Forward Bend Movement Patterns
Wattananon P, Sung W, Biely S, Silfies S, Cannella M
Drexel University

149. Biomechanical Effects of Incompleteness and Slackness in Annular Fibers Are Higher in the Tissues of Nucleus than That of Annulus: A Finite Element Model Investigation
Hussain M
Logan University

150. Neuromuscular Regulation of Reaction Forces During the Golf Swing
McNitt-Gray J, Zaferiou A, Munaretto J, Requejo P, Flashner H
University of Southern California

Saturday, August 13, 11:00 am – 12:30 pm

Award Finalists

JB2. The Viscoelasticity of Chondrocytes in Situ
Han S, Herzog W
University of Calgary

CB1. Mechanical Properties of Muscle in Hamstring Contractures of Children with Spastic Cerebral Palsy
Smith L, Lee K, Carr A, Ward S, Chambers H, Lieber R
University of California, San Diego

Computational Modeling

151. Increase Patella Cartilage Stress with Internal Femoral Rotation: Evaluation Using Finite Element Analysis
Yang N, Ho K, Farrokhi S, Powers C
University of Southern California

152. Virtual Aging of the Muscular System and Its Effects on Running Biomechanics
Miller R, Umberger B, Kent-Braun J, Caldwell G
Queen's University

153. Validation of a Real-Time Markerless Tracking System for Clinical Gait Analysis - Ad Hoc Results
Oberlander K, Bruggemann G
Institute of Biomechanics and Orthopaedics, German Sport University Cologne

154. Improved Mesh for a Finite Element Model of Fracture Risk Assessment in Osteogenesis Imperfecta
Fritz J, Grosland N, Smith P, Harris G
Marquette University

155. The Influence of Head Weight on the Biomechanical Response of the Cervical Spine Under Applied Moments
Mesfar W, Moglo K
Royal Military College of Canada, Kingston, ON, Canada

156. A Biomechanical Model of the Rat Hindlimb
Wei Q, Jarc A, Yeo S, Sandercock T, Tresch M, Pai D
Northwestern University

157. a Continuous Method to Quantify Stress-Strain Behavior of Biologic Materials
Kuxhaus L, Weisenbach C, Miller M, Tanaka M
Clarkson University

158. Reconfiguration of the Upper Extremity Relative to the Pushrim Affects Load Distribution During Wheelchair Propulsion
Munaretto J, McNitt-Gray J, Flashner H, Requejo P
University of Southern California

POSTER SESSION II
SATURDAY 8:30 AM – 12:30 PM

Posters 101-150 (8:30am-10:00am) & Posters 151-200 (11:00am-12:30pm)
Centennial Ballroom A

159. Virtual Prototyping and User Training for Neural Prosthetic Systems in Msms
Davoodi R, Loeb G
University of Southern California

Clinical

160. Phase Identification of Sitting Pivot Wheelchair Transfers
Kankipati P, Koontz A, Vega A, Lin Y
University of Pittsburgh

161. Error-Enhancement Gait Training with a Robotic Exoskeleton: A Pilot Study After Stroke
Srivastava S, Kao P, Agrawal S, Scholz J
University of Delaware

162. Effects of Subthalamic Nucleus Deep Brain Stimulation on Parkinsonian Gait Behavior
Park K, Vallabhajosula S, Roemmich R, Hass C, Hsiao-Wecksler E
University of Illinois at Urbana-Champaign

Ergonomics

163. Validity and Accuracy of a Slip Resistance Measurement Protocol for the Assessment of Slip Potential
Blanchette M, Powers C
University of Southern California

164. The Impact of Posture on the Transmission of Vibration Across a Functional Spinal Unit.
Gooyers C, McMillan R, Howarth S, Eger T, Callaghan J
University of Waterloo

165. Effects of Gloves with Different Coefficients of Friction on Fall Recovery During Simulated Ladder Falls
Motawar B, Hur P, Seo N
University of Wisconsin

Gait

166. Mechanics and Energetics of Post-Stroke Walking: Towards a Muscle-Level Understanding
Hampton A, Farris D, Sawicki G
Joint Department of Biomedical Engineering - North Carolina State University and University of North Carolina - Chapel Hill

167. An Improved Method for Inferring Stability and Other Dynamical Information from Nearly-Periodic Noisy Human Locomotion Data
Wang Y, Srinivasan M
The Ohio State University

168. A Marker Set-Independent Approach to Joint Translation Measurement of the Knee During Walking
Wang H, Zheng N
University of North Carolina at Charlotte

169. Adaptations in Joint Kinetics Over Consecutive Steps in Stair Negotiation
Yentes J, Vallabhajosula S, Stergiou N
University of Nebraska at Omaha

170. The Effects of Shoe Architecture on Impact Forces During Gait
Harmon S, Williams B, Sevener K, Goehler C
Valparaiso University

POSTER SESSION II
SATURDAY 8:30 AM – 12:30 PM

Posters 101-150 (8:30am-10:00am) & Posters 151-200 (11:00am-12:30pm)
Centennial Ballroom A

Motor Control

171. Multi-Functional Use of the Elongate Hind Foot of the Zebra-Tailed Lizard During Running on Different Substrates
Li C, Hsieh T, Umbanhowar P, Goldman D
Georgia Institute of Technology

