

September 2014

ISB *Now*



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2014

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President's Blog

By Ed Chadwick | September 2014

In a previous blog I wrote *"When you get the chance publicize the importance and contributions of biomechanics. Let us all work to raise our profile."* In the following I am going to emphasize this with respect to university curricula. Over the last year on a number of occasions I have been part of discussions about the role of biomechanics in university curricula. The University of Bologna was founded in 1088, and it is likely that their curricula have evolved significantly since then. Evolution of an area of study is inevitable and therefore so is curricular reform, consequently promoting the role of biomechanics in various curricula is an important issue for all biomechanists. The role of biomechanics is an important consideration in these curricula. Not all of our membership teaches at an institution of higher learning, but we all received our training from such institutions and typically recruit new employees with training from them so we are all invested in ensuring the (prominent) role of biomechanics in curricula.

Talking to fellow biomechanists at conferences I hear a litany of observations about university life. There are increased undergraduate student numbers, less well prepared students entering programs, reduced resources, increased administrative burdens, and unwarranted curricula reforms. It is remarkable that I hear this from biomechanists from all around the world. Cynics would say that academics have always made these complaints; but when, for example, undergraduate numbers triple in a ten year period without a commensurate increase in faculty numbers, at least some of these complaints are not illusionary. Many of the (perceived) problems are beyond our control, but here I would like to encourage our membership to examine and promote biomechanics in their respective curricula.

Biomechanics research and education took a significant boost in the US from the investments of The Whitaker Foundation. That foundation was founded and funded by Uncas Whitaker (1900-1975). Unlike many foundations they planned to spend all of their funds, US\$700 million, by July, 2006. The foundation helped create 30 biomedical engineering programs throughout the US, and helped finance 13 new buildings. The legacy of the foundation persists, but of course they will make no new investments. These programs help promote biomechanics, but there is still work we can all do as advocates for biomechanics.



Uncas Whitaker (1900-1975)

With the explosion of knowledge there are often battles fought for what topics are covered in the curricula. Twenty years ago consideration of genetic factors was a minor part of many curricula now it competes for a significant portion of curricula time. Using the number of students enrolled in degrees of sport and exercise sciences as a metric, in many countries such programs are the most popular degrees. I have been consulted by undergraduate programs in sport and exercise science where the plan was to have no compulsory biomechanics class(es). While acquiescing to such curriculum reforms might reduce an ISB member's class size, it does not help promote the importance of biomechanics.

As biomechanists we can make a strong case that biomechanics should be a cornerstone of such curricula - in fact we should make that case.

In the US the amount of biomechanics in the curricula of trainee orthopedic surgeons has shown a significant decrease over the last two decades; I suspect the same is true elsewhere. Once again biomechanics is competing with other important areas. A good working knowledge of biomechanics seems essential for an orthopedic surgeon, but this cannot be covered in the few lectures remaining in many programs. There are many important new advances in biomechanics which relate to orthopedics which would also be valuable in such curricula.

As biomechanists once again I am asking you to be advocates for biomechanics, this time in any curricula you can influence. I would hope there is uniformity amongst the membership of the ISB of the value of biomechanics in various curricula; so let us collectively be strong advocates for biomechanics.

Regards,

John Challis

Penn State University

(jhc10@psu.edu)

Students' Corner

By Ed Chadwick | September 2014

Hi Trainees,

The **WCB 2014 ISB Trainee Networking Panel** was a big success! Thanks to Dr. Allison Gruber, Dr. Ron Zernicke, Dr. Joe Hammill, Dr. Brent Edwards, and Dr. Ross Miller for sharing their insights and experiences with the trainees who were in attendance. Dr. Zernicke provided some helpful supplementary material about preparing for academic jobs and interviews that will be posted in the Student section of the ISB website. Look for it soon!

Planning for XXVth ISB Congress in Glasgow, Scotland

Together the Scientific Committee for the XXVth ISB Congress, the Economically Developing Countries Officers, and the ISB executive council have been planning new and exciting programming for the upcoming 2015 Congress. We hope to host several lunch time sessions including a mentoring, a mock academic interview, EDC session, and a special session for Post Doctoral Fellows.

