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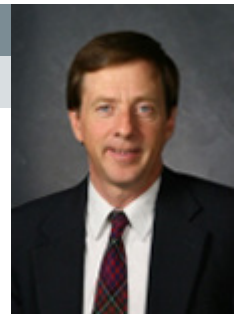
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Newsletter

Volume: 27 - Number: 1, June 2014

From the President

Richard E. Hughes



A front-page New York Times article on May 15th had the headline, "Labs Are Told to Start Including a Neglected Variable: Females." The article was about a paper in Nature by Janine Clayton (NIH Office of Research on Women's Health Director) and Francis Collins (NIH Director) that said, among other things, that "reviewers will be enjoined to evaluate applicants' research plans to include, compare, and contrast experimental findings in male and female animals and cells." Diversity of basic science study populations is a current topic; Clayton and Collins made it clear this is something investigators will have to take seriously in the future to secure NIH funding.

At last year's ASB annual meeting diversity luncheon, I was approached by numerous people who were very enthusiastic about the topic of diversity. I strongly believe that a volunteer organization runs on members' enthusiasm, so I asked the executive board to charter a diversity task force. Kate Saul chaired it and she delivered the final report to the executive board in April (she has a separate piece on the task force in this newsletter on [page 3](#)). The first two principles articulated in the report are to (1) "support career development of all members to achieve their highest potential" and (2) "promote sound science and research justice." Kate educated the task force about the concept of "research justice," which comes from The Belmont Report on research ethics that guides the operation of institutional review boards. The use of the concept of research justice grounds the recommendations of the task force in ethical principles that are widely accepted in the community of practicing scientists. For example, the task force identified specific actions that the ASB could take to help members recruit diverse study populations. The task force report addressed a number of other issues relating to diversity, including one that is of particular concern to me – the balance between the five disciplines within the ASB.

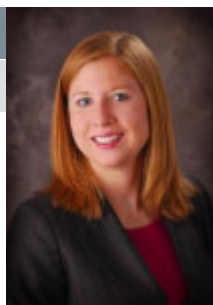
On a personal note, I have to confess that when I started the task force I feared that I would feel a bit like the target – the white, middle-aged, straight male who's representative of "what's wrong." I have to say that during all the conference calls, emails, and report draft edits that I never felt that way. The task force is composed of thoughtful, sensitive, dedicated ASB members (student and regular) who are not interested in attacking or diminishing anyone. The first principle of the diversity statement is to "support career development of all members to achieve their highest potential."

Finally, the ASB has been the best professional experience in my life. It has been

Continued on page 3...

Student's Corner

Jennifer Bagwell



Summer is almost here, which means that planning for the [World Congress of Biomechanics](#) (WCB) meeting is in full force. WCB will be held in Boston, Massachusetts from July 6-11, 2014. This is a unique opportunity for students to attend a large international biomechanics conference in our own backyard. In addition to the conference activities organized by the WCB, the ASB will have several events of particular interest to students.

One way to take full advantage of the networking opportunities associated with being an ASB student member is to participate in the ASB one-on-one student mentoring program at WCB. This program is designed to allow students to network with more senior scientists. Interested students will be paired with a mentor based on shared research interests. Although it is too late for this year, please consider participating at next year's meeting at Ohio State.

By Thursday night of the conference everyone will be ready for a little relaxation at the student night out. This event will take place from 7:30-9:30pm at a local bar and restaurant within walking distance of the conference. Please come meet other ASB students in a comfortable atmosphere and enjoy some Boston food and an adult beverage (if you are of age and you so choose)! More details regarding this event will be emailed to student members prior to the conference.

Other events of interest to students include the diversity breakfast and the women in science breakfast. The diversity breakfast will take place on Wednesday July 9th at 7am. This will be an opportunity to discuss the progress of the diversity task force and possible future opportunities for engagement within the society. For more information on the diversity task force, please see the "[Diversity Task Force Update](#)" section of this newsletter. The women in science breakfast will be held Thursday July 10th at 7am. This will be an opportunity to hear leading women scientists discuss their experiences.

Lastly, I wanted to let students know that the ASB student advisory committee (Rumit Singh Kakar, Nadine Lippa, John Looft, Doug Renshaw, and myself) is in the process of planning a student webinar focused on enhancing the student-advisor relationship. This webinar will include perspectives and advice from faculty, students, and recent graduates. More information regarding this webinar will be emailed to members as the planning progresses. Please feel free to share ideas, suggestions or comments with me, Jennifer Bagwell, at petersjj@usc.edu. I look forward to seeing you in Boston!

"Somewhere, something incredible is waiting to be known."

- Carl Sagan



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The Editorial Board invites businesses that have products or services of interest to members of the Society to advertise in the ASB Newsletter. Advertising space may also be purchased for job postings or other special announcements.

The current advertising rates are as follows:

1/4 page--\$100
1/2 page--\$200
full page--\$400
back page--\$600

If you are interested in learning more about advertising in the ASB newsletter, please email Dan Gales:

DGales@lhup.edu

ASB Newsletter



ASB Involvement

If you are interested in becoming more active in the Society (e.g., serving on a committee or chairing a conference session), contact [Andrew Karduna](#), Secretary/Membership Committee Chair, with your name, address, phone/fax number, email address, and your desired involvement. This information will be included in a database which is periodically updated and distributed to the Executive Board.

Back Copies of the Newsletter

All previous ASB newsletters have been converted into pdf documents and are archived on the [ASB website](#).

From the President (cont.)

Richard E. Hughes

a warm, welcoming place where I have made many friends and had the good fortune to work with fantastic people. The executive board is a group people committed to the wellbeing of the society, and I have enjoyed all of our conversations and deliberations. I want to thank the members of the society for giving me the opportunity to serve the ASB and work so closely with the executive board.

Diversity Task Force Update from [Kate Saul](#)

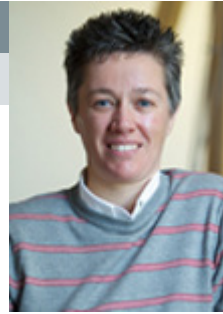
Last September, following substantial interest expressed at the diversity luncheon at the 2013 annual meeting in Omaha, NE, the ASB executive board chartered a diversity task force to examine the current role of diversity in the ASB and how to strengthen our efforts in this arena going forward. Specifically, the task force was charged to clarify the definition of “diversity” in the context of the society, propose an approach to ensure continuity of effort and responsibility with regard to diversity in the society, and suggest appropriate activities related to diversity that could be considered for implementation. The committee drew from the regular and student membership, and the various disciplines of the ASB, and has met regularly since September to address this charge. As chair of the task force, I’d like to enthusiastically thank the members who have worked diligently the last few months: Richard Hughes (ex-officio), Rob Siston, Kristin Zhao, Szu-Ping Lee, Portia Flowers, Rumit Kakar, Lakisha Guinn, Jennifer Bagwell, and Rosemarie Figueroa. This group has put a tremendous effort into understanding the definition of diversity in our home institutions and other professional societies, engaging diversity professionals outside of the ASB, and identifying ways in which the ASB can support the research and career development of each member of our society. I am very grateful for their hard work and impressed by their contributions. I’d also like to thank the executive board for chartering this task force. Their response to the issues raised at the diversity luncheon demonstrates the ongoing commitment of the ASB and its leadership to addressing the concerns of the membership and to supporting diversity within the society.



This month, the task force submitted a final report to the executive board for review, including a proposed diversity mission statement and outlining recommended new and existing activities that support the mission arms. The scope of the proposed mission emphasizes those activities that support our current membership and as a collection would benefit everyone in the society while also addressing our diverse individual needs. We look forward to officially presenting the report to the board prior to the summer World Congress of Biomechanics meeting in Boston, and obtaining feedback from the board regarding future plans. We also plan to discuss the report in detail at a diversity breakfast in Boston, generously sponsored by the ASB. Please join us in Boston to learn more about the recommendations and possibilities for engagement moving forward. While much work has been accomplished by the task force members, much work will remain as we grow our diversity efforts, support and engage our membership, and continue to create the respectful community we enjoy within the ASB. We encourage your input and participation in future activities! Please feel free to contact me (ksaul@ncsu.edu) if you have any questions regarding the task force effort.

Education Committee

Cécile Smeesters



This spring, each month had its own [ASB regional conference](#): the Human Movement Science Research Symposium was held in February; the Midwest ASB Conference took place in March; April saw the Rocky Mountain Regional Meeting of the ASB; and May was for the Northwest Biomechanics Symposium. You can read about the resounding success of each one of these student centered conferences on pages 16 to 21. ASB wishes to thank the organizers of each of these regional conferences for their efforts and the various institutional and commercial sponsors that helped make them possible. If you are interested in hosting an ASB regional conference, [applications](#) for ASB support are due on September 30 each year. I would like to particularly encourage applications from the northeast and southwest regions, which have not had a regional conference since 2007 and 2008, respectively.