172. Biomechanical Constraints on Coordination in Children and Adults
Asmussen M, Przysucha E, Zerpa C
Lakehead University

173. Age-Related Changes in Motor Adaptation to Novel Dynamics
Pienciak A, Ahmed A
University of Colorado

174. Effect of Task Constraints on Limb Stabilization During Human Locomotion
Auyang A, Chang Y
Georgia Institute of Technology

Muscle

175. Skeletal Muscle Stiffness Across the Adult Lifesapn of the Rat
Pauwels L, Eklund K, Breighner R, Domire Z
Texas Tech University

176. Quantatative Description of Throwing from the Knees in Baseball and Softball Catchers
Plummer H, Oliver G
University of Arkansas

Posture and Balance

177. Use of a Judo Break-Fall Technique During a Lateral Fall
Lehman S, DeGoede K
Elizabethtown College

178. Effects of Whole-Body Vibration Training on Dynamic Postural Stability in Elderly Adults
Wang Y, Lin W, Lin J, Lee A
National HsinChu University of Education

179. Dependency of Spatiotemporal Characteristics of Head Stabilization on Visual and Inertial Stimulation
Rastgar Agah M, Darvish K, Wright W, Keshner E
Temple University

Running

180. The Influence of Sagittal-Plane Trunk Posture on Patellofemoral Joint Stress During Running
Teng S, Ho K, Powers C
University of Southern California

181. Do Barefoot Runners Display More Variability in Footstrike Mechanics than Shod Runners?
Altman A, Davis I
University of Delaware

182. Correlation of Lower Limb Events After a 45 Minute Run
Hageman E, Derrick T
Iowa State University

183. A Multi-Segment Foot Model Based on In-Vivo and In-Vitro Stereophotogrammetricstudies and Clinical Theories of Dynamic Foot Function: Running Gait Reliability
Bauer R, Joshi M, Klinkner T, Cobb S
University of Wisconsin-Milwaukee

184. Kinematic and Kinetic Differences Between Shod and Barefoot Running
Samarawickrame S, Hashish R, Salem G
University of Southern California

185. Investigating In-Vivo Motion of the Medial Longitudinal Arch with Different Orthotic Types Using Lateral Fluoroscopy Images During Dynamic Gait
Balsdon M, Bushey K, Dombroski C, Jenkyn T
The University of Western Ontario

POSTER SESSION II
SATURDAY 8:30 AM – 12:30 PM

Posters 101-150 (8:30am-10:00am) & Posters 151-200 (11:00am-12:30pm)
Centennial Ballroom A

186. Ramp Angle, Not Final Plateau Height, Determines Hill Walking Transition Strategies
Sheehan R, Gottschall J
The Pennsylvania State University

187. Effect of Time Normalizing Gait Data on the Condition Signature of Lower Limb Joint Motions
Park K, Morris E, Hsiao-Wecksler E
University of Illinois at Urbana-Champaign

188. Limb Asymmetries During a Side-Cutting Task in Adolescent Patients 6-12 Month Following ACL Reconstruction
Dai B, Butler R, Garrett W, Queen R
Michael W. Krzyzewski Human Performance Lab, Duke University

Spine

189. The Effect of Whole Body Vibration on Proprioception in Lumbar Spine
Solc A, Chopra N, Sylvain G
Laurentian University

190. Biomechanical Testing of Multi-Level Laminoplasty and Laminectomy Procedures
Kode S, Gandhi A, Smucker J, Fredericks D, Grosland N
The University of Iowa

Sports

191. Muscle Forces During Single Leg Landing
Morgan K, Donnelly J, Reinbolt J
University of Tennessee

192. Changes in Effort Distribution of American Collegiate Triple Jumpers During the Course of a Season
Romer B, Johnson D, Romer T, Sinclair A, Weimar W
Auburn University

193. The Relationships Between Technique Variability and Performance in Elite Discus Throwers During Competition
Dai B, Leigh S, Li H, Yu B
The University of North Carolina at Chapel Hill

194. The Different Task Demands of a Drop Land and Side-Step Cut
Pratt K, Sigward S
University of Southern California

195. Landing Mechanics During Contextually Relevant Practice Conditions
Hamzey R, Uyeda K, Munaretto J, McNitt-Gray J
University of Southern California

Upper Extremity

196. A Pilot Study of Biomechanical Factors Affecting Upper Limb Posture During Grasping, Holding, and Placing Cylindrical Object
Zhou W, Armstrong T, Wegner D, Reed M
University of Michigan

197. Multi-Digit Coordination During a Pouring Task That Requires Dynamic Stability
Manis R, Santos V
Arizona State University

198. Effects of Variations in Velocity on Viscoelastic Behaviour in the Metacarpophalangeal (MCP) Joint of the Human Hand
Kuo P, Deshpande A
University of Maine

199. Shoulder Position Impacts the Measurement of Glenohumeral Internal Rotation and Infraspinatus Hardness
Dashottar A, Borstad J
The Ohio State University

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

ODD:
Th, 5:15pm-6:15pm
Sat, 10:00am-11:00am

Simulia Best Computational Poster Award

Room: Odessa

EVEN:
Th, 2:45pm-3:45pm
Sat, 8:45am-9:45am

SBCP. 2D/3D Hybrid Structural Model of Vocal Folds
Cook D, George P, Julias M
New York University Abu Dhabi