If you have programming ideas for the upcoming Congress, please feel free to contact me and I will put your ideas forward to the Scientific Committee. Look for more details about programming and student outings at the Congress in upcoming editions of Student's Corner. You don't want to miss it! Don't forget to submit your abstract by **November 28** at www.isbglasgow.com.

NEW -- ISB Trainee Spotlight

Starting October 1, we will begin a new initiative on social media: **ISB Trainee Spotlight**. We will post small stories about ISB Trainees and some of the fabulous things they are doing. You may nominate a colleague or yourself, as long as they are a current ISB Trainee. Supervisors can nominate trainees, too! We hope this will be a fun way to showcase our fabulous trainee group on Facebook, LinkedIn, and Twitter.

To submit a nomination for consideration, please submit the following to isb.studentrepresentative@gmail.com:

- 1) a short paragraph about the individual

1. the university they attend,
 2. their research focus
 3. why you think they should be a spotlighted trainee
- 2) a picture
 - 3) a statement acknowledging the nominated individual is aware of the nomination
 - 4) a statement confirming the individual is comfortable with their photo being posted on the ISB Facebook and LinkedIn Pages

As always, feel free to contact me with any questions or suggestions. Don't forget to follow @ISBiomechanics (twitter), International Society of Biomechanics (Facebook), International Society of Biomechanics Student Group, and the International Society of Biomechanics members LinkedIn page.

All the best,

Kelsey Collins

isb.studentrepresentative@gmail.com

Technical Groups Update

By Ed Chadwick | September 2014

MOTOR CONTROL SEED GROUP & ISB SYMPOSIUM ON MOTOR CONTROL IN BIOMECHANICS

The 1st **ISB Symposium on Motor Control in Biomechanics** organized by the new Motor Control Seed Group of the International Society of Biomechanics (ISB) was a great success.

The ISB Symposium was held on July 8th 2014 during the 7th World Congress of Biomechanics (WCB) in Boston, USA. The session was organized by Professor Carlo J. De Luca (Boston University, USA) and Professor Philip Rowe (University of Strathclyde, UK) ([see here for details](#)). It featured a keynote Lecture by Professor Zev Rymer from the Rehabilitation Institute of Chicago and the following internationally distinguished researchers:

- Professor Neville Hogan (MIT, USA)
- Professor Walter Herzog (University of Calgary, Canada)
- Professor David Lloyd (Griffith Health Institute, Australia)
- Professor Steven Robinovitch (Simon Fraser University, Canada)
- Professor Thomas Buchanan (University of Delaware, USA)
- Professor Marco Santello (Arizona State University, USA)

- Professor Paola Contessa (Boston University, USA)
- Professor Evangelos Christou (University of Florida, USA)

The wide interest in the symposium was demonstrated by the numerous attendees that included over 400 researchers and students.



Delegates at the ISB Motor Control Symposium

The goal of the new Motor Control Seed Group is to provide a forum to highlight and foster the growing interest in scientific work that bridges the fields of Motor Control and Biomechanics.

As part of this initiative, the next **ISB Symposium on Motor Control in Biomechanics** is currently being planned for the upcoming XXVth Congress of ISB in Glasgow, Scotland, July 12-16, 2015.

Check the [ISB 2015 webpage](#) for updates and we look forward to seeing you in Glasgow!

Sincerely,

Prof. Carlo J. De Luca, PhD

Prof. Philip Rowe, PhD

ISB at the World Congress

By Ed Chadwick | September 2014

At the recent World Congress of Biomechanics there were a number of ISB coordinated events. One of the events was the International Society of Biomechanics Presidential Symposium. The session was organized and chaired by John Challis and Ton van den Bogert, and comprised talks by former ISB presidents and Executive Council members. Here are details and photos from the session.



Ton van den Bogert, Cleveland State University: Control of human walking: new perspectives with application to wearable robots.



Benno Nigg, University of Calgary: Vibrations during human activities.