Spring is also the time for the education committee to get to work on reviewing the [ASB Graduate Student Grant-in-Aid \(GIA\) applications](#). There were thirteen proposals submitted this year and the competition was quite intense. Three of the eight members of the education committee were randomly assigned to review each proposal. After this initial screening, the top seven proposals were selected for further evaluation by all eight reviewers. While all of these were very good research proposals, we found the five proposals finally selected to be quite outstanding. Finally, the recommendation of the education committee was forwarded to the ASB executive board which approved our funding decision. So congratulations to the 2014 GIA recipients:

- Elizabeth Boyer, Iowa State University, Advisor: Timothy Derrick
Subject-Specific Tibial Bone Stresses in Shod Rearfoot, Midfoot/Forefoot, and Barefoot Running
- Bradley A DeForest, The University of Tennessee, Advisor: Songning Zhang
Effects of Knee Pain Relief Using Topical NSAIDs on Gait Biomechanics in People with Medial Compartment Knee Osteoarthritis
- Jamie E Hibbert, East Carolina University, Advisor: Zachary J Domire
Effects of a Long-Term Stretching Intervention on the Mechanical Properties of Muscle Tissue
- Derek Pamukoff, The University of North Carolina at Chapel Hill, Advisor: Troy Blackburn
The Effect of Vibratory Stimuli on Cortical and Spinal Neuron Excitability: Implications for Osteoarthritis Treatment and Prevention
- Shane Rabideau, East Carolina University, Advisor: Paul DeVita
Joint Torque and Power Redistribution during Accelerated Walking In Older Adults

While we will have to wait until next year to hear the results of their research, you can read about the research results of the 2013 GIA recipients on pages 22 to 26. Deadline for submission of [ASB Graduate Student GIA applications](#) is January 15 of each year.



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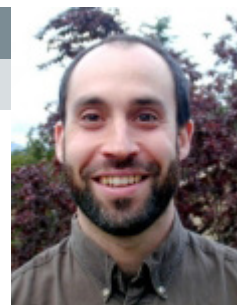
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Secretary/Membership

Andrew Karduna



When last we spoke, I was telling you about a by-law crisis concerning the membership application process. Before I get to that, here is an update on our current membership numbers. As of today, we have 583 active members (9 Emeritus, 394 Regular, and 180 Student Members). However, there are still 282 people who have not renewed their membership for 2014. If you are in the first category, thanks. If you are in the second category, please go to www.asbmem.org to renew your membership.

So about the by-laws crisis. If you will remember, I found these instructions in the by-laws: "After the first general meeting, application for membership in the Society must be made in writing, be supported by at least two members of the Society, and be approved by the Executive Board." It is not our current practice to do that. So my proposal was either to change our practice or change the by-laws. But more of that later.

Elections have been going on for the past 3 weeks and total of 416 members voted in our newest Executive Board members: Paul DeVita (President-Elect), Clare Milner (Program Chair) and Amy Lenz (Student Representative). Welcome to the party. I also want to thank all candidates who agreed to run.

Now back to the crisis. There was a discussion of the membership application process at the last ASB executive board meeting and the general agreement is that we should probably be following the by-laws. So I am working with the membership committee on re-designing the on-line application process to reflect this. Crisis averted. Hopefully I won't be getting a visit from this guy in the future:



Treasurer

Karen Troy



Happy summer to all of you! Spring has been a busy time and I am pleased to report that I've been planting the seeds of research all over the country with the ASB's money. As a Society, we made contributions to the following regional meetings: the Human Movement Science Research Symposium in North Carolina, the Midwest ASB Conference in Ohio, the Rocky Mountain Regional Meeting in Colorado, and the Northwest Biomechanics Symposium in Oregon. I also had the pleasure of writing the checks for ten student travel awards, five Grant-in-Aid (GIA) awards of \$2000 each to fund graduate research projects, and one Research Travel Grant. John Challis and Cécile Smeesters had the hard job of reviewing all of these applications (thank you, John and Cécile!), while I got to do the fun part and hand out the money.

These awards, along with the costs for administering the Borelli, Hay, pre-doc, and post-doc awards, are the major expenses that our Society incurs during the year. Although our goal is to break even, our annual meeting often ends with a net profit, and the 2013 Annual Meeting in Omaha netted the Society \$9,827. Nick Stergiou, Amanda Fletcher, and Jenna Yentes all deserve our thanks for their effort in making the meeting a huge success. Because the 2014 Annual Meeting is in combination with the World Congress of Biomechanics and we will not receive any portion of the registration fees, the Society will be covering expenses related to several popular ASB-specific activities such as the women in science breakfast, the diversity breakfast, and the ASB fellows and president's breakfast. The net cost for these events comes out to be around \$9500 and I believe this is money well spent.

In addition to these rotating funds, we maintain long-term investment accounts to cushion the Society in the case of a net loss during the year. These investments total approximately \$182,000, up about 5% due to general improvements in the economy. I am working with our president Richard Hughes and president-elect Darryl Thelen to "review the books" to ensure transparency and accountability in how the Society's money is being handled and tracked. Overall, the ASB's financial health is very good and I am always thinking about how we can more effectively spend money to carry out the mission of our Society, which includes "facilitating the development of biomechanics as a basic and applied science."



ASB Executive Board 2013-14

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"I tell my students, 'When you get these jobs that you have been so brilliantly trained for, just remember that your real job is that if you are free, you need to free somebody else. If you have some power, then your job is to empower somebody else. This is not just a grab-bag candy game.'"

- Toni Morrison

Education Committee (cont.)

Cécile Smeesters

The last spring task for the Education Committee is to evaluate suggestions for tutorial topics and speakers from the ASB membership for the annual meeting. For this year's World Congress of Biomechanics we have selected for you the following two tutorials:

- Probabilistic Methods to Evaluate Uncertainty in Musculoskeletal Modeling
Bradley Davidson

Tuesday, July 8 2014, 6:30-7:30PM

- Guidance for Writing NIH Grants

Andrew Biewener

Thursday, July 10 2014, 6:30-7:30PM

I'd like to end by thanking the members of my education committee for the considerable time and effort they dedicated to the ASB over the past year: Jennifer Bagwell (University of Southern California), Kimberly Bigelow (University of Dayton), Zackary Domire (East Carolina University), Alena Grabowski (University of Colorado Boulder), Hyun Gu Kang (California State Polytechnic University at Pomona), Erika Nelson-Wong (Regis University), and Mike Pavol (Oregon State University). They helped me update the GIA guidelines and establish some GIA reviewer conflict of interest rules. They reviewed each GIA application diligently and in a timely fashion. Also, they provided brief comments about notable strengths or weaknesses of each GIA proposal to give applicants some feedback. Additionally, they actively participated in some very spirited discussions on following the GIA guidelines! Finally, they suggested tutorial topics and speakers, and participated in the final selection. Thus, they made my first year as education committee chair a wonderful experience.

Save The Date for ASB 2015!

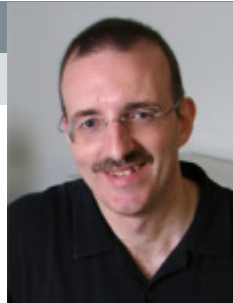
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Past-President

John Challis

Within the ASB one of the duties which falls to the past-president is to preside over a number of awards. In the following I will report our award winners. Before lauding our winners I would like to thank all of the reviewers who worked hard (and promptly) in the review process.



The Borelli Award

This is the most prestigious honor given by the ASB. It recognizes outstanding career accomplishment and is awarded annually to an investigator who has conducted exemplary research in any area of biomechanics. The awardee attends the annual meeting of the ASB to receive the award and to deliver the Borelli lecture. The award consists of an engraved plaque and a check for \$1,500.

This year's winner is Vijay Goel from the University of Toledo. Vijay is the McMaster-Gardner Professor of Orthopaedic Bioengineering in the Departments of Bioengineering and Orthopaedic Surgery at the University of Toledo. He was trained in Panjabi University, India (BE), Roorkee University, India (ME), and the University of New South Wales, Australia (PhD). Although he has been active in several areas of biomechanics, his main focus is spine biomechanics. Dr. Goel has been granted visiting professorships and been the invited speaker at various societies and institutions (e.g., Cleveland Clinic Foundation, Mayo Clinic, Rutgers University, ASME, ISSL) and all over the world (e.g, India, Singapore, Taiwan, China, Australia, and Egypt). Dr. Goel has won awards for his research including the HR Lissner Award (ASME-BED), the Henry Farfan Award (North American Spine Society), and the Wiltsie Lifetime Achievement Award (International Society for the Study of Lumbar Spine). Vijay's talk is titled "Design, development and evaluation of innovative fusion augmenting spinal hardware".



Jim Hay Memorial Award

The Jim Hay Memorial Award for Research in Sports and Exercise Biomechanics was established in 2004 through the support of the Hay family and additional donors to recognize outstanding career accomplishment and is awarded annually to an investigator who has conducted exemplary research in the area of sports and exercise science biomechanics. The Hay Award selection is based on originality, quality and depth of the research and the relevance of this work to the field of sports and exercise biomechanics. The awardee attends the annual meeting of the ASB to receive the award and to deliver the Jim Hay Memorial lecture. The award consists of an engraved plaque and a check for \$1,000.