ODD:
Th, 5:15pm-6:15pm
Sat, 10:00am-11:00am

Popular Choice

Room: Odessa

EVEN:
Th, 2:45pm-3:45pm
Sat, 8:45am-9:45am

201. Ultrasonographic Investigation of Hand Muscle Atrophy in Stroke Survivors
Triandafilou K, Kamper D
Sensory Motor Performance Program, Rehabilitation Institute of Chicago

202. Vertebral Fracture Location Influences Risk of Future Vertebral Fracture
Bruno A, Anderson D, D'Agostino J, Bouxsein M
Harvard-MIT Division of Health Sciences and Technology

203. Mechanobiology of Alpha-Keratin Using North American Porcupine Quills
Chou S, Overfelt R
Auburn University

204. Sparse Control of Force During Human Locomotion: Lessons from Hopscotch
Yen J, Chang Y
Georgia Institute of Technology
2010 Grant-in-Aid Recipient

205. Morphological Changes in Skeletal Muscle Endomysial and Perimysial Collagen Networks Subjected to Strain
Gillies A, Inoue N, Lieber R
University of California San Diego and VA San Diego Healthcare System

206. Localized Strain Measurements of the Intervertebral Disc During Biaxial Tensile Testing
Karakolis T, Callaghan J
University of Waterloo

207. Postural Sway in Patients with Low Back Pain - Association Between Mean Sway Characteristics and Clinical Outcomes
Xia T, Long C, Gudavalli R, DeVocht J, Owens E, Wilder D, Cao Y, Meeker W, Goertz C
Palmer College of Chiropractic

208. Effects of a Global Alteration of Running Technique on Chronic Exertional Compartment Syndrome
Gregory R, Diebal A, Alitz C, Gerber J
U.S. Military Academy

209. A 3D Extended Inverted Pendulum Model to Simulate the Center of Mass Trajectory During Normal Gait
Hayot C, Sakka S, Fohanno V, Lacouture P
Institut Pprime

210. Effect of Footwear on Balance
Rose W, Bowser B, McGrath R, Salerno J, Wallace J, Davis I
University of Delaware

211. Age-Related Changes in Gaze Behavior, Center of Mass and End-Point Control During Step Negotiation
Hamel K, Greaves N, Loverro K
San Francisco State University

212. Force-Velocity Behaviour of Human Medial Gastrocnemius Shifts at the Walk to Run Transition
Farris D, Sawicki G
North Carolina State University

213. Static and Dynamic Optimization Solutions for Wheelchair Propulsion
Morrow M, Rankin J, Neptune R, Kaufman K
Mayo Clinic

214. The Mechanics of Sloped Walking Revisited: Mechanical Work Performed by the Individual Limbs
Franz J, Lyddon N, Kram R
University of Colorado Boulder

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

215. Response of Below-Knee Amputee Muscle Activity to Changes in Energy Storage and Return Foot Stiffness Using Additive Manufacturing
Fey N, Klute G, Neptune R
The University of Texas at Austin

216. Moved to Awards

217. Moved to Awards

218. Moved to Awards

219. Moved to Awards

220. Moved to Awards

Muscle

ODD:
Th, 5:15pm-6:15pm
Sat, 10:00am-11:00am

Room: Odessa

EVEN:
Th, 2:45pm-3:45pm
Sat, 8:45am-9:45am

221. Estimation of in Vivo Force-Velocity Properties in Human Skeletal Type I Muscle with Crossbridge Modeling
Gollapudi S, Lin D
Washington State University

222. Non-Uniform Upregulation of the Hypertrophic Pathway in Skeletal Muscle Following Lengthening Contractions: Implications for Regional Muscle Adaptations
Abshire S, Butterfield T
University of Kentucky

223. Alterations in Gene Expression due to Differing Magnitudes of Cyclic Compressive Loads in Healthy Skeletal Muscle
Waters C, Dupont-Versteedgen E, Butterfield T
University of Kentucky

224. Quantification of Atrophy and Activation Failure in the Plantarflexors Post-Stroke
Knarr B, Ramsay J, Buchanan T, Binder-Macleod S, Higginson J
University of Delaware

225. The Effects of Electrical Stimulation on Muscle Injected with Botulinum Toxin a (Botox)
Fortuna R, Horisberger M, van der Marel R, Herzog W
University of Calgary

Motor Control

ODD:
Th, 4:00pm-5:00pm
Sat, 11:15am-12:15pm

Room: Shanghai

EVEN:
Th, 5:15pm-6:15pm
Sat, 8:45am-9:45am

226. The Relation Between Independent Control of Digit Forces and EMG-EMG Coherence During Precision Grip
Jesunathadas M, Shibata D, Laitano J, Santello M
Arizona State University, Tempe

227. Minimum Toe Clearance Adaptations to Floor Surface Irregularity and Gait Speed in Older Adults
Schulz B, Hart-Hughes S, Bulat T
VA HSR&D/RR&D Center of Excellence in Maximizing Rehabilitation Outcomes

228. Contributors to Ankle Proprioception for Static and Dynamic Tasks
Floyd L, Holmes T, Dean J
Medical University of South Carolina

229. Quantification of Sensory Reweighting for the Directional Motion Perception
Yi Y, Park S
Korea Advanced Institute of Science and Technology