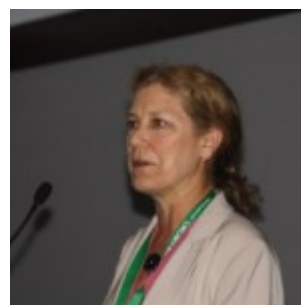
Ron Zernicke et al., University of Michigan: Skeletal adaptation: Mechanisms & influences.



Walter Herzog, University of Calgary: The magic of muscle contraction.



Julie Steele, University of Wollongong: The biomechanics of better breast health



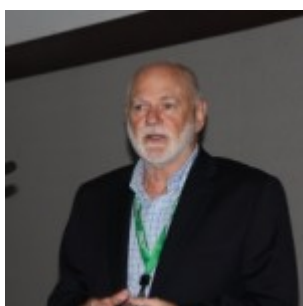
Mary Rodgers et al., University of Maryland School of Medicine: Lateral stability and falls: an overview of biomechanical findings from the FALLS project.



Aurelio Cappozzo, Italian University of Sport and Movement: High resolution reconstruction of functional skeletal kinematics is still an issue.



Brian Davis et al., The University of Akron: Distributed shear and pressure on the plantar surface of the foot during gait.



Maarten Bobbert, VU Amsterdam: How do humans control vertical squat jumps from different initial postures?

Thanks to Brian Davis who provided the photos. Abstracts of these talks can be found at the conference web-site.

Announcement of the ISB awards 2015

By Ed Chadwick | September 2014

As the ISB award officer it is an honor to me to announce four awards which will be assigned by the ISB during the forthcoming 25th ISB Congress held in Glasgow in 2015.

David Winter Young Investigator Award (DWYIA)

Best Podium & Best Poster of the ISB 2015 Conference

There are two DWYIA presented in honour of Professor David Winter and his pioneering contribution to the science and application of biomechanics. One is for the best oral presentation and the other for the best poster presentation given at the 25th Congress of ISB held in Glasgow 2015. The award recipients are offered a certificate, a monetary award of US\$ 750.

Requirements: Candidates must be the first author of an abstract submitted for presentation, have a maximum age of 35 at the first day of the congress, and must have made the major contribution to the research presented in the abstract. If selected for the final round, the candidate must personally present the paper (whether oral or poster) at the ISB-congress. The abstracts for this competition are solicited

with the call for papers of the ISB Congress.

Clinical Biomechanics Award (CBA)

Requirements: Any scientist may submit an abstract for the award. The abstract must describe a study related to a clinical problem and contain some form of biomechanical analysis pertaining to the clinical problem. The content must be entirely original, not published at the time of the ISB-congress nor submitted for publication to any Book or Journal other than Clinical Biomechanics.

Procedure: Applicants have to indicate their application for the CBA during abstract submission to the 25th congress of ISB. From the abstracts submitted, 5 are selected and nominated for the award. The authors of the 5 selected abstracts are requested to submit a full length paper prepared according to the guidelines of Clinical Biomechanics. A jury will evaluate the full papers and select the winning paper. The first author of the winning paper is expected to give a 20 min plenary session of the winning paper at the 2015 ISB congress.

The winning paper will be published as the ISB Clinical Biomechanics Award paper in Clinical Biomechanics (subject to a normal peer review process). The first author of the winning paper will receive a certificate and a monetary award of US\$ 1250.

Promising Scientists Award (PSA)

The Promising Scientist award, sponsored by MotionAnalysis, is designed to acknowledge people who have performed superior biomechanics research early in their career. It entails a certificate and a monetary award of US\$ 5000 for scientific purposes, such as visiting another research group to collaborate on a project. The winner of the award is expected to give a 30 min. plenary presentation over the recent studies that have contributed to the award at the 25th ISB Congress in Glasgow.

Requirements: To be eligible for the award, a candidate must (1) be a member of the ISB, (2) be at a relatively early stage of his or her scientific career in Biomechanics, and (3) be no more than 5 years post PhD degree.

Procedure: Each candidate must submit his or her full curriculum vitae, identify at least two first author full articles in peer reviewed scientific journals that he or she has written in a single area of Biomechanics, and provide interpretative summaries describing the contribution of each article.