2014 Award Summary

Borelli Award

Vijay Goel,
University of Toledo

Jim Hay Memorial Award

Fred Yeadon,
Loughborough University



2014 Award Summary

Young Scientist Pre-Doctoral

Laura Chernak Slane,
University of Wisconsin-Madison

Post-Doctoral Young Investigator Award

Amber Rath Stern,
University of Missouri-Kansas City, and Engineering Systems, Inc.

Clinical Biomechanics Award

W. Brent Edwards, et al.,
University of Calgary

Journal of Biomechanics Award

Ata M. Kiapour, et al.,
Boston Children's Hospital, Harvard Medical School

Past-President (cont.)

John Challis

This year's winner is Fred Yeadon from Loughborough University. Fred Yeadon graduated in Mathematics from the University of Cambridge in 1968 and after a number of years teaching mathematics, obtained his PhD in Biomechanics from Loughborough University in 1985. He then took up a biomechanics position at the University of Calgary and in 1990 returned to Loughborough University where he is currently Professor of Computer Simulation in Sport. The quality of his work in sports biomechanics has been recognized by numerous awards including the New Investigator's Award from International Society of Biomechanics (1983), and the Dyson Award from the International Society of Biomechanics in Sports (2008).

In addition he is a fellow of the British Association of Sport and Exercise Sciences and the European College of Sport Science, and a honorary membership of the International Society of Biomechanics. Fred's talk is titled "Sports biomechanics research: Ideas and investigation".



Young Scientist Pre-Doctoral Award

This award recognizes early achievements by a promising young scientist prior to receipt of their PhD. Selection is based upon the scientific quality of the submitted materials. The awardee attends the annual ASB meeting to present their work in a special awards session. The award consists of an engraved plaque, a check for \$500, and a waiver of conference fees for the annual ASB meeting. This year's award winner is Laura Chernak Slane from the University of Wisconsin-Madison. Her talk is titled "Non-uniform deformation of the Achilles tendon during loading in young and middle-aged adults" with co-author Darryl Thelen.

Young Scientist Post-Doctoral Award

This award recognizes early achievements by a promising young scientist within five years of receiving their PhD. Selection is based upon the scientific quality of the submitted materials. The awardee attends the annual ASB meeting to present their work in a special awards session. The award consists of an engraved plaque, a check for \$500, and a waiver of conference fees for the annual ASB meeting. This year's award winner is Amber Rath Stern from the University of Missouri - Kansas City, and Engineering Systems, Inc. Her talk is titled "Osteocyte strain transmission is reduced due to age-related changes in the microstructural, micro-mechanical, and macromechanical properties of bone". Her co-authors are Teri Cline, Craig Meers, Branson Billings, Mark Van Dyke, Christopher Bergman, Thomas Register, Ying Liu, Mark Johnson, Lynda Bonewald, and Matthew Stern.

Clinical Biomechanics Award

This award recognizes outstanding new biomechanics research targeting a contemporary clinical problem, and is sponsored by Elsevier Science, Ltd., publishers of Clinical Biomechanics. The awardee is expected to present their work at the

Past-President (cont.)

John Challis

ASB Conference, and submit their work for publication in Clinical Biomechanics. The details of this year's award winner are:

Reduction in proximal femoral strength in patients with acute spinal cord injury. W. B. Edwards,¹ T. J. Schnitzer,² K. L. Troy³

¹University of Calgary, Calgary, AB, ²Northwestern University Feinberg School of Medicine, Chicago, IL, ³Worcester Polytechnic Institute, Worcester, MA.

Journal of Biomechanics Award

This award recognizes substantive and conceptually novel mechanics approaches explaining how biological systems function. It is sponsored by Elsevier Science, Ltd., publishers of the Journal of Biomechanics. The awardee is expected to present their work at the ASB Conference, and submit their work for publication in the Journal of Biomechanics. The details of this year's award winner are:

Uni-directional coupling between tibiofemoral frontal and transverse plane rotation supports valgus collapse mechanism of ACL injury. A. M. Kiapour,¹ A. Kiapour,² V. V. Goel,² C. E. Quatman,³ S. C. Wordeman,³ T. E. Hewett,³ C. K. Demetropoulos⁴

¹Boston Children's Hospital, Harvard Medical School, Boston, MA, ²Engineering Center for Orthopaedic Research Excellence (ECORE), University of Toledo, Toledo, OH, ³Sports, Health and Performance Institute, The Ohio State University, Columbus, OH, ⁴The Johns Hopkins University Applied Physics Laboratory, Laurel, MD.

Student Travel Awards

These are offered to help students attend the ASB annual meeting, which this year is part of the World Congress on Biomechanics. Each student received an award of \$250. This year the winners were: Bryon Applequist (University of Nebraska at Omaha), Owen Beck (University of Colorado at Boulder), Bradley DeForest (University of Tennessee), Jana Jeffers (University of Colorado Boulder), Binal Motawar (University of Wisconsin-Milwaukee), Caitlin O'Connell (University of Pittsburgh), Ryan Hasenkamp (University of Nebraska at Omaha), Eric Pisciotta (University of Nebraska at Omaha), Zach Sievert (Old Dominion University), and Lisa Zukowski (University of Florida).

ASB Fellows

In 2011, ASB created the status of fellow to recognize professional achievement and service of the top members of the Society and to encourage continued service to the Society in a leadership role. This year's new fellows are:

- Don Anderson (The University of Iowa)
- Tom Buchanan (University of Delaware)

Congratulations to our award winners and our new fellows!



Additional 2014 Awards

Student Travel Awards

Bryon Applequist,
University of Nebraska at
Omaha

Owen Beck,
University of Colorado at
Boulder

Bradley DeForest,
University of Tennessee

Jana Jeffers,
University of Colorado at
Boulder

Binal Motawar,
University of Wisconsin-
Milwaukee

Caitlin O'Connell,
University of Pittsburgh

Ryan Hasenkamp,
University of Nebraska at
Omaha

Eric Pisciotta,
University of Nebraska at
Omaha

Zach Sievert,
Old Dominion University

Lisa Zukowski,
University of Florida

ASB Fellows

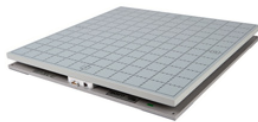
Don Anderson,
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Tom Buchanan,
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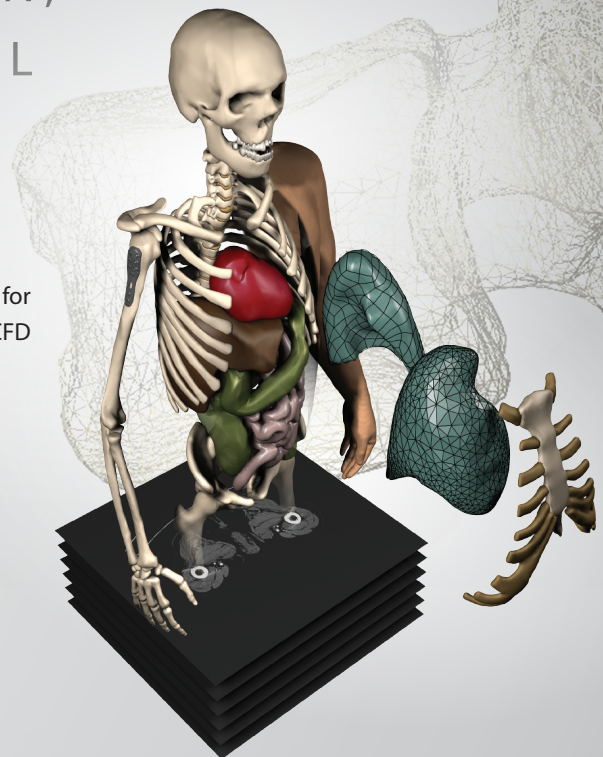


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Communications Committee

Michelle Sabick



Greetings, ASB members! I look forward to seeing many of you in Boston next month at the [World Congress of Biomechanics](#) (WCB). Please take advantage of ASB resources to help you navigate the WCB and attend ASB-specific events. We will have at least three different communication methods available: Twitter, Facebook, and a Google email group called ASBEventsatWCB2014. You can use any or all of them to receive messages daily about upcoming events, like the Borelli lecture, ASB Symposia, the 5K fun run and the ASB Business Meeting. Please join the Google group to get postings via email if you don't follow our social media threads.

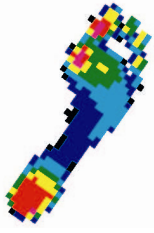



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



... *more* than a pretty picture; accuracy and quality in pressure distribution measurement.





Barefoot pressure platforms for both research and clinical applications.

