

# December 2016



# Table of Contents

<b>XVI International Symposium on Computer Simulation in Biomechanics</b> .....	1
<b>ISB Travel Grant Report: JJ Hannigan</b> .....	1
<b>ISB Travel Grant: Alessandra Bento Matias</b> .....	2
<b>ISB Travel Grant: Jayishni Maharaj</b> .....	3
<b>ISB Travel Grant: Fransiska Bossuyt</b> .....	3
<b>News from the Working Group in Motor Control</b> .....	4
<b>ISB 2017 Call for abstracts</b> .....	5
<b>ISB Matching Dissertation Grant: Lauren Benson</b> .....	6
<b>Call for abstracts: International Conference on Biomechanics in Sports</b> .....	7
<b>ISB Award Deadlines</b> .....	8
<b>ISB at ASB: Sponsored Keynote by Prof Tibor Hortobagyi</b> .....	8
<b>EDC Officer Report</b> .....	9
<b>List of new members, December 2016</b> .....	11
<b>ISB Fellows Update: Prof Mary Rodgers</b> .....	11
<b>Biomechanics in India: an opportunity for cross-cultural research</b> .....	12
<b>Students' Corner</b> .....	13
<b>President's Blog, December 2016</b> .....	15

# XVI International Symposium on Computer Simulation in Biomechanics

By Ed Chadwick | December 2016

On behalf of the organising committee I'm delighted to announce the details for the 16<sup>th</sup> meeting of the ISB Technical group on computer simulation, which will be held on July 20<sup>th</sup> -22<sup>nd</sup> 2017 at Southern Cross University, Gold Coast Campus (<http://isbweb.org/~tgcs/iscsb-2017/index.html>). Abstract submission is now open - see website for abstract template and submission details (deadline 20<sup>th</sup> February 2017).



Two keynote lectures are confirmed as; Associate Professor Thor Besier (University of Auckland, New Zealand) and Professor Federico Casolo (Milan, Italy). In addition an OpenSim computer workshop will be held on the 20<sup>th</sup>. As usual there will be the usual mix of presentations and computer demonstrations along with the prestigious Andrzej Komor Young Investigators Award.



*Thor Besier*



*Federico Casolo*

## ISB Travel Grant Report: JJ Hannigan

By Ed Chadwick | December 2016

I am currently a doctoral candidate in the Motion Analysis Laboratory at the University of Oregon under the supervision of Dr. Li-Shan Chou. This past summer I was able to attend to the XIV International Symposium on 3D Analysis of Human Movement in Taipei, Taiwan. This travel was made possible largely due to the monetary contribution from the **ISB Student Technical Group Travel Grant**.

At the symposium, I had the opportunity to present my research on quantifying inter-segment coordination during running using a method called continuous relative phase. My oral presentation, titled "Inter-Segment Coordination in Running: Is coordination variability different between sexes?",

focused on the ability of this technique to distinguish sex differences in coordination variability that cannot be seen using typical kinematic methods. Presenting this research at the symposium gave me valuable feedback on my work that I am now incorporating into a manuscript.

The scientific and social programs at the symposium were both outstanding. Because the focus of the symposium was on techniques and advances in quantifying 3D motion, presentations were more technically focused than at any biomechanics conference I had previously attended. The technical aspects of the presentations could be applied to many different sub-fields within biomechanics, making it a very worthwhile conference for all attending. The social highlight of the conference was undoubtedly the banquet, which included a 10-course meal, a live band, karaoke, and dancing. Everyone in attendance had an amazing time!

I would like to thank the organizing committee, especially Dr. Tung-Wu Lu, for their extraordinary efforts in hosting the conference. I would also like to thank the International Society of Biomechanics for their generous contribution, which greatly offset the cost of international travel. I look forward to attending future 3DAHMs and ISB-sponsored conferences as I continue my research.