Deadline: Applications for the award are to be sent to the ISB Awards Officer, Prof Catherine Disselhorst-Klug (disselhorst-klug@hia.rwth-aachen.de) by **February 28, 2015**.

Emerging Scientists Award [ESA]

The Emerging Scientist Award, sponsored by Professor Carlo J De Luca, honors excellence in graduate research in the area of motor control and electromyography and is associated with a monetary award of \$US 2,500. The winners will present in the award's session at that 2015 ISB Congress

Requirements: Candidates must be at a very early stage of their scientific career and to be eligible must not have received their PhD degree before the 2013 ISB Congress. Current graduate students, including MSc level students, are also eligible.

Procedure: You have to send your abstract to the award officer Professor Catherine Disselhorst-Klug. The abstract must be in the area of motor control/electromyography. You are also requested to submit an up to date curriculum vitae and PDF copies of two of your refereed publications in the area of motor control / electromyography. Please note: Additionally, you are also required to submit your abstract simultaneously to the ISB congress organisers.

Deadline: Please send your applications to Prof Catherine Disselhorst-Klug (disselhorst-klug@hia.rwth-aachen.de) by **February 28, 2015**.

Further information:

You can find additional information about the ISB awards on the ISB-Homepage (<https://isbweb.org/awards>). For further information you are welcome to contact me directly.

Prof. Dr. Catherine Disselhorst-Klug, PhD.
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Invitation from the Bulgarian Society of Biomechanics

By Ed Chadwick | September 2014

BULGARIAN SOCIETY OF BIOMECHANICS

Associated Member of the European Society of Biomechanics; Affiliate Society of the International Society of Biomechanics

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tel. +359 2 979 64 48 fax: +359 2 870 74 98

e-mail: stoyan@imbm.bas.bg

Array

GOVERNING BOARD:

Stoyan Stoytchev, President

Svetoslav Nikolov, Vice-President

Gergana Nikolova, Secretary

The Bulgarian Society of Biomechanics (BSB) was established by the late Professor Yuli Toshev who

served as a president from 1991 up to his untimely death in 2008. In 2011 a new Governing Board was elected and a new registration was done, required under the applicable laws in Bulgaria. Members of the BSB belong to different institutions in Bulgaria, such as Institute of Mechanics, Institute of Mathematics and Informatics, Institute of Neurosurgery, Institute of Biophysics and Biomedical Engineering, National Sports Academy, Biological faculty at the Sofia University, Medical Academy etc. More information about BSB can be found at <http://www.imbm.bas.bg/biomechanics/index.php/aims-and-members>.

The Governing Board of BSB aims to continue the traditions of the Institute of Mechanics and BSB in organizing local and international conferences like: EuroMech Colloquium No. 68 "Mechanics of Biological Solids", Varna, 1977; the Franco-Bulgarian Seminar Biomechanics and Computer Science in Cardiology", Varna, 1978; the First International Summer School on Biomechanics", Varna, 1977; the Sixth International School on Biomechanics held in Blagoevgrad, 1995, "Days of Biomechanics-2011" held in 2011 in Sofia.

On **November 20-21, 2014** in Sofia, Bulgaria, BSB is organizing the Second Conference "Days of Biomechanics-2014". On behalf of the scientific committee, we would like to invite colleagues-researchers (professors, doctors, young scientists and PhD-students) to take part in the conference which topics cover wide range of problems: clinical and tissue engineering; cell and molecular biomechanics; rheology of biological tissues and fluids; transport phenomena in biological systems; mechanics of bioprocess and biofilm systems; computational methods and modeling in biomechanics; biomechanics and control of movement; orthopedic biomechanics; rehabilitation biomechanics; sport biomechanics; biomechanics and sport medicine; functional tissue engineering. Proceedings of the conference will be published inspecial issue of the journal - Series on Biomechanics.

The **deadline for one-page abstract submission is October 15th**, 2014, at e-mail: s.nikolov@imbm.bas.bg. During the conference, the PhD-students and the Young Investigators competition for the Academician G. Brankov award will take place. For more information and questions about conference, you can contact the organizers at e-mail: s.nikolov@imbm.bas.bg.