230. Flexor Muscle Coactivation is Joint Specific
Frey Law L, Avin K, Krishnan C
The University of Iowa

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

231. Measurement of the Aerodynamic Stability and Control Effectiveness of Human Skydivers
Cardona G, Evangelista D, Ray N, Tse K, Wong D
University of California, Berkeley

232. The Development of Orthosis in Consideration of Rotation Axis
Fukumoto T, Maeoka H, Ando T
Kio University

233. Influence of a Compliant Artificial Ankle on Mechanics and Energetics of Human Walking
Huang T, Adamczyk P, Zelik K, Kuo A
University of Michigan

234. Kinematics and Kinetics with a Powered Lower Leg System During Stair Ascent Following Transtibial Amputation
Aldridge J, Ferris A, Sturdy J, Wilken J
Center for the Intrepid, Department of Orthopedics and Rehabilitation, Brooke Army Medical Center, Fort Sam Houston, TX

235. A Comparison of the Affect of Soft and Rigid Custom-Made Corrective Orthotics and Over-The-Counter Proprioceptive Feedback Orthotics on Hindfoot Pronation During Walking Gait: A Two-Dimensional Dynamic Fluoroscopic Study
Bushey K, Balsdon M, Dombroski C, Jenkyn T
University of Western Ontario

236. The Effects of Total Ankle Replacement on Ankle Joint Mechanics During Walking
Brown S, Wang H, Frame J, Herbst S
Ball State University

ODD:
Th, 4:00pm-5:00pm
Sat, 10:00am-11:00am

Sports

Room: Shanghai

EVEN:
Th, 2:45pm-3:45pm
Sat, 11:15am-12:15pm

237. Dynamic Coordination of Leg Musculature is Associated with Agility in High School Soccer Athletes
Lyle M, Tsai L, Valero-Cuevas F, Gregor R, Powers C
University of Southern California

238. Miniaturized Wireless Imu Enables Low-Cost Baseball Pitching Training Aid
McGinnis R, Perkins N, King K
University of Michigan

239. Peak Times of Muscle Activities During Landing from Rotations Jump
Bai D, Kasubuchi K , Tokuda M, Fukumoto T
Heisei Memorial Hospital

240. Improvements in the Rate of Force Development-Scaling Factor Following a High Speed-Low Resistance Cycling Exercise Program
Bellumori M, Knight C
University of Delaware

ODD:
Th, 5:15pm-6:15pm
Sat, 10:00am-11:00am

Posture and Balance

Room: Tokyo/Vancouver

EVEN:
Th, 2:45pm-3:45pm
Sat, 8:45am-9:45am

241. Biodynamics of Stepping Up and Down while Wearing Multifocal Lens Eyeglasses
Beschorner K, Tomashek D, Smith R
University of Wisconsin-Milwaukee

242. Effects of Vibration Amplitude and Frequency on Postural Sway in Altered Sensory Environments
Dickin D, McClain M, Hubble R
Ball State University

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

243. Surrogation Analysis Reveals Development of Deterministic Structure in the Control of Posture
Haworth J, Kokkoni E, Harbourne R, Stergiou N
College of Public Health, University of Nebraska Medical Center

244. Effect of Age on the Threshold of Balance Recovery in Younger, Middle-Aged and Older Adults: Preliminary Results
Carbonneau E, Smeesters C
Universite de Sherbrooke

245. The Influence of Firefighter Boot Type on Postural Measures
Chander H, Wade C, Garner J, Garten R, Acevedo E
University of Mississippi

246. Nonlinear Dynamics and Bifurcations in Postural Control with and Without a Wobble Board
Chagdes J, Raman A, Rietdyk S, Haddad J, Zelaznik H
Purdue University

247. Stochastic Resonance Electrical Stimulation to Improve Postural Control in Knee Osteoarthritis
Collins A, Blackburn T, Yu B, Olcott C, Jordan J, Weinhold P
The University of North Carolina at Chapel Hill

248. Conventional Wisdom Regarding Yoga Pose Modification May Not Benefit Healthy Older Adults: Examining the Modified Tree Pose
Yu S, Wang M, Mulwitz L, Haines M, Samarawickrame S, Hashish R, Kazadi L, Greendale G, Salem G
University of Southern California

249. Variations in Posturography Testing Methods: Effect of Talking, Visual Fixation, and Time on Plate on Sway Measurements
Sutton E, Kinor D, Denzinger C, Jules A, Bigelow K
University of Dayton

250. Time to Contact Measures Demonstrate Modulation of Postural Stability During a Lower Extremity Dynamic Movement Task
Schloemer S, Cotter J, Jamison S, Chaudhari A
The Ohio State University

251. Human Stabilization of a Bicycle on Rollers
Cain S, Perkins N
University of Michigan

252. Obesity Increases Body Angular Velocity Immediately After a Trip
Matrangola S, Madigan M
Virginia Tech

253. Relationships Between Quiet Standing and Limits of Stability Assessments in Cancer Survivors
Smith J, Carpenter A, Heise G, Repka C, Challis J
University of Northern Colorado

254. The Effects of Balance Training on Obstacle Crossing in Older Adults
Muir B, Rietdyk S, Haddad J, Seaman J, Heijnen M
Purdue University

255. The Effect of Perturbation Magnitude on Walking Stabilty
Sinitski E, Terry K, Wilken J, Dingwell J
Department of Orthopedics and Rehabilitation, Center for the Intrepid