*JJ Hannigan*

Motion Analysis Laboratory, University of Oregon, Eugene, Oregon, USA

## **ISB Travel Grant: Alessandra Bento Matias**

By Ed Chadwick | December 2016

*My name is Alessandra Matias and I am a PhD candidate in the Laboratory of Biomechanics of Human Movement and Posture, University of Sao Paulo Medical School - Brazil, under supervisor of Dr. Isabel Sacco.*

*I would like to thank the International Society of Biomechanics (ISB) Council for awarding me the ISB Student Travel Grant to visit Dr. Alberto Leardini at the Rizzoli Institute for 5 weeks.*

*My project aiming was the methods of measurement of Medial longitudinal Arch during the static and dynamic tasks and verification of correspondence among the measures. Dr. Leardini and his team (Paolo Caravaggi in especial) gave me the opportunity to discuss the work and helped me to understand important things in the foot model related to the Arch. This was a great opportunity to improve my knowledge about biomechanics of the foot and especially about the multisegmentar model that I use in my research in Brazil developed by Dr. Leardini. There I learned new ways of implementation of projects and methodologies of acquisition.*

I also had the opportunity to attend the 24th Annual Meeting of the European Orthopaedic Research Society hosted by **Istituto Ortopedico Rizzoli**. I had the chance to meet other researchers and to discuss not only the research I was doing in Bologna but also topics about the career.

The team of Dr Leardini in Bologna is wonderful and I was very well welcomed into the Laboratory. I loved spending 5 weeks in Bologna and I could visit some museums, churches, and I tried a lot of Italian food and wines that were amazing.

One more time I would like to thank the ISB for the financial support that allowed me to have this unique experience.

*Alessandra Bento Matias*

*PhD Candidate, Laboratory of Biomechanics of Human Movement and Posture, University of Sao Paulo Medical School, Brazil.*

## **ISB Travel Grant: Jayishni Maharaj**

By Ed Chadwick | December 2016

With the support of the ISB travel grant, I travelled from Brisbane, Australia to present at the American Society of Biomechanics conference (Raleigh, USA) and then visited the Human Mobility Research Centre at Queens University, Canada to learn an innovative new method to investigate foot biomechanics.

Understanding the biomechanical function of the foot is difficult due to its complex structure. Currently, traditional motion capture is commonly used to describe the motion of multiple segments of the foot (Leardini et al., 2007). However even this level of detail is an over simplification of the actual joint rotations that occur within the foot. These estimates also suffer from poor fidelity of skin movement to underlying bone motion. Recent developments in 3D X-ray motion analysis allows non-invasive investigation of skeletal motion during dynamic activities such as locomotion (Astley and Roberts, 2012). The Human Mobility Research Centre at Queens University is setting up a laboratory using these novel videoradiography techniques. With the help of Assoc. Prof Rainbow, I was able to analysis data collected using these imaging techniques to gain a better understanding of the movement of the calcaneus and talus in the foot.

The visit was highly beneficial. I gained a lot of valuable skills including including segmenting bones from CT scans, creating partial volumes and surface areas of the segmented bones and subsequently tracking bones in high speed x-ray scans taken during walking. During the visit I also learnt how to fit objects to the articular surface of bones to create accurate anatomical coordinate systems and consequently calculate precise rotations between segments. To achieve these tasks, with my clinical background required a lot of upskilling in basic mechanical and mathematical concepts, knowledge that I believe will be invaluable as I continue to understand the mechanics of the foot after completion of my dissertation.

During my stay I also attended and presented at the American Society of Biomechanics Conference. I presented a study from my PhD thesis for the first time in a thematic poster session, which involved a short oral presentation followed by 10 minutes of group discussions. It was great presenting in this session, my research created some great discussion between several well renowned researchers in our field. The discussion led me to explore areas in my analysis I had not previously considered. During the conference I was mentored by A/Prof Greg Sawicki, who gave some great advice and encouraged me to be creative with research ideas. His suggestions and questions were thought provoking and invaluable.

I would like to thank the ISB for the travel grant and Assoc. Prof Rainbow and his lab for hosting and assisting me during my visit.

*Jayishni Maharaj*

University of Queensland

## **ISB Travel Grant: Fransiska Bossuyt**

By Ed Chadwick | December 2016

The International travel grant offered by the International Society of Biomechanics gave me the opportunity to go on a research stay of six weeks (From August till the middle of September 2016) at the Human Engineering Research Laboratories of the University of Pittsburgh under supervision of Dr. Michael Boninger.