In-shoe pressure measurement via wireless Bluetooth. Pressure, force and gait parameters are available.



pedar



pliance

Pressure sensors for a variety of applications including hand, intraarticular, seating and more.

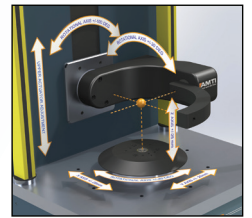
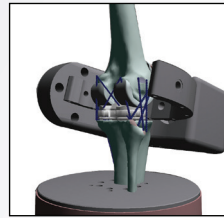
novel electronics inc
964 Grand Avenue • St. Paul MN • 55105
Tel: 651-221-0505
www.novelusa.com • novelinc@novelusa.com

*"Learn from yesterday, live for today, hope for tomorrow.
The important thing is to not stop questioning."
- Albert Einstein*

VIVO™ Joint motion and load Simulator

The new VIVO™ joint motion simulator is a striking advance in tools for orthopaedic research, bringing life-like realism to in-vivo simulation in the lab. With innovative, more flexible software and a test area large enough for any joint of the body, VIVO enables new research possibilities for cadaveric specimens and joint implants.

- Digital Fixturing™ recreates misalignment and other surgical procedure variations
- Virtual Soft Tissue™ reproduces soft tissue constraints during the simulation, enabling life-like modeling of various post-surgical conditions
- Six axes of control, with displacement or force control on every axis
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AMTI
FORCE AND MOTION

SET UP A MEETING



AnyBody
Leading in musculoskeletal analysis

Meet AnyBody at the 7th World Congress of Biomechanics

Stop by booth #2 to discuss with the guys from AnyBody, and other researchers from around the globe, how musculoskeletal simulation could add value to your research. There will be many papers presented from all areas of biomechanics that used AnyBody simulations to reach their scientific goals, and you can get feedback from experienced AnyBody users.

Selected AnyBody papers – Pick up a list with all details at our booth #2

- The Influence of Vertebral Body Geometry on Lumbar Spine Loading (M. Pulzer et al.)
- Load analysis of the hip joint for occupational activities (P. Varady et al.)
- Estimation of lumbar load for complicated asymmetric lifting using musculoskeletal modeling (M. de Zee et al.)
- Development of an Automated Validation Report For Musculoskeletal Models (D. Nolte et al.)
- Morphing Patient-Specific Musculoskeletal Models (J. Rasmussen et al.)
- Inverse Dynamics and the Immeasurable Motions (J. Rasmussen et al.)
- Making A-FOOTPRINT: A Musculoskeletal Foot/Ankle Model with 50 Degrees-of-Freedom for Arthroplasty and Orthotics (A. Al-Munajjed & J. Rasmussen)
- Patient-specific Musculoskeletal Modelling of Total Knee Arthroplasty using Force-dependent Kinematics (M.S. Andersen et al.)
- Prediction of Ground Reaction Forces in Inverse Dynamic Simulations (M.S. Andersen et al.)
- Introducing Force Dependant Kinematics in the AnyBody Shoulder Model (L. Sins et al.)

6-11 July 2014 in Boston, MA



Things to do in Boston

Boston is a place with something for everyone. Within this historical city lie its beautiful architecture and waterfronts. We make no promises about the weather... be prepared. FYI, the Government Center T-stop is closed for renovations. Please be aware of this, especially if this was part of your plan on getting from the airport to the hotels. Here are just a few suggestions from editorial assistant, Cara Lewis.



Boston Public Library

As the second largest public library in the US behind the Library of Congress, BPL has one of the biggest collections of books, audiotapes, and media.. Ask for a tour of the library, or find a nook to read, either way you are sure to enjoy your visit.

Boston Public Library

700 Boylston Street, Copley Square
Boston, MA 02116
www.bpl.org

Fenway Park

The oldest park in Major League Baseball and home of the Boston Red Sox team, the park and its surrounding areas are a sight to see. The fun atmosphere of Fenway and Yawkey Way give you a quick view into the culture of Boston.

Fenway Park

4 Yawkey Way
Boston, MA 02215
www.redsox.com



Bull & Finch Pub

If you are a fan of the television show “Cheers”, you may want to visit the original Boston pub that inspired the show. With live entertainment and a delectable menu, there is something for everyone at this pub.

Bull & Finch Pub

84 Beacon Street
Boston, MA 02108
www.cheersboston.com

Boston Public Garden

Located in the heart of Boston, the Boston Public Garden is one of the best places to relax and enjoy the scenery. You can paddle amongst the swans on the four acres pond, or have a picnic in the open area. If you remember Robert McCloskey’s classic children’s book, you can check out the Make Way for Ducklings statue by Nancy Schön. The rendition features Mrs. Mallard and her 8 ducklings. You can find the statue near the gate at the corner of Beacon Street and Charles Street.

Boston Public Garden

69 Beacon St
Boston, MA 02108
www.cityofboston.gov/parks



Charles River Esplanade

A popular path for walkers, joggers, rollerbladers and bicyclists, the Esplanade is the perfect path to enjoy the scenery and catch the sunset.

Charles River Esplanade

Boston, MA 02110
www.esplanadeassociation.org



Top of the Hub

Not only can you shop around in the many stores on the ground floors of the Prudential Center, but you can also take in a beverage or even a meal at the Top of the Hub, the restaurant on the 52nd floor. While you are there, check out the Skywalk Observatory to get a sky high view of Boston.

Prudential Center

800 Boylston Street
Boston, MA 02199
www.topofthehub.net

Museums

If museums play to your interests, check out the Museum of Fine Arts, the Museum of Science, or Boston Children's Museum. The Museum of Fine Arts, as one of the more comprehensive museums in the world, features over 450,000 works of art.

Museum of Fine Arts

465 Huntington Avenue
Boston, MA 02115
www.mfa.org

Featuring temporary exhibits, IMAX films, and Planetarium shows, the Museum of Science never fails to entertain. Over 700 interactive exhibits are set up on any given day.

Museum of Science

1 Science Park
Boston, MA 02114
www.mos.org

The Boston Children's Museum is the second oldest and one of the most hands on and influential museums in the world. Featuring exhibits that focus on science, culture, health and fitness, and more, it has been engaging children for over 100 years.

Boston Children's Museum

308 Congress St
Boston, MA 02210
www.bostonchildrensmuseum.org

New England Aquarium

A large glass tank spiraled by a multilevel walkway make the New England Aquarium one of the most popular waterfront attractions. From petting sting rays to an expedition into the Amazon Rainforest, the aquarium never fails to amaze with its vast collection of sea animals.

New England Aquarium

1 Central Wharf
Boston, MA 02110
www.neaq.org

Waterfront Activities

If waterfront is your thing, there are multiple Harbor Cruises and Whale Watching. The view itself is a sight to see, and the restaurants in the area are worth the trip.

Boston Harbor Cruises

One Long Wharf
Boston, MA 02110
www.bostonharborcruises.com

Faneuil Hall

Faneuil Hall has served as a marketplace and meeting hall since 1742. Speeches given by Samuel Adams and others have been given on the second floor of Faneuil hall, while the first floor is still used as a marketplace, also known as Quincy Market. It is the main hub of Faneuil Hall and bordered by the financial district. Featuring a variety of restaurants and shops, you are sure to find something you like at Quincy Market.

Faneuil Hall

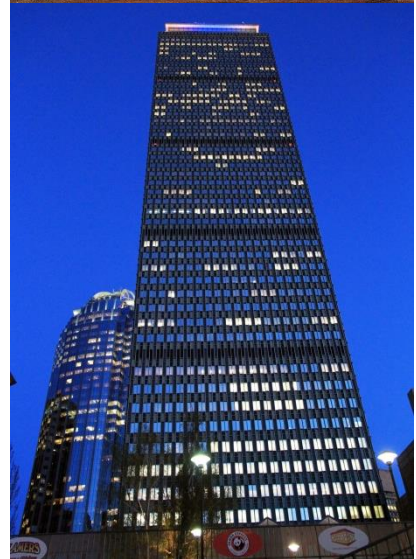
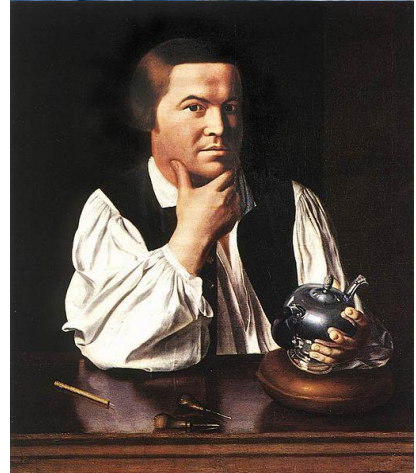
4 South Market Building
Boston, MA 02109
www.faneuilhallmarketplace.com

Freedom Trail

Spanning 2.5 miles and covering 16 sites pertaining to the Revolutionary War, the Freedom Trail hits some of the most historical aspects of the city. You can take a guided tour or download a map of the trail and follow the red brick road yourself.