256. Prenatal Motor Development Affects Observed Motor Behavior for Different Incubation Periods in Domestic Chick
Racz K, Sindhurakar A, Bradley N, Valero-Cuevas F
University of Southern California

ODD:
Th, 4:00pm-5:00pm
Sat, 11:15am-12:15pm

Upper Extremity

Room: Tokyo/Vancouver

EVEN:
Th, 5:15pm-6:15pm
Sat, 8:45am-9:45am

257. 3D Orientation of the Distal Phalanges of the Thumb and Index Finger During Pinch
Mondello T, Domalain M, Li Z
Cleveland Clinic

258. A Pilot Study of the Effects of Upper Extremity Lymphedema on 3-Dimensional Shoulder Kinematics and Function in Survivors of Breast Cancer
Biggers L, Bojrab R, Hilts B, Kempson J, Overman Z, Rundquist P
University of Indianapolis

POSTER SESSIONS

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

259. A Comparison Between Dart-Throwing Motion Plane Rom and the Dash Score After Distal Radius Fracture
Kasubuchi K, Fukumoto T, Imagita H
Heisei Memorial Hospital

260. Bilateral Three-Dimensional Wrist Velocity During Activities of Daily Living: Towards Generating Normative Upper Limb Kinematic Profiles
Lulic T, Sravanapudi A, Gonzalez D, Dickerson C, Roy E
University of Waterloo

261. A Prototype Video Game System for Studying Rehabilitative Learning
Holt B, Reyes A, Valero-Cuevas F
University of Southern California

262. Development of Humeral Intramedullary Fixation Nail (Hifn) Based on Korean Cadaveric Tests
Chon C, Ko C, Oh J
Solco Biomedical Co.

263. Motor Learning Reduces Metabolic Cost of Arm Reaching
Huang H, Kram R, Ahmed A
University of Colorado, Boulder

264. The Effect of Shoulder Position on Scapular Kinematics in a Traditional Push-Up
Suprak D, Donegan J, Morales G, Stroschein J
Western Washington University

265. Survivors of Stroke May Achieve Cyclic Reaching: A Biomechanical Analysis of the Hemiparetic and Less-Affected Upper-Extremities.
Massie C, Malcolm M, Browning R
Colorado State University

266. Design of a 2 Degree of Freedom Upper Limb Prosthetic Controller
Barton J
University of Maryland

267. Surgery of Trapeziometacarpal Joint Arthritis: Increasing Or Decreasing the Degrees of Freedom?
Domalain M, Seitz W, Evans P, Li Z
Cleveland Clinic

ODD:
Th, 4:00pm-5:00pm
Sat, 10:00am-11:00am

Gait

Room: Tokyo/Vancouver (268-280) & Barcelona/Casablanca (281-295)

EVEN:
Th, 2:45pm-3:45pm
Sat, 11:15am-12:15pm

268. Altered Walking Performance During Simultaneous Cognitive Tasks
Lenz A, Higginson C, Higginson J
University of Delaware

269. Biomechanical Characterization of Slipping on Pervious and Traditional Concrete Walking Surfaces
Bruetsch A, King G, Kevern J
University of Missouri-Kansas City

270. The Effect of Torsion Deformity and Medial Knee Osteoarthritis on Lower Limb Extensor Moments During Gait.
Mandeville D, Rachala S, Imamura R, Bayers-Thering M, Krackow K
California State University, Sacramento

271. Muscle Co-Activation and Stride Variability: Implications for Walking Economy in People with Parkinson's Disease
Christiansen C, Davidson B, Schenkman M, Kohrt W
University of Colorado Denver

272. Investigating the Influence of Obesity on Gait Using Support Vector Machine Analysis
Milner C, McBride J, Freedman J, Zhao X
University of Tennessee

273. Effects of a Passive Elastic Exoskeleton During Walking
Dean J
Medical University of South Carolina

274. Development of an Experimental Model to Examine the Role of Hip Muscle Impairment on Distal Muscle and Joint Function
Dwyer M, Ronan K, Miracle A, Butterfield T
University of Kentucky

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

275. Impact Forces When Stepping Off Moving Railroad Equipment
Serina E, White K
Talas Engineering, Inc.

276. A Multi-Segment Foot Model Based on In-Vivo and In-Vitro Stereophotogrammetric Studies and Clinical Theories of Dynamic Foot Function: Walking Gait Reliability
Cobb S, Joshi M, Bauer R, Klinkner T
University of Wisconsin-Milwaukee

277. Energetics and Biomechanics of Slow Uphill Vs. Fast Level Walking in Obese and Non-Obese Adults
Browning R, Reynolds M, Board W
Colorado State University

278. Influences of Load Carriage and Fatigue on Lower Extremity Kinetics During Walking
Wang H, Frame J, Ozimek E, Reedstrom C, Leib D, Dugan E
Ball State University

279. Muscle Activity During Gait Transitions
Berg Robertson A
University of Houston

280. Effects of Ballistic Extremity Armor on Joint Kinematics During Gait
Adams A, Hasselquist L, Schiffman J
Natick Soldier Research, Development, and Engineering Center

281. 3-D Tarsal Kinematics Acquired Using Bi-Planar Videofluoroscopy and a Simple Static Gait Simulator
Schwartz J, Dawson M, Blankenhorn B, Bariteau J, Rainbow M, DiGiovanni C, Moore D
Rhode Island Hospital / Warren Alpert Medical School of Brown University