The research stay allowed me access to expertise, state of the art research facilities and research environment. Working together with staff and students in an extremely stimulating research environment in the United States was a unique experience which I will take with me throughout my further life. During the research visit I discussed and refined the research strategy of my PhD project with Dr. Boninger. The project aims to investigate the effect of fatigue on shoulder mechanics during wheelchair propulsion. I also learned to perform and analyse quantitative ultrasound protocols (QUS) which will be used in the data collection of the projects of my PhD. Another important part of the visit was the preparation of a manuscript which investigates changes in propulsion kinetics during an overground figure 8 fatigue protocol. With this project I gained valuable insights into the fatigue protocol which will also be used in further projects of my PhD. Besides working on the research strategy and the manuscript I also had the opportunity to observe data collection of several projects, moreover of the ambitious project of doctoral student Nathan Hogaboom including QUS. His project investigates how a fatiguing wheelchair transfer and propulsion protocol affects shoulder pain and pathology in hand-rim wheelchair users with SCI. Finally, I gave a presentation to the staff and students of HERL and the Swiss Paraplegic Research, my activities during the research stay and the finalised research strategy. It was a great honour to present for the staff and students and to be able to discuss the project with them.

The research visit was highly beneficial for my research project, was crucial to foster collaborations between the Human Engineering Research Laboratories and the Swiss Paraplegic Research regarding future research projects, and will be an important factor later on in my research career. I am enormously grateful for this opportunity and wish to thank the International Society of Biomechanics and the University of Luzern for their financial support. Furthermore, I wish to thank The Swiss Paraplegic Research and Dr. Ursina Arnet who fully supported me and helped me realise the research visit. Finally, special thanks go to my promotor Dr. Michael Boninger who invited me to come to visit their laboratories and spent a lot of time and effort in guiding me during this visit.

*Fransiska Bossuyt*

Swiss Paraplegic Research

## **News from the Working Group in Motor Control**

By Ed Chadwick | December 2016

As the new year approaches, we would like to share the news of two exciting events that will take place in 2017.

Both events will feature internationally renowned speakers presenting their work at the intersection of Motor Control and Biomechanics. We invite you to join us to discover the latest developments in these fields and discuss with experienced investigators.

### **5th Symposium on Motor Control in Biomechanics**

**When:** May 30th 2017

**Where:** 64th ACSM Meeting, Denver (USA)

**Info and Registration:** Attendance is free to ACSM participants. Please register [here](#). For information and updates see [mcg.isbweb.org/5th-symposium.html](http://mcg.isbweb.org/5th-symposium.html)

### **6th Symposium on Motor Control in Biomechanics**

**When:** July 25th-26th 2017

**Where:** XXVI ISB Congress, Brisbane (Australia)

**Award:** A US\$500 award sponsored by ISB will be assigned to a student/researcher who submits an abstract to the Motor Control symposium.

**Abstract Submission:** Abstract submission for oral and poster presentation is now open on the [ISB 2017 website](#). Make sure to select the presentation type "Oral/Poster Presentation for the Motor Control Working Group (MC)". **Deadline:** January 13, 2017

**Info and Registration:** Attendance is free to ISB participants. Register on the [ISB 2017 website](#). For information and updates see [mcg.isbweb.org/6th-symposium.html](http://mcg.isbweb.org/6th-symposium.html)  
We look forward to seeing you in 2017!

Sincerely,

*Dr. Paola Contessa, Delsys Inc.*

ISB Working Group in Motor Control

## **ISB 2017 Call for abstracts**

By Ed Chadwick | December 2016

The ISB 2017 Congress Committee invites you to participate in ISB 2017 to be held in Brisbane from 23 - 27 July 2017.

The call for abstracts and registration for the Congress are now open!