The Freedom Trail Foundation

99 Chauncy Street, Suite 401
Boston, MA 02111
www.thefreedomtrail.org



ASB Regional Conferences

Human Movement Science Research Symposium

The 11th Human Movement Science Research Symposium was held at the University of North Carolina at Chapel Hill on February 21st, 2014. This was the largest meeting to date with nearly 150 attendees featuring 57 student presentations from universities across the southeastern states. While this meeting focused largely on biomechanics research, we also had presentations in exercise physiology, and motor control. The highlight of the day was our keynote speaker - Dr. Irene Davis from the Spaulding National Running Center at the Harvard Medical School. We thank Dr. Davis for attending our symposium and delivering a fantastic presentation on the benefits and pitfalls of barefoot running. We thank our sponsors: The American Society of Biomechanics, Tekscan, Donjoy, and the Departments of Physical Therapy and Exercise & Sport Science at the University of North Carolina at Chapel Hill for their continued support of this meeting. Without your generous support, this day would not be possible and accessible for students. We look forward to seeing you at next year's meeting!

Derek Pamukoff & Ashley Littleton
UNC-CH Human Movement Science PhD Students
Program Co-Chairs, 2014



Dr. Irene Davis delivering the keynote address entitled “The Benefits and Pitfalls of Barefoot Running”.



Human Movement Science Research Symposium

University of North Carolina at Chapel Hill

February 21, 2014



Midwest American Society of Biomechanics Conference

University of Akron

March 4 - 5, 2014

ASB Regional Conferences

Midwest American Society of Biomechanics Conference

The 2014 Midwest American Society of Biomechanics Conference was held on March 4th and 5th at Quaker Station on The University of Akron campus in Akron, Ohio. There were 133 attendees from 16 different universities, 13 companies and federal organizations across 6 states. A total of 82 students attended the conference: 22 undergraduate students and 60 graduate students. All of these students registered for free – thanks largely to the generous support of the American Society of Biomechanics. The two-day conference allowed attendees to learn and ask questions about research being done at universities and companies all across the Midwest. Highlights of the meeting included keynotes by Drs. Frank Loth and Ton van den Bogert on the topics of “Experimental and Numerical Simulation of Biological Flows” and “Model-based strategies for analysis and prediction of human movement”, respectively. The closing reception was held at The Football Hall of Fame in Canton, Ohio with special guest speaker and Executive Vice President for Student Success at the University of Akron, Jim Tressel.

- Podium and poster presentations – 61 and 33
- Keynotes – 2 (delivered by Drs. Loth and van den Bogert)
- Workshop – 1 (presented by Dr. Carin Helfer)
- Tutorial – 1 (presented by Dr. Jason Moore and Obinna Nwanna)
- Companies/Organizations – 13
- Corporate sponsors – Bertec, Simpleware and Great Lakes Neurotechnologies
- Undergraduates – 22
- Graduates – 60
- Student award winners: Emily Ellerbrock (Ohio University); Anna Nagle (University of Cincinnati); Jillian Urban (Virginia Tech - Wake Forest University)

Brian Davis, PhD, The University of Akron, Conference Chair



Joe Giuffrida, Emily Ellerbrock and Jim Tressel at the award ceremony.

ASB Regional Conferences

Rocky Mountain Regional Meeting of the ASB

The 4th Annual Rocky Mountain Regional Meeting of the ASB (RMASB) was held April 11-12 in beautiful Estes Park, Colorado. This meeting serves as an important opportunity for students and faculty in the Rocky Mountain Region to get together for networking, present their research and engage in the ASB and biomechanics community. We had 90 attendees this year, with representation from University of Colorado Boulder, University of Northern Colorado, Colorado State University, University of Denver, Colorado School of Mines, Regis University, Ft. Lewis College, Colorado Mesa University, University of Colorado Anschutz Medical Campus, Brigham Young University, University of Wyoming, Boise State University and the United States Olympic Training Center.

The keynote speaker was Dr. Roger Enoka, from the University of Colorado Boulder, who delivered an engaging talk titled “Motor Unit Types: A Lesson in Pseudoscience” that encouraged us to critically examine and challenge our thinking about muscle mechanics.

Student research is the focus of this meeting, with 16 podium and 27 poster presentations. In addition to our usual faculty selected awards, this year attendees were given the opportunity to vote for “People’s Choice” awards for best poster and best podium presentations. Due to generous corporate sponsorship, we were able to provide cash prizes with these awards of \$200 for each of the faculty-selected awards and \$100 for each of the People’s Choice awards. The awardees are listed below:

- Best Podium: Casey Myers (University of Denver) “The Effects of Measurement Error and Body Segment Parameter Uncertainty on Muscle Force Estimation”
- Best Poster: Amy Hegarty (Colorado School of Mines) “Effects of Gait Training on Dynamic Muscle Forces in Children with Cerebral Palsy”
- People’s Choice Podium: Alyse Kehler (University of Colorado Boulder) “Energy Fluctuations During Diagonal Stride Roller Skiing; Walking or Running on Wheels?”
- People’s Choice Poster: Zach Lerner (Colorado State University) “Modeling Subject-specific Lower Extremity Alignment Improves Medial-lateral Knee Joint Contact Force Prediction During Gait”

The co-organizers for this year’s meeting (Dr. Alena Grabowski, University of Colorado Boulder, Dr. Raoul Resier III, Colorado State University and Dr. Erika Nelson-Wong, Regis University) would like to thank the ASB once again for their generous grant support as this meeting would not have been possible without it. We would also like to thank our corporate sponsors (AMTI, NDI, Bertec, Protokinetics, Tekscan and Vicon) for sponsoring refreshment breaks, the Friday evening dinner, and the student research awards.

The RMASB meeting will continue to be held on an annual basis at the YMCA



Rocky Mountain Regional Meeting of the ASB

Estes Park, Colorado

April 11 - 12, 2014



ASB Regional Conferences

of the Rockies in Estes Park as this has proven to be a perfect setting combining natural beauty and affordability for attendees (we are able to offer the meeting with no registration costs and inexpensive lodging options). The co-organizers for the 2015 meeting are: Dr. Matt Seeley (Brigham Young University), Dr. Gary Heise (University of Northern Colorado) and Dr. Missy Thompson (Ft. Lewis College).

Dr. Alena Grabowski, University of Colorado Boulder
Dr. Raoul Resier III, Colorado State University
Dr. Erika Nelson-Wong, Regis University
Conference Co-organizers



The YMCA of the Rockies provides a stunning venue for scientific discussion!

"An expert is a person who has made all the mistakes that can be made in a very narrow field."

- Niels Bohr

ASB Regional Conferences



Northwest Biomechanics Symposium

For the tenth year, biomechanics students, faculty, and professionals from across the Northwest United States and western Canada gathered for the annual Northwest Biomechanics Symposium (NWBS), held May 16-17, 2014, at Willamette University in Salem, Oregon. This student-centered regional meeting of the ASB was co-hosted by Brandi Row Lazzarini from Willamette University and Michael Pavol and Ravi Balasubramanian from Oregon State University. NWBS 2014 brought together 85 attendees from 18 colleges and universities in Oregon, Washington, California, British Columbia, and Alberta. A stimulating program featured 30 scientific presentations on a breadth of topics ranging from clinical and sport biomechanics, to methodology, joint and tissue mechanics, and locomotion. Small, facilitated group discussions, held between sessions, focused on professional development topics that included successful presentations and preparing for graduate school, postdoctoral fellowships, faculty jobs, and jobs in industry. Attendees also had ample opportunities to socialize and network. A highlight of the program was the ASB Keynote Address, "From Biomechanics to Neuromechanics," delivered by Francisco Valero-Cuevas from the University of Southern California, in which he emphasized the need to integrate the fields of biomechanics and motor control. The transformative issues raised sparked discussion throughout the remainder of the symposium.

Consistent with the student-centered focus of the NWBS, approximately 60% of the attendees were students, ranging from undergraduates to doctoral students, and all scientific presentations were by students and/or first-time presenters. Among these high-quality podium and poster presentations, two received special recognition. Taylor Dick from Simon Fraser University was awarded the best doctoral student presentation for "Motor or Transmission: The Functional Role of the Human Gastrocnemii as Assessed by 3D Ultrasound." Jacqueline Soicher from the University of British Columbia was awarded the best bachelor's or master's student presentation for "Developing a Method to Quantify Spinal Cord Swelling Using Fiber Optic Pressure Sensors." Awards were sponsored by MEA Forensic. With the quality of the presentations made and the large student attendance, the future of biomechanics in the Northwest region looks bright.