282. Reduced Visual Input Affects Gait Characteristics During Treadmill Walking in a Virtual Environment
Huang C, Chien J, Vallabhajosula S, Siu K
Nebraska Biomechanics Core Facility, University of Nebraska at Omaha; College of Public Health, University of Nebraska Medical Center

283. Changes in Locomotor Adaptations and Aftereffects in Control and Spinal Cord Injury Populations Following Swing Phase Resistance
Thajchayapong M, Schmit B, Hornby T
Northwestern University

284. Effects of Obesity on Symmetry and Spatio-Temporal Characteristics of Adolescent Gait
Dufek J, Mercer J, Currie R, Gouws P, Candela L, Gutierrez A, Putney L
University of Nevada, Las Vegas

285. A Curved-Bottom Shoe Alters Ground Reaction Forces and Ankle Biomechanics During Walking
Zhang S, Paquette M, Milner C, Westlake C, Byrd E, Baumgartner L
Biomechanics/Sports Medicine Lab, The University of Tennessee, Knoxville

286. Ground Reaction Forces During Stair Ascent in Pregnant Fallers and Non-Fallers
McCrory J, Chambers A, Daftary A, Redfern M
West Virginia University

287. Stride Length Influences Lower Extremity Coupling During Walking
Russell E, Hamill J
The Andrews-Paulos Research & Education Institute

288. Effects of Varying Gait Strategy on Metabolic Cost and Stability
Franz C, Monsch E, Dean J
Medical University of South Carolina

289. Voluntary Changes in Step Width and Step Length Affect Step-To-Step Stability During Human Walking
McAndrew Young P, Dingwell J
University of Texas at Austin
2010 Grant-in-Aid Recipient

290. Are Running and Sprinting Different Gait Modes? Evidence from Forward Dynamics Simulations
Miller R, Deluzio K
Queen's University

POSTER SESSIONS

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

291. Preferred Walking Speed in a Virtual Environment
Bartlett J, Sessoms P
Naval Health Research Center

292. Loading Patterns During a Step Task in Individuals with Knee Osteoarthritis
Winters J, Kumar D, Rudolph K
University of Delaware

293. The Effect of an Unexpected Underfoot Perturbation on Step Kinematics in Subjects with and Without Peripheral Neuropathy
Kim H, DeMott T, Allet L, Richardson J, Ashton-Miller J
University of Michigan

294. Kinematic Changes in Contralateral Knee During Training with Real-Time Biofeedback in Women with Knee Hyperextension
Teran-Yengle P, Yack H
University of Iowa

295. Whole-Body Angular Momentum while Walking on Sloped Surfaces
Silverman A, Wilken J, Sinitski E, Neptune R
Colorado School of Mines

ODD:
Th, 4:00pm-5:00pm
Sat, 11:15am-12:15pm

Clinical

Room: Barcelona/Casablanca

EVEN:
Th, 5:15pm-6:15pm
Sat, 8:45am-9:45am

296. Wireless Multi-Channel Device to Capture Dynamics of Complex Sensorimotor Tasks
Reyes A, Valero-Cuevas F
University of Southern California

297. Polyethylene Wear and Patient Specific Contact Stress in Total Hip Arthroplasty
Daniel M, Kosak R, Iglic A, Kralj-Iglic V
Czech Technical University in Prague

298. Removing the Human Factor from Clincal Reflexology
Bush T, Mukherjee R, Sikorskii A, Wyatt G
Michigan State University

299. Effect of Decision Making on Landing Mechanics in Women and Men
Mache M, Hoffman M, Pavol M
California State University, Chico

300. Variability Measures of Trunk and Pelvis Acceleration During Walking and Quiet Stance Are Related in Patients with Multiple Sclerosis and in Healthy Controls
Huisinga J, St. George R, Horak F
Oregon Health and Science University

301. The Role of Experimentally Induced Hip Abductor Muscle Strength Deficits on Frontal Plane Biomechanics During Gait
Pohl M, Kendall K, Wiley P, Patel C, Emery C, Ferber R
University of Calgary

302. Relationship Between Neural-Reflex Torque and Muscle Reflex Response in Parkinsonian Rigidity
Muthumani A, Powell D, Hanson N, Kremer L, Wagner L, Threlkeld A, Xia R
Creighton University

303. Relationship Between Movement Speed and Regularity of Movement in Parkinson's Disease
Muthumani A, Powell D, Haider H, Threlkeld A, Xia R
Creighton University

304. Comparison of Three Methods for Measurement of Foot Progression Angle Magnitude and Asymmetry
Merriwether E, Hastings M, Bohnert K, Penelton K, Sinacore D
Washington University in St. Louis

305. Biomechanics of Sit to Stand and Stand to Sit from High and Low Chair After Total Hip Arthroplasty in Obese Subjects
Singh B, Brown T, Callaghan J, Yack J
University of Iowa

306. Time-To-Boundary Predictions Based on Other Center of Pressure Measures in Cancer Survivors
Carpenter A, Smith J, Heise G, Repka C, Challis J
University of Northern Colorado

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

307. The Effects of Ankle Bracing on Joint Momentsand Loading Rates During Jump Landing Tasks
Stafford E, Gillette J
Iowa State University