The Program Committee invites authors to submit abstracts for presentation within the program of ISB 2017. Submissions are sought for oral and poster presentations and the program committee encourages submissions related to the following themes:

1. Clinical biomechanics
2. Tissue and Cellular biomechanics
3. Organ Biomechanics
4. Musculoskeletal biomechanics
5. Gait and posture
6. Biomedical engineering
7. Robotics and prosthetics
8. Injury and rehabilitation biomechanics
9. Computational / Simulation
10. Sports biomechanics and technology
11. Comparative biomechanics
12. Neuromechanics

13. Biomechanics of Women
14. Experimental technologies/Instrumentation
15. Animation/VR/Gaming
16. Occupational biomechanics - ergonomics

[Please click here for more information and to submit an abstract.](#)

**Abstract submissions must be received by 13 January 2017, 11.59pm EST. Authors will be notified of acceptance at the end of February 2017.**

Registration for ISB 2017 is also now open. Delegates may register for the Congress by completing the online registration form. Registration must be completed by 17 March 2017 to qualify for the early bird rates.

[Please click here for more information and to register.](#)

Thank you

On behalf of the ISB 2017 Program Committee

## **ISB Matching Dissertation Grant: Lauren Benson**

By Ed Chadwick | December 2016

With the funds I received from the ISB Matching Dissertation Grant, and a matching amount from the University of Wisconsin-Milwaukee College of Health Sciences, I was able to complete my dissertation. My project was titled "Identifying Gait Deficits in Stroke Patients Using Inertial Sensors." Falls remain a significant problem for stroke patients. Tripping, the main cause of falls, occurs when there is insufficient clearance between the foot and ground. Based on an individual's gait deficits, different kinematic patterns are necessary to achieve adequate foot clearance during walking. However, gait deficits are typically only quantified in a research or clinical setting, and it would be helpful to use wearable devices to quantify gait disorders in real-world situations. Therefore, the objective of this project was to understand gait characteristics that influence the risk of tripping, and to detect these characteristics using accelerometers.

Thirty-five participants with a range of walking abilities performed normal walking and attempted to avoid tripping on an unexpected object while gait characteristics were quantified using motion capture techniques and accelerometers. Multiple regression was used to identify the relationship between joint coordination and foot clearance, and multiple analysis of variance was used to determine characteristics of gait that differ between demographic groups, as well as those that enable obstacle avoidance. Machine learning techniques were employed to detect joint angles and the risk of tripping from patterns in accelerometer signals.

Measures of foot clearance that represent toe height throughout swing instead of at a single time point are more sensitive to changes in joint coordination. Participants with a history of falls or stroke perform worse than older non-fallers and young adults on many factors related to falls risk, however, there are no differences in the ability to avoid an unexpected obstacle between these groups. Individuals with an inability to avoid an obstacle have lower scores on functional evaluations, exhibit limited sagittal plane joint range of motion during swing, and adopt a conservative walking strategy. Machine learning processes can be used to predict knee range of motion and classify individuals at risk for tripping based



on an ankle-worn accelerometer. This work is significant because a wearable device that detects gait characteristics relevant to the risk of tripping may reduce the risk of falls for stroke patients.

*Lauren Benson*

University of Wisconsin-Milwaukee

# Call for abstracts: International Conference on Biomechanics in Sports

By Ed Chadwick | December 2016

Dear friends, colleagues, biomechanists,

On behalf of the organizing committee I am happy to send out this CALL FOR PAPERS for the of the 35th International Conference on Biomechanics in Sports. The conference will be held at the German Sport University Cologne **June 14th - 18th 2017** ([www.isbs2017.org](http://www.isbs2017.org)).

It will cover all aspects from basic to applied science.

Key dates:

Submission open: 01.12.2016

Deadline submission: 29.01.2017

Revised paper submission: 19.03.2017

Registration open: 17.03.2017

Notification of authors: 03.04.2017

End early bird registration: 17.04.2017

End registration: 01.05.2017

Topics:

- Musculo-skeletal loading in sports and physical activity
- Teaching and coaching of and with biomechanics
- Relationship of load and adaptation
- Biomechanics of injury and overload prevention
- Improving the performance capacity of the musculo-skeletal system
- Management of musculo-skeletal loading
- Biomechanics of adapted and paralympic sports
- Sports and sports medical technology
- Enhancement of human performance
- Sports technology and sports equipment
- Modelling and Computer Simulation
- Strength, Conditioning and Training
- Muscle & Tissue Mechanics
- Neuromuscular Biomechanics

We are looking forward to welcoming you in Cologne.