EDC Workshops at ISB2015

By Ed Chadwick | September 2014

The International Society of Biomechanics (ISB) is planning to organize various events at the [XXVth ISB Congress in Glasgow, Scotland](#), to support researchers from Economically Developing Countries (EDCs). We are currently gauging interest in two proposed ideas:

1. Mentoring Workshop - The idea is to offer support in this workshop from experienced ISB members to members from Economically Developing Countries, for example to set up or give advice with regard to a research project or to assist in a grant application.
2. Regional Conference Brainstorm - Are you interested in developing your regional network? This session would bring together EDC members who would like to organise a local a biomechanics-related conference/workshop in order to help one another develop strategies for success. EDC and non-EDC members who have coordinated such an event would be invited to this session to offer relevant advice.

Please let us know:

- if you would like to attend such a workshop;
- if you have ideas for specific subjects or cases; or
- if you want to contribute by sharing your experience.

Reply to Andrea Hemmerich or Bart Koopman, ISB-EDC project officers, at

a.hemmerich@alumni.utoronto.ca or h.f.j.m.koopman@utwente.nl.

Thanks!

EDC Congress Travel Grant

Please be reminded that full applications for the EDC Congress Travel Grant are due at the end of November. Detailed application instructions will be available on the [ISB-EDC Information page](#).

Meet Your Executive - Alberto Leardini

By Ed Chadwick | September 2014

I am Alberto Leardini and I am one of your new executives on the ISB council, where I have been given the responsibility for the Student Awards. I am enjoying this work, which gives me the opportunity to track and support the research that the younger members of the society are doing, and at the same time I can discuss the major issues of this community with senior experts in biomechanics. Presently, I am the Technical and Scientific director of the Movement Analysis Laboratory at the Istituto Ortopedico Rizzoli located in Bologna, Italy, and the Coordinator within the Institute of the Special Reference Centre on Biomechanics of the Foot and Ankle. I have been working for this Institute since 1990, but concurrently, from 1996 to 2000, I have done my DPhil at University of Oxford, working with Professor John O'Connor and his group of Orthopaedic Engineering on the mechanics of the natural and replaced ankle joint. This work resulted in a new total ankle replacement now successfully implanted in many patients.

The comprehension of the mobility and stability of the joints of the lower limb has been later extended to the knee, both natural and replaced, by experimental measurements and computer models: a number of current and possible new prosthesis designs have been assessed. The functional and clinical assessment of joint prostheses has also implied work in three-dimensional videofluoroscopy and radiostereometry. The long term and close relation with physicians in orthopedics at the Rizzoli has contributed also to my concomitant interests in human movement analysis (working for a long time with prof Cappozzo and Cappello) and surgical technology (with collaborations with the major relevant companies). In both fields I have the pleasure to be involved in the design and development of biomechanical research studies on methodological issues together with on relevant clinical questions.

It has been among my personal missions to participate in the activities of scientific communities, not only for the scope of promoting the relevant discipline, but primarily of providing education and opportunities for younger and emerging researchers. I have served for many years the Società Italiana di Analisi del Movimento in Clinica (SIAMOC) and the ISB Technical Group of 3-D Analysis of Human Movement, and I have contributed to the start of the International Foot & Ankle Biomechanics community (i-FAB). For these communities I have hosted in Bologna one of their congresses, which I believe are extraordinary opportunities for personal and professional growth. My most recent commitment is with the ISB Council, after much participation to its biannual congress, which I have always enjoyed for the number and quality of new research, very much close to my areas of interest.

From these two professional overall experiences I have learned a lot. Biomechanics in its own right has now the opportunity to develop much faster with the knowledge, instrumentations and techniques built up and made recently available. On the other hand, many physiological and clinical problems remain unresolved, and a strict communication with also these relevant communities is perhaps fundamental for a common evolution, particularly in the interest of the patients. The critical role of industry shall also be not misunderstood or underestimated, for its potential to provide important solutions and resources for these developments. In these years, I will be pleased to talk to you and to provide my two cents in these matters.