308. Size of Error Affects Retention of Locomotor Adaptation in Human Sci
Yen S, Landry J, Wu M
Rehabilitation Institute of Chicago

309. Comparison of Five Headless Screws for Fixation of Small Bones
Assari S, Darvish K, Ilyas A
Temple University

ODD:
Th, 5:15pm-6:15pm
Sat, 10:00am-11:00am

Lower Extremity

Room: Barcelona/Casablanca (310-317) & Melbourne (318-325)

EVEN:
Th, 2:45pm-3:45pm
Sat, 8:45am-9:45am

310. Quantitative Evaluation of Rotational Knee Joint Stability Using a Mechanical 'Pivot Shift' Device
Sena M, Coughlin D, Lotz J, Feeley B
University of California, San Francisco

311. Odds-Ratio and Injury Probability Estimation Based on Tibial Plateau Geometry: Subjects with Multiple ACL Injuries
Hashemi J, Breighner R, Mansouri H, Slauterbeck J, Beynnon B
Texas Tech University

312. The Search for a Limiting Joint During Lower Extremity Collapse: A Case Study
Flanagan S, Kulik J, Salem G
California State University, Northridge

313. Joint Moments During Stair Descent: Step-By-Step Versus Step-Over-Step
Gillette J, Stevermer C, Hall M
Iowa State University

314. Frontal Plane Knee Kinematics in Land-And-Go Tasks with Whole Body Rotation Requirements
Held L, Mathiyakom W, Flashner H, McNitt-Gray J
University of Southern California

315. Gender Differences in Lower Extremity Biomechanics During Landing
Stearns K, Powers C
University of Southern California

316. Do Calcaneal Motion and Tibial Torsion Influence Leg Axial Rotation During Weight-Bearing Dorsiflexion?
Chizewski M, Shewaga K, Porter S, Chiu L
University of Alberta

317. Knee Joint Moment Comparison Between Unicompartmental Knee Arthroplasty and Healthy Individuals for Stair Ascent
Fu Y, Yom J, Mahoney O, Simpson K
University of Georgia

318. Knee Mechanics Before and After Perturbation Training in Subjects with ACL Deficiency
Manal K, Gardinier E, Snyder-Mackler L
University of Delaware

319. Effects of Gluteus Maximus Fatigue on Jump-Landing Kinematics and Electromyography in Women
Hollman J, Hohl J, Kraft J, Strauss J, Traver K
College of Medicine, Mayo Clinic

320. Effects of Increasing Inertia on Sidestep Cutting Turns
Qiao M, Brown B, Westlake C, Jindrich D
Arizona State University

321. A Method to Detect Individual Muscle Impairments Across the Whole Lower Limb in Patients with Cerebral Palsy
Handsfield G, Sauer L, Hart J, Abel M, Meyer C, Blemker S
University of Virginia

322. Lower Extremity Dynamics for Drop Jumps Onto Different Surfaces
Johnson L, Forrester S
Loughborough University

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

323. Increased Toe Clearance Accuracy During Obstacle Avoidance: Validation of Cubic Interpolation to Upsample Kinematic Data
Heijnen M, Muir B, Rietdyk S
Purdue University

324. Association Between Functional Hip Abductor Strength and Hip Joint Kinematics and Kinetics During a Dynamic Uni-Pedal Drop Landing Task
Lee S, Powers C
University of Southern California

325. Foot Type and Falls in Older Adults: The Framingham Foot Study
Riskowski J, Hagedorn T, Dufour A, Casey V, Hannan M
Institute for Aging Research

ODD:
Th, 4:00pm-5:00pm
Sat, 11:15am-12:15pm

Running

Room: Melbourne

EVEN:
Th, 5:15pm-6:15pm
Sat, 8:45am-9:45am

326. Runners with Anterior Knee Pain Utilize a Greater Percentage of Their Available Pronation Range of Motion
Rodrigues P, TenBroek T, Hamill J
New Balance Sports Research Lab

327. Forefoot-Rearfoot Kinematics in Recreational Runners with a History of Tibial Stress Injury
Barnes A, Wheat J, Milner C
Sheffield Hallam University

328. Alterations in Hip and Pelvis Kinematics During Running in Persons with Femoroacetabular Impingement
Peterson J, Giordano B, Meyer J, Snibbe J, Powers C
University of Southern California

ODD:
Th, 4:00pm-5:00pm
Sat, 11:15am-12:15pm

Ergonomics

Room: Melbourne

EVEN:
Th, 5:15pm-6:15pm
Sat, 8:45am-9:45am

329. Dynamic Loading of Upper Extremity Joints with Sign Language
Abdoli-Eramaki M, Johnson R, Fischer S, Woodcock K
Ryerson University

330. Effect of Probe Size on EMG Activity of the Wrist and Hand in Diagnostic Medical Sonographers
Kuhlman S, Gerard C, Burns J, Sabick M
Boise State University

331. A Study on Development of a Senior-Friendly Lift Handgrip Through Drivability Tests
Ko C, Cho D, Chun K
Korea Institute of Industrial Technology (KITECH)

332. Vertical Affordance for Pulling During Simulated Baggage Handling
Doan J, Fowler S, Sessford D, Brown L
University of Lethbridge