# ISB Award Deadlines

By Ed Chadwick | December 2016

## Promising Scientist Award

The Promising Scientist award 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 competition is held each year in which there is an ISB-conference. 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 ISB-congress of the same year.

Requirements: To be eligible for the award, a candidate must (1) be a member of the ISB, (2) be post-doctoral but not more than 5 years. 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. Applications for the award are to be sent to the Jury chairman. Please send your applications to ISB Awards Officer, Prof Catherine Disselhorst-Klug ([disselhorst-klug@ame.rwth-aachen.de](mailto:disselhorst-klug@ame.rwth-aachen.de)) by **February 28, 2017**. Additionally, please download the PSA tick-box questionnaire on the ISB Web-site, answer the questions and send it back to the ISB Awards Officer.

## Carlo de Luca Emerging Scientist Award

The ISB has had great pleasure to announce and award the Carlo de Luca Emerging Scientist Award in honor of Professor Carlo de Luca and his pioneering contribution to the science and application of biomechanics, in particular in the area of electromyography. The award 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 are selected prior to the next ISB Congress and will present in the award's session at that 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 previous ISB Congress (two years prior to the Congress where the award will be given). Current graduate students, including MSc level students, are also eligible. Please send your applications to Prof Catherine Disselhorst-Klug ([disselhorst-klug@ame.rwth-aachen.de](mailto:disselhorst-klug@ame.rwth-aachen.de)) by **February 28, 2017**. 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.

When applying for the award, please download the Carlo de Luca ESA tick-box questionnaire at the ISB Web-site, answer the questions and send it back to the ISB Awards Officer, too.

Please note: You are also required to submit your abstract simultaneously to the ISB congress organizers and that ISB has a policy that an abstract submitted for an ISB conference award is non-identical to an abstract submitted elsewhere.

# ISB at ASB: Sponsored Keynote by Prof Tibor Hortobagyi

By Ed Chadwick | December 2016

As Program Chair for the 40<sup>th</sup> annual meeting of ASB subtitled “Building a dynamic future on the strength of our past”, I was delighted when ISB agreed to sponsor a keynote speaker at our special anniversary meeting.

Dr Hortobagyi’s ISB keynote lecture was titled “The Biomechanical Plasticity of Human Gait in Old Age: Gait Speed the 6<sup>th</sup> Vital Sign”. The lecture was presented in the plenary ballroom to enable all attendees to hear from this international expert in the biomechanical plasticity of gait. Dr Hortobagyi’s lecture was a thorough and interesting presentation of his work in the important field of healthy aging. He provided great insights towards understanding the complementary roles of gait biomechanics and neural control of movement in studying neuromechanical adaptations to activity. The lighthearted anecdotes of individuals Dr Hortobagyi has met who embodied the concept of healthy aging were great illustrations of what we can all aspire towards as we move further down the years!

Dr Hortobagyi’s lecture was very well-received by the conference attendees, as attested to by the many and varied questions posed at the end of the talk. The question and answer period at the end of the lecture was a great opportunity to ‘pick the brains’ of this renowned researcher and great speaker.

To the delight of conference attendees, in addition to sharing his research during the keynote lecture, Dr Hortobagyi attended many of the scientific sessions throughout the meeting. He fully participated in the sessions by contributing his opinion and expertise to many of the discussions of the work of others. This was an excellent demonstration, particularly for junior members, of having a true passion for knowledge and for moving science forward.

On behalf of ASB, I sincerely thank the Executive Council of ISB for providing this excellent educational opportunity for our members.

*Clare Milner*

Program Chair for the 40<sup>th</sup> annual meeting of ASB

## EDC Officer Report

By Ed Chadwick | December 2016

2017 is around the corner. 2016 was a great year and we will keep working to make 2017 even better. As the year ends, I would like to tell you some of the recent advances of biomechanics in EDC.