The NWBS co-hosts wish to thank the event sponsors: The American Society of Biomechanics, Noraxon USA, Inc., Bose Corporation, Tekscan, Inc., Simpleware, Origin Engineering, LLC, Xcitex, the Oregon State University (OSU) College of Public Health and Human Sciences, the OSU College of Engineering, the OSU School of Mechanical, Industrial, and Manufacturing Engineering, the Seattle VA Center of Excellence for Limb Loss Prevention and Prosthetic Engineering, and MEA Forensic, with in-kind contributions by Willamette University. The



Northwest Biomechanics Symposium

Willamette University

May 16 - 17, 2014



ASB Regional Conferences

co-hosts also thank all those who made the event possible by serving as abstract reviewers, session moderators, discussion facilitators, award judges, and volunteers, as well as everyone who attended and who presented. We look forward to NWBS 2015, which will be hosted by the University of Washington and the VA Center of Excellence for Limb Loss Prevention and Prosthetic Engineering in Seattle, Washington.

Brandi Row Lazzarini, Willamette University

Michael Pavol, Oregon State University

Ravi Balasubramanian, Oregon State University

Conference Co-hosts



Dr. Francisco Valero-Cuevas from the University of Southern California delivers the ASB keynote address at NWBS on Friday, May 16, 2014. Photo by Frank Miller, Willamette University.

*"The scientist is not a person who gives the right answers,
he's one who asks the right questions."*

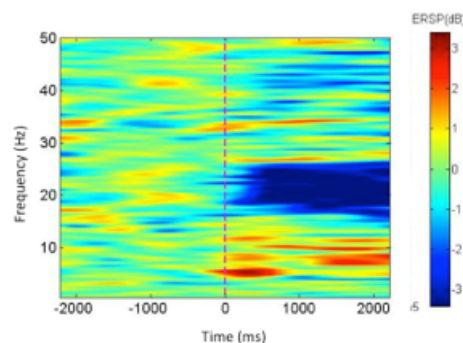
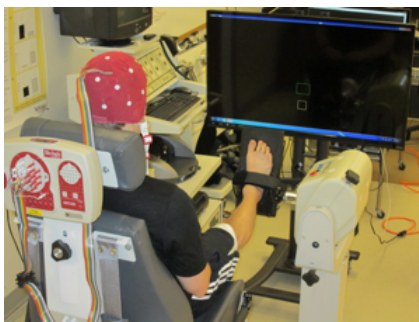
- Claude Lévi-Strauss

2013 ASB Grant-in-Aid

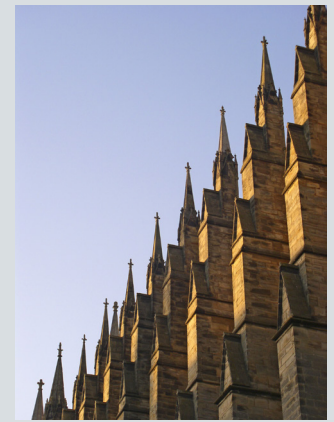
David Arpin: "Sensorimotor Cortical Activity in Children with Cerebral Palsy During an Isometric Motor Control Task"

Cerebral palsy (CP) is one of the leading causes of childhood disability, and is often caused by a defect or lesion in the immature brain. Due to the brain insult, these children generally have poor neuromuscular control. In my prior experimental work, I evaluated the steady-state isometric ankle plantar flexion torques of children with CP and typically developing (TD) children. The results showed that the amount of variability in the steady-state ankle torques of children with CP were greater than what was seen in the TD children. Building on this work, I submitted a Grant-in-Aid proposal aimed at adding brain imaging to this experimental paradigm to further our understanding of the link between the activity of the sensorimotor cortices and the torque variations seen at the ankle of children with CP. This experiment involves having the children sustain an isometric ankle plantar flexion torque that is at 20% of their maximum, while electroencephalography (EEG) is concurrently used to assess the neural activity within the sensorimotor cortices (Figure below, left).

My preliminary results show that neural desynchronization (dark blue) occurs in the beta frequency range as the children perform the motor task (Figure below, right). These results imply that changes in the cortical oscillations at this frequency range may be related to the motor control of ankle joint. In my ongoing investigation, I am examining if there are differences in the amount of synchronization of the cortical oscillations in the beta frequency range between children with CP and TD children. I am also examining the relationship between the amount of synchronization of the cortical oscillations in the beta frequency range and the amount of variability in the isometric ankle plantar flexion torques and gastrocnemius EMG. I would like to thank the ASB for providing the Grant-in-Aid funding for this project, and I look forward to presenting my final results at the 2015 ASB meeting that will be held at the University of Ohio.



A participating subject performing an isometric ankle plantarflexion contraction while the torque, gastrocnemius EMG and EEG is simultaneously recorded (left). Exemplary time-frequency plot from one of the participating subjects, where zero is the onset of movement. A prominent sensorimotor desynchronization (dark blue) occurs between 15-30Hz during the motor task (right).



**University of
Nebraska Medi-
cal Center**

Advisor: Max Kurz



University of Dayton

Advisor: Kimberley Bigelow

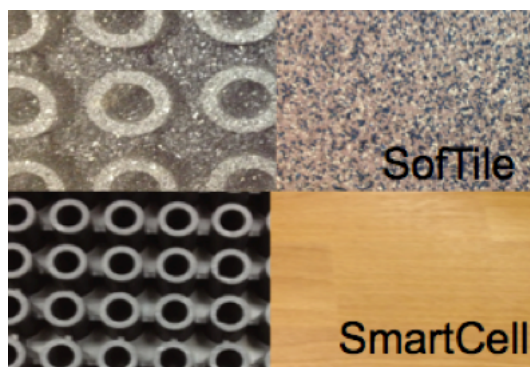
University of Wisconsin-Milwaukee

Advisor: Na Jin Seo

2013 ASB Grant-in-Aid

Renee Beach: “The Effect of Compliant Flooring on Postural Stability in an Older Adult Population and in Individuals with Parkinson’s Disease”

Renee Beach was awarded the 2013 American Society of Biomechanics Grant-in-Aid for use of the purchase of equipment towards her research in posturography. Renee used the funds from the grant to help support her work in Movement Biomechanics to purchase an APDM OPAL inertial measurement unit. The OPAL measures kinematic data and Renee hoped to use the OPAL sensor to measure older adults and older adults with Parkinson’s Disease during gait while on compliant flooring. Compliant flooring is suggested to be used as a fall injury prevention technique due to the force attenuation. Renee recently completed a study on posturography while both of these populations are standing and completing transitional movements on the compliant flooring. The OPAL sensor purchased with funds from the ASB Grant-in-Aid helped Renee further her research by monitoring the gait of these populations while walking across a stretch of compliant flooring. The first step in this research is currently being conducted by using 4 OPAL sensors on the individual as they perform the Instrumented Timed Up and Go Test. Renee’s work will continue using the OPAL in future research.



Representative compliant flooring (left) and experimental set up (right).

Binal Motawar: Identification of Neural Mechanisms for the Delayed Grip Relaxation in Chronic Stroke Survivors

Healthy adults are able to stop gripping an object by relaxing long finger flexors in less than a second. However, stroke survivors suffer from delays in relaxing muscles. The simple task of relaxing a grip can take stroke survivors as long as 5 seconds to accomplish. Despite the functional significance of muscle relaxation, our understanding of muscle and grip relaxation is lacking. My proposal included experiments investigating neural mechanisms of grip relaxation in healthy adults and stroke survivors. We recorded short-interval intracortical inhibition (SICI) and spinal motor excitability (H reflex) for the flexor digitorum superficialis muscle in both hands of healthy young adults, healthy old adults and chronic stroke survivors while relaxing from a maximum voluntary power grip.

Our experiments strengthened previous findings that the muscle relaxation in

2013 ASB Grant-in-Aid

healthy young adults is not a passive process but rather requires activation of SICI in hand motor cortex. We also showed for the first time that hand muscle relaxation is accompanied by stable spinal motor excitability, in contrast to previous findings of depressed spinal excitability during the soleus muscle relaxation. Greater concentration of monosynaptic connections may explain greater role of the brain than the spinal motor pool in the hand muscle's relaxation in healthy young adults. For healthy older adults, our results show that the greater grip relaxation time was associated with lack of SICI activation and resultant facilitation of spinal motor excitability during grip relaxation.

We next examined the SICI and spinal motor excitability in chronic stroke survivors. We found that the SICI during grip relaxation in chronic stroke survivors was comparable to that in healthy old adults. Despite the similarities in the brain's SICI, chronic stroke survivors maintained their spinal motor excitability and were slower than healthy old adults, perhaps due to stroke-related changes in intrinsic properties of motor neuron pool such as size or threshold. Alternatively, a secondary long latency supraspinal inhibitory network may be involved for grip relaxation.

In general, these findings increase our understanding of hand muscle relaxation. This knowledge can be used to develop neuromodulation therapies such as movement or pharmacological interventions to facilitate motor function after stroke.



A test subject in the grip testing device.

Jo Armour Smith: Trunk neuromechanics during turning: a window into recurrent low back pain

I received an ASB Grant-in-Aid award in 2013 to help support my PhD dissertation research in the Jacquelin Perry Musculoskeletal Biomechanics Laboratory at the University of Southern California. I recently defended my dissertation and will be graduating this summer.