ODD:
Th, 4:00pm-5:00pm
Sat, 10:00am-11:00am

Gait

Room: Melbourne

EVEN:
Th, 2:45pm-3:45pm
Sat, 11:15am-12:15pm

333. Velocity Modulation During Walking by Young Adults
DeVita P, Sidiropoulos A, Rider P, Taylor A, Roseno S, Manbeck R, Hortobagyi T
East Carolina University

334. Multiscale Entropy of EMG During Walking in Young and Older Adults
Dela M, Dingwell J, Kang H
California State Polytechnic University, Pomona

POSTER SESSION I & II

Posters 201-341

Meeting Rooms

335. External Work is Increased Using Rocker Bottom Shoes
Henning H, Wurdeman S, Huben N, Stergiou N
Nebraska Biomechanics Core Facility, University of Nebraska at Omaha

336. Effects of Hand Carried Load on Metabolic Cost and Trunk-Pelvis Coordination During Walking
Boynton A, Royer T
US Army Research Lab/University of Delaware

337. Meta-Analysis to Predict Metabolic Cost As a Function of Walking Speed and Added Mass at Different Body Locations
Scherzter E, Reimer R
Ben-Gurion University

338. Force Running Wheel for Measuring Individual Limb Forces in Mice During Spontaneous Locomotion
Roach G, Edke M, Griffin T
Oklahoma Medical Research Foundation

339. Reconstructing the Takeoff Mechanics of Giant Pterosaurs
Habib M
Chatham University

340. Gait Kinematics Change When Emotions Are Felt Vs. Portrayed
Kang G, Gross M
University of Michigan

341. Robotic Performance-Based Resistance Versus Assistance for Learning of a Novel Gait Pattern with a Robotic Exoskeleton
Kao P, Srivastava S, Agrawal S, Scholz J
University of Delaware

PODIUM/POSTER SESSION PRESENTERS

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PRESENTERS

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PODIUM/POSTER SESSION PRESENTERS

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PRESENTERS

■ = PODIUM PRESENTATION ■ = POSTER PRESENTATION

WESTIN LONG BEACH

FLOORPLAN – THIRD FLOOR

WESTIN 3RD FLOOR MAP

CITY OF LONG BEACH
AREA MAP

AREA MAP

ASB 35TH ANNUAL CONFERENCE

SCHEDULE AT A GLANCE

Long Beach, CA 2011 — American Society of Biomechanics — founded 1977

Times: 7:00, 7:15, 7:30, 7:45, 8:00, 8:15, 8:30, 8:45, 9:00, 9:15, 9:30, 9:45, 10:00, 10:15, 10:30, 10:45, 11:00, 11:15, 11:30, 11:45, 12:00, 12:15, 12:30, 12:45, 1:00, 1:15, 1:30, 1:45, 2:00, 2:15, 2:30, 2:45, 3:00, 3:15, 3:30, 3:45, 4:00, 4:15, 4:30, 4:45, 5:00, 5:15, 5:30, 5:45, 6:00, 6:15, 6:30, 6:45, 7:00, 7:15, 7:30, 7:45, 8:00, 8:15, 8:30, 8:45, 9:00, 9:15, 9:30, 9:45

Wednesday, August 10

	TUTORIALS I Tokyo/ Vancouver Room	
ASB Executive Board Meeting	**TUTORIALS II** Tokyo/ Vancouver Room	**VIRTUAL LAB TOUR** Barcelona/ Casablanca Room
	Student Event Tokyo/Vancouver Room	

Exhibitor's Reception *Ocean Terrace West*

Opening Reception
Aquarium of the Pacific
(food provided)

Thursday, August 11

Ballroom B	Ballroom C	Ballroom D
Breakfast *(food provided)*		
Bone	*Neuro-mechanics*	*Gait*
Break and Exhibits		
Imaging	*Tendon and Ligament*	*Upper Extremity*
Break and Exhibits		
Keynote Lecture **Christine Ortiz**		
Lunch *(food provided)*		**Diversity Luncheon**
Induction of ASB Fellows		
Young Scientist Awards		
Poster Session I — Includes display of JoB, Clinical Biomechanics, and Simulia Awards *(food provided)*		
Night on the Town		

Friday, August 12

Ballroom B	Ballroom C	Ballroom D
Past Presidents Breakfast	Breakfast *(food)*	**Women in Science Breakfast**
Joint Mechanics	*Injury*	*Muscle*
Break and Exhibits		
Invited Symposium	*Methods*	*Sports*
Break and Exhibits		
Borelli Award Lecture **Scott Delp**		
Lunch *(food provided)*		**Business Meeting**
Invited Symposium	*Knee*	*Posture and Balance*
Break		
Motor Control	*Orthopaedics*	*Rehabilitation*
Break and Exhibits *(food provided)*		
Keynote Lecture **Jessica Hodgins**		
Break		
Conference Banquet Queen Mary *(food provided)*		

Saturday, August 13

Ballroom B	Ballroom C	Ballroom D
Beach Fun Run		
Breakfast *(food provided)*		
Poster Session II — Includes display of JoB, Clinical Biomechanics, and Simulia Awards *(food provided)*		
Lunch *(food provided)*		
Hay Award Lecture **Joe Hamill**		
Break		
Gait: Prosthetics	*Computational Biomechanics*	*Ergonomics*
Break		
Closing Ceremony and Awards		
ASB Executive Board Meeting		