Chilean researchers organized the I Congress of their Chilean Society of Human Movement. Members of ISB participated as invited speakers. Brisbane 2017 congress was advertised during lectures and informal talks, as well the I Latin American Meeting of Biomechanics, which will be organized in May 2017 during the XVII Brazilian Congress of Biomechanics in Porto Alegre, Brazil.

After my talks in the Conference, I showed the main details concerning the ISB 2017 Congress, details concerning grants applications, abstract submissions and opportunities that participating in the main congress of ISB can bring to the scientists from EDC. The Chilean Association sent a request to become

an ISB affiliated society.



Looking forward to a great ISB congress in 2019 in Calgary, prof. Walter Herzog told the participants about the venue of the ISB congress in Canada in four years.



The I Latin American Meeting of Biomechanics that will happen during the XVII Brazilian Congress of Biomechanics in Brazil next May was also advertised during the conference in Chile. The meeting will involve biomechanics scientists from Brazil, Chile, Argentina, Uruguay and Colombia.

Early in 2017 I will request new information from the EDC current projects. The purpose of this request will be to show to the members the advances in EDC projects supported by ISB and to motivate the establishment of new projects.

## List of new members, December 2016

By Ed Chadwick | December 2016

[table id=34 /]

## ISB Fellows Update: Prof Mary Rodgers

By Ed Chadwick | December 2016

Mary Rodgers was one of the inaugural fellows of the ISB. Mary is George R. Hepburn Dynasplint Professor in the Department of Physical Therapy and Rehabilitation Science (PTRS), at the University of Maryland School of Medicine. She is also Senior Advisor for the National Institute for Biomedical Imaging and Bioengineering at the National Institutes of Health (USA).

Dr. Rodgers earned her Physical Therapy degree from the University of North Carolina, Chapel Hill. She then obtained a MS in Medical Allied Health also from the University of North Carolina. Then in 1985 she obtained her PhD in Biomechanics from the Pennsylvania State University. From Penn State she moved to the University of West Virginia, with a joint appointments in Physical Therapy and Orthopaedics. Her rehabilitation science research at Wright State University in Dayton, OH, spanned seven years. In 1994 she moved to the University of Maryland, and is a full professor and former departmental chair in the Department of PTRS. Mary is a fellow of the American Physical Therapy Association (2009), the American Society of Biomechanics (2012), and ISB (2015). She has served as an Associate Editor for *Archives of Physical Medicine and Rehabilitation* since 2003.

Mary's research has focused on wheelchair propulsion biomechanics to understand and prevent overuse injury. More recently her scholarship has focused on technology development for rehabilitation, healthy independent living, and mobility. She serves as Director of the Pilot & Exploratory Studies Core for the University of Maryland Claude D. Pepper Older Americans Independence Center funded by the National Institute of Aging, NIH. This core provides start-up support for research proposals exploring mechanisms underlying the disability phenotype in older persons and the functional and clinical responses to exercise. As Senior Advisor in the Extramural Science Program at *National Institute of Biomedical Imaging and Bioengineering*, she facilitates support of technology development for rehabilitation, individuals with disability, and healthy independent living.

From 1997 to 2007 Mary was a member of the ISB Executive Council, and from 2003-2005 served as the President.

# Biomechanics in India: an opportunity for cross-cultural research

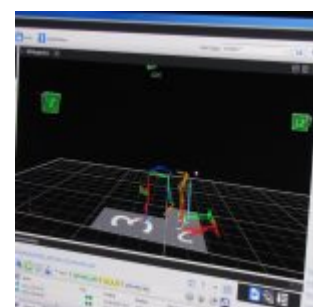
By Ed Chadwick | December 2016

I have just returned from an eight-day visit to the [MGM Centre of Human Movement Science](#) in Navi Mumbai, India. I have known Prof. Rajani Mullerpatan, Director of the Centre, for over four years now and continue to be impressed with initiatives she leads both within and outside the lab. Activities range from student research projects investigating the movement mechanics of traditional dance and lifestyle to creating awareness and training of healthcare providers about biomechanics, as well as clinical assessments of patients with musculoskeletal disorders. Most recently, I've had the privilege to be part of some of the research and teaching that takes place here.