**University
of Southern
California**

**Advisor: Kornelia
Kulig**

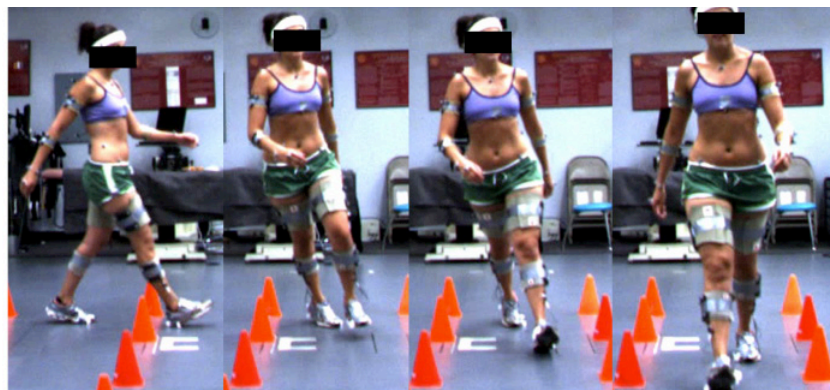


2013 ASB Grant-in-Aid

I am interested in dynamic postural control of the trunk. My dissertation research investigated how trunk postural control during anticipated ipsilateral walking turns is modulated in response to changing mechanical and attentional task constraints, and compared healthy individuals to individuals with a history of persistent low back pain who were between symptomatic episodes. I also examined whether insertion of intramuscular EMG electrodes into the paraspinal musculature results in significant changes in locomotor kinematics following insertion.

My dissertation work demonstrated speed-dependent patterns of inter-segmental coordination between the trunk and pelvis and paraspinal muscle activity during walking turns. The modulation of these aspects of postural control with increasing speed were the same as those previously demonstrated during steady-state locomotion, indicating a similar control strategy. Stride-to-stride coordination variability was reduced when turns were performed concurrently with an attention task. This suggests that the magnitude of coordination variability is at least in part a function of attentional resources and may represent real-time correction of coordination during locomotion in response to perturbations or postural destabilization. Insertion of intramuscular EMG electrodes into the paraspinals was associated with minimal discomfort and did not significantly alter locomotor kinematics. This confirms that this is an appropriate methodology to investigate trunk postural control.

There were no differences in kinematics between healthy and asymptomatic individuals with a history of low back pain. Therefore previously demonstrated changes in trunk kinematics in symptomatic individuals with low back pain may be due to concurrent pain rather than a persistent change in motor control. However, these individuals utilize a different control strategy in the paraspinals to respond to increasing locomotor speed compared with healthy individuals. The enhanced understanding of the relationship between symptoms and neuromechanical impairments in individuals with low back pain is vital for the development of more effective intervention strategies for persistent musculoskeletal pain disorders.



Ipsilateral walking turn.

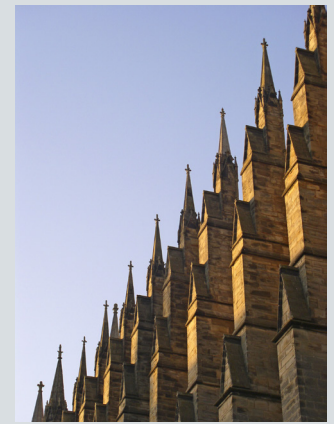
2013 ASB Grant-in-Aid

Senia Smoot: A Pilot Study of the Effect of an Acute Vestibular Therapy on Postural Stability, Gait Variability, and Gaze Patterns of Children with Autism Spectrum Disorder

Senia Smoot was awarded the 2013 American Society of Biomechanics Grant-in-Aid of Research to support her research in evaluating sensory based interventions for children with Autism Spectrum Disorder (ASD). Senia examined physiological changes caused by a sensory-based, vestibular swing therapy for children with ASD. The main goal of this research was to find new tools to evaluate sensory based interventions. Senia used the funds from the grant to purchase a therapy swing and provide subject reimbursement to the families who participated in her study. During the last year Senia used a force plate, a mobile gaze tracker, and three wearable inertial measurement units (IMUs) to measure the acute effect of the therapy swing on postural control, gaze patterns, and the gait of children with ASD. The swing purchased with the funding provided a therapy experience for the subjects and the reimbursements made it possible for families who had to travel to participate in the study. Findings from this work have resulted in a manuscript (publication pending) and accepted poster presentations at the ASB Annual Conference in Omaha, Nebraska and the World Congress of Biomechanics in Boston, Massachusetts.



Vestibular swing therapy device



**University
of Dayton**

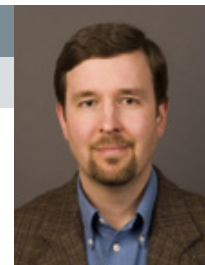
**Advisor: Kimberley
Bigelow**



Check in often for updates to the program on Facebook, Twitter, and the meeting website site.

Program Chair

Brian Umberger



As you probably know by now, the American Society of Biomechanics will hold its 38th annual meeting in conjunction with the 7th [World Congress of Biomechanics](#) (WCB) in Boston, Massachusetts from July 6-11, 2014 at the Hynes Convention Center. The WCB is shaping up to be a historic meeting, drawing together ten domestic and international professional societies. The draft program is impressive, consisting of well over 4000 presentations on a diverse array of topics. ASB members will be well represented among the presenters.

While I'm sure no one remembers, one of my "campaign promises" when I ran for program chair was to maintain many of the events that we typically associate with an ASB meeting. With the help of several enthusiastic ASB members, and the support of the ASB executive board, we have managed to make good on that promise (making me apparently unqualified to run for actual political office). In addition to benefiting from the topical breadth and diversity afforded by the WCB, we hope that ASB members will still feel at home at this large meeting. To that end, the ASB is sponsoring five half-day symposia representing the five recognized disciplines within the ASB, as well as the Borelli award lecture, the Hay award lecture, two tutorials, the student mentoring program, the women in science breakfast, the diversity breakfast, the student night out, the past-presidents/fellows breakfast, the ASB business meeting, a 5K fun-run, and an awards session including the pre- and post-doctoral young scientist awards, the Journal of Biomechanics award, the Clinical Biomechanics awards, and the recognition of new fellows. You can expect to hear more about these events as the WCB draws closer. I do not have space in this column to thank by name the many people who have helped with organizing these myriad events, but I will be sure to find another venue where I can give everyone their due. As I've heard other people say before, ASB is a fantastic society with an engaged membership. When I asked people for help over the past 18 months, not a single person said no!

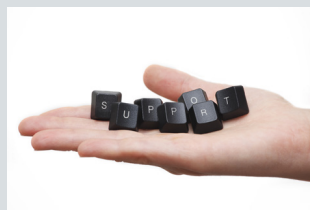
At the time this article goes to press, the early bird registration period for WCB will have passed, and the second priority deadline will be rapidly approach. According to the WCB website (<http://wcb2014.com>), registration fees are \$600 for regular attendees and \$425 for students through June 27, 2014. After that date, registration fees increase by \$120 for both categories. If you have not made your hotel reservations yet, plan to do so soon. Boston is a notoriously expensive city, but the WCB organizers have done a good job of arranging discounts with hotels near the convention center. See the WCB website for several hotel options, as well as information on travel in and around Boston, including transit from the airport. As I noted in my December column, it is also possible to save money by staying at a hotel outside of Boston and relying on the local public transit system (known as the MBTA.)

I will close this column with a few words about communications leading up to the WCB. Your one-stop source for general information about WCB should be their website (<http://wcb2014.com>), which is constantly being updated by their staff. Also, see page 29 of this newsletter for a listing of ASB-specific events; as of mid-June all of the details in the listing are correct. We will send out a few announcements and updates through the full member email list. For more frequent

Program Chair (cont.)

Brian Umberger

and detailed announcements about WCB we will use the ASB Facebook and Twitter accounts. We have also created a Google email group, ASBEventsatWCB2014, that ASB members can choose to join (a Gmail account is not required to join the group). More information about these options will be distributed as the World Congress draws closer. I look forward to seeing everyone in Boston!



ASB Corporate Members 2014

Corporate membership categories are aimed at encouraging affiliation by commercial organizations that market products which are used by the biomechanics research community, or companies that are otherwise engaged in activities that fall within the Society's general interest areas. Companies wishing to become a Corporate Member are encouraged to contact [Karen Troy](#), Treasurer.

The ASB Executive Board is pleased to recognize the following companies:

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ASB
AMERICAN SOCIETY OF BIOMECHANICS

38th Annual Meeting of the
American Society of Biomechanics

July 6-11, 2014

In conjunction with the
7th World Congress of Biomechanics

Hynes Convention Center, Boston, Massachusetts
<http://wcb2014.com>

Photo Credit: Willem van Bergen



The American Society of Biomechanics

<http://www.asbweb.org>

ASB Events at the World Congress of Biomechanics

The following events are organized by the American Society of Biomechanics (ASB), but some, such as the symposia, tutorials and Borelli lecture are open to all attendees of the World Congress of Biomechanics (WCB). Other events, such as the business meeting, the student night out, and the diversity and women in science breakfast meetings are specifically for ASB members. The WCB opening reception and banquet are also listed below for convenience. The locations for all events will be listed in the WCB program. Dates and times are accurate at the time of this printing. The diversity and women in science breakfast meetings will require pre-registration. Information on the pre-registration process for the diversity and women in science breakfast meetings will be forthcoming.

Monday, July 7 th	
3:00 PM - 6:30 PM	ASB Symposium: Simulation Models of Sport and Exercise (includes Hay lecture)
7:00 PM - 9:00 PM	WCB Opening Reception
Tuesday, July 8 th	
7:00 AM - 8:00 AM	ASB Past-Presidents/Fellows Breakfast (past-presidents and fellows only)
2:30 PM - 6:00 PM	ASB Symposium: New Approaches to Biomechanics in Ergonomics/Human Factors
6:30 PM - 7:30 PM	ASB Tutorial: Probabilistic Methods and Uncertainty in Musculoskeletal Models
Wednesday, July 9 th	
7:00 AM - 8:00 AM	ASB Diversity Breakfast (ASB members only, pre-registration required)
8:00 AM - 12:30 PM	ASB Symposium: Subject- and Patient-Specific Musculoskeletal Modeling
12:30 PM - 3:00 PM	ASB Executive Board Meeting (ASB executive board only)
7:00 PM - 10:00 PM	WCB Banquet
Thursday, July 10 th	
7:00 AM - 8:00 AM	ASB Women in Science Breakfast (ASB members only, pre-registration required)
9:45 AM - 10:30 AM	ASB Borelli Award Lecture (Vijay Goel)
11:00 AM - 4:00 PM	ASB Symposium: Technology, Health and Rehabilitation
4:30 PM - 6:00 PM	ASB Awards Session
6:30 PM - 7:30 PM	ASB Tutorial: Guidance for Writing NIH Grants
7:30 PM - 9:30 PM	ASB Student Night Out (ASB student members only)
Friday, July 11 th	
6:30 AM - 7:30 AM	ASB 5K Fun Run (start location and route will be announced)
8:00 AM - 12:30 PM	ASB Symposium: Metabolic Energy Use in Movement: Basic Princ. to Human Health
1:00 PM - 2:00 PM	ASB Business Meeting (ASB members only)
3:00 PM - 4:30 PM	ASB Teaching Symposium



7th World Congress of Biomechanics

<http://wcb2014.com>

Umbrellas are for Tourists

William Ledoux

Greetings everyone! I hope you have found this latest edition of the newsletter timely and informative. I would like to thank all of the contributing authors (~20) who sent me content in good form and made my job easy. In addition to discussions on the ASB diversity task force and highlights of the upcoming World Congress of Biomechanics meeting (including a two-page “things to do in Boston”), we have also provided financial and membership updates, as well as detailed summaries of this year’s four regional meetings. Further, we have included updates from all five of the last year’s ASB Grant-in-Aid winners and announced the winners of our conference awards, including the Borelli and Jim Hay Memorial awards. Finally, we included an updated list of many of the upcoming biomechanics conferences. It truly has been a team effort!

In closing, I would also like to update you on the status of the ASB archives. After discussing options with a few libraries, we have tentatively decided to go forward with the University of Washington. I am still trying to determine if there is a need to create such an archive; currently I am not sure how much content we are talking about. As I mentioned previously, if you are a former officer or a long time member and are have something you’d like to contribute, be it electronic or hardcopy, please contact me. I will be making a personal appeal in Boston to the past-presidents and fellows, and hopefully this will kickstart the process.



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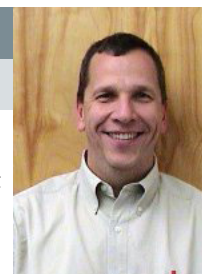
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Events Calendar

Dan Gales



NOTE:

For other listings of international conferences, please visit either the ISB's [web-site](#) or [Biomch-L](#).

International Conference on Neuro-Rehabilitation

June 24-26, 2014, Aalborg, Denmark

Abstract deadline – past

www.icnr2014.org

Gait and Clinical Movement Analysis Society

June 24-27, 2014, Newark, Delaware

Abstract deadline – past

www.gcmas.org

European College of Sport Science

July 2-5, 2014, Amsterdam, The Netherlands

Abstract deadline – past

www.ecss-congress.eu/2014/14

World Congress of Biomechanics

July 6-11, 2014, Boston, Massachusetts

Abstract deadline – past

wcb2014.com

International Society of Biomechanics in Sports

July 12-16, 2014, Johnson City, Tennessee

Abstract deadline – past

www.etsu.edu/academicaaffairs/scs/isbs2014

International Symposium on the 3-D Analysis of Human Movement

July 14-17, 2014, Lausanne, Switzerland

Abstract deadline – past

3dahm2014.epfl.ch

Neuro Robotics for Patient Specific Rehabilitation

July 18, 2014, Padova, Italy

Abstract deadline – past

neurorob.nre.bccn.uni-goettingen.de

International Calgary Running Symposium

August 14-17, 2014, Calgary, Alberta

Abstract deadline – June 30, 2014

www.calgaryrunningsymposium2014.com

IEEE Engineering in Medicine and Biology Society

August 26-30, 2014, Chicago, Illinois

Abstract deadline – past

embc.embs.org/2014

Virtual Physiological Human Conference 2014

September 9-12, 2014, Trondheim, Norway

Abstract deadline – June 15, 2014

www.ntnu.edu/vph2014

International Functional Electrical Stimulation Society

September 17-19, 2014, Kuala Lumpur, Malaysia

Abstract deadline – June 30, 2014

sites.google.com/site/ifess2014kl/home

European Society of Movement Analysis for Adults and Children

September 29-October 4, 2014, Rome, Italy

Abstract deadline – past

www.esmac-siamoc2014.com

Human Factors and Ergonomics Society International

October 27-31, 2014, Chicago, Illinois

Abstract deadline – past

tinyurl.com/qywlfor

Orthopaedic Research Society

March 24-28, Las Vegas, Nevada

Abstract deadline – August 25, 2014

www.ors.org/2015annualmeeting

Triennial Symposium of Hand and Wrist Biomechanics International

June 16-17, 2015, Milan, Italy

Abstract deadline – TBA

www.hwbi.org/2015.html

International Society of Biomechanics

July 12-16, 2015, Glasgow, United Kingdom

Abstract deadline – November 10, 2014

www.isbglasgow.com

American Society of Biomechanics

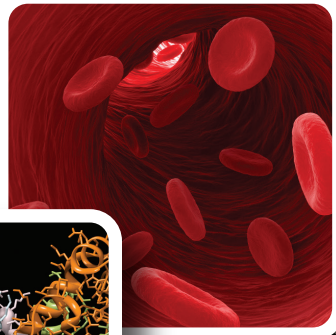
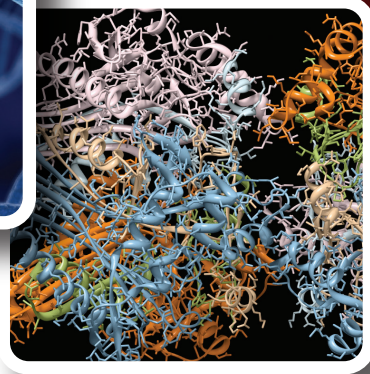
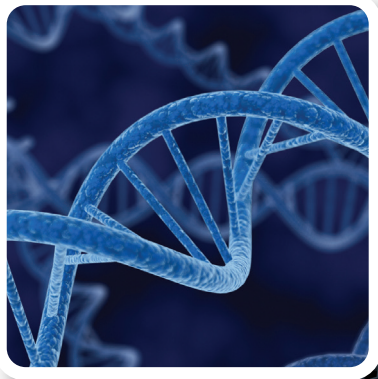
August 5-8, 2015, Columbus, Ohio

Abstract deadline – TBA

u.osu.edu/asb2015



7th WORLD CONGRESS OF BIOMECHANICS



The World Congress of Biomechanics is an international meeting held once every four years, rotating among Europe, Asia and the Americas. This, the 7th WCB, will once again bring together bioengineers, life scientists and medical researchers from around the world for 5 days of in-depth discussions and presentations. Vendor exhibitions will highlight the latest technologies, publications, and medical devices.

Plan to join us in Boston, just following the US Independence Day festivities on July 4th.

www.wcb2014.com

FEATURING A STUDENT PAPER COMPETITION,
SPONSORED BY ASME BIOENGINEERING DIVISION

ORGANIZED BY:

World Council of Biomechanics

IN CONJUNCTION WITH:

American Society of Biomechanics

American Society of Mechanical Engineers

Canadian Society for Biomechanics

European Society of Biomechanics

Global Enterprise for MicroMechanics
and Molecular Medicine

US National Committee of Biomechanics

JULY 6-11 2014

John B. Hynes Veterans
Memorial Convention Center
Boston, MA