In August 2013, Dr. Rajani Mullerpatan and I travelled from opposite ends of the globe to meet for the first time in person in Natal, Brazil. Following e-mail and Skype discussions from our respective locations on the planet, it was our shared time at that ISB Congress that ultimately offered the opportunity for us to get to know one another... and for the seed of collaboration to be planted.

Our shared intentions to apply biomechanics research to understanding culturally specific activities such as squatting in India motivated us to collaborate on a joint research initiative. One of our questions focussed on the biomechanical differences between physical postures that a woman may choose during childbirth: how would upright positions such as squatting facilitate or hinder passage of the baby through the birth canal when compared with more conventional supine positions? Could we measure the kinematics of the pelvis and dynamic forces acting on this segment in these different birthing positions?

Following two additional in-person meetings in Glasgow and Toronto in 2015 our ideas took form as a small grant proposal at the end of that year. By that time the MGM Centre of Human Movement Science, boasting a 12-camera Vicon motion capture system, three AMTI force platforms, and a Novel pressure platform, had just been officially inaugurated. (You can read more about the history of this project and ISB contributions in the ISB Now [2014](#) and [2015](#) archives.)



This past April our hard work and planning finally came to fruition when I travelled to MGM's Centre of Human Movement Science in India for two weeks. During this time I contributed to an interdisciplinary biomechanics training course with students from engineering and physiotherapy and worked together with several students and research associates on various aspects of our research project.

The objective of this project was to investigate the effects of birthing position on pelvic dimensions in a group of non-pregnant, Indian subjects. Clinically-relevant pelvic dimensions are estimated from anatomical landmarks that are digitized using the Vicon motion capture system. Dynamic analysis of motion, including loading at the hip and lumbosacral joints, will help us interpret pelvimetry findings.



It has been an ambitious undertaking and we all continued to work hard refining data collection and processing methods after my initial stay. During my recent follow-up visit we had an opportunity to address some of the many challenges of this project - from the “mundane” data processing issues to the complex dynamics of cross-cultural collaboration. It has been a valuable learning experience and has presented new insights and opportunities; I look forward to further collaboration with Rajani and her colleagues long into the future.



*Research collaborators including ISB members Dr. Andrea Hemmerich (far left), Prof. Rajani Mullerpatan (centre right in blue), and Prof. Geneviève Dumas (far right) at the MGM Institute of Health Sciences.*

## Students' Corner

By Ed Chadwick | December 2016

I hope you've all had a productive 2016. As the year comes to a close, don't forget to renew your ISB membership! You can do so [here](#).

Lots of exciting things are in store for 2017. In July, we head Down Under to Brisbane, Australia for the [XXVI Congress of the International Society of Biomechanics](#). As a student member, you'll be entitled to a substantial discount on your conference registration. I am currently in the process of planning a student excursion, mentoring program and roundtable discussion for the meeting, so please keep an eye on your emails as we get closer to the date.

As many of you may be aware, the call for abstracts is currently open for ISB2017 and will be due on **January 13, 2017**.

Other important dates for your calendar are:

- Notification to successful Congress Travel Grant applicants = Feb 1, 2017
- Notification of ISB2017 abstract acceptance = Feb 28, 2017
- Applications due for Technical Group Travel Grant (TGTG) = Feb 28, 2017\*
- Early bird registration closing = March 17, 2017

- Notification to successful TGTG applicants = May 1, 2017

\*The TGTG of up to \$US500 is offered to help reduce the travel expenses to attend one of the following meetings:

- *Technical Group on Computer Simulation*

Date: July 20-22, 2017

Location: Gold Coast, Australia

Abstract Submission Deadline: Feb 20, 2017

Website: <http://isbweb.org/~tgcs/iscsb-2017/>

- *Footwear Biomechanics Group*

Date: July 20-22, 2017

Location: Gold Coast, Australia

Abstract Submission Deadline: Feb 13, 2017

Website: <http://fbs2017.footwearbiomechanics.org/>

## **Advice to Students**

This edition of our Advice to Students project features Prof. Peter Milburn from Griffith University, Australia and can be viewed here:

<https://youtu.be/4VjgKgIHMP0>

I really enjoyed speaking with Dr. Milburn whilst preparing this video. The messages he shares in the clip made me reflect on my own experience as a graduate student and got me pondering how well I utilize the resources around me. His first message; “learn from your peers”, is something that can be easily overlooked. The graduate students I share the Pennsylvania State University Biomechanics lab with have a vast knowledge and a broad range of practical skillsets. It’s useful to recognise that we have a lot to offer each other and may continue to collaborate well into the future!

Secondly, Dr. Milburn touches on networking - specifically, approaching more senior delegates at conferences. He provides a useful perspective, encouraging us to be bold and initiate discussions because “biomechanists like nothing more than to talk about their work!” Dr. Milburn also offers some useful tips for getting the conversation started.

As always, stay in the loop by connecting with us via our social media channels ([Facebook page](#), [Student Members Facebook Group](#) and [Twitter feed](#)). If you have any feedback, questions or comments, I’d love to hear from you.

Kind regards,

*Kirsty McDonald*



# President's Blog, December 2016

By Ed Chadwick | December 2016

2016 has been a significant year in our calendar for many reasons. The Brexit vote saw the UK leaving the EU, the US people chose Donald Trump as President Elect, North Korea launched a satellite into orbit, Obama visited Cuba, the Olympics and Paralympics were successful, and so on...

Looking toward 2017, ISB has several significant events planned, but none more so than our biennial congress to be held between the 23-27 of July in Brisbane, Australia. Planning is well underway with many of the keynotes and award lectures already locked in. Since my last report I can now add the following names to the list of those that have accepted an invitation to deliver a plenary lecture at the conference: Professor Chwee Teck Lim from the National University of Singapore, Associate Professor Munjed Al Muderis from Notre Dame University in Sydney, Associate Professor Sylvia Blemker from the University of Virginia and Professor Melissa Knothe Tate from the University of New South Wales, Australia. More detailed information about our keynote speakers can be found at the following conference link: [Keynote Presenters](#).

The 'Call for Abstracts' opened on the 1st of November, but more importantly for your diaries is the date when **abstract submissions close - January 13, 2017**, so please make sure your abstracts are submitted by then to avoid disappointment. Over recent weeks, several groups have contacted the ISB Organising Committee with a request to propose Thematic Sessions and Workshops. I'm pleased to be able to announce that the committee thought this was an excellent idea and have included a call for Expressions of Interest (EOI's) for thematic sessions and workshops. More information can be found at the following link, [EOI's for Thematic Sessions](#), including the submission deadline of the 30th of December.

The ISB Congress is being held in conjunction with the Asian Pacific Association of Biomechanics (APAB) and the Australian and New Zealand Society of Biomechanics (ANZSB) and will also include one and a half day concurrent sessions by two ISB Working Groups; Hand and Wrist Biomechanics International and the Motor Control Group. Both groups have guaranteed an excellent line-up of invited speakers and will also draw from the open abstract submission to complement their sessions.

Satellite symposia by the Footwear Biomechanics Group and the Technical Group on Computer Simulation are also planned to take place prior to the conference on Queensland's iconic Gold Coast, which is only one hour south of Brisbane. Both of these meetings conclude on the 22nd of July, which gives delegates plenty of time to travel to Brisbane to take part in the ISB Tutorials, which are scheduled for the morning and afternoon of the 23rd of July.

Our ISB education officers have sourced an excellent lineup of speakers, which include: Professor Lynne Bilston (MR Imaging in biomechanics), Professor Greg Sawicki (Biologically inspired concepts guiding lower-limbo exoskeleton design), Professor Francois Hug and Dr Dominic Farris (Ultrasound techniques for muscle-tendon imaging) and Professor Peter Hunter and Thor Bessier (Multiscale modelling in biomechanics). I'm sure you'll agree that there is something there for everyone, so please sign-up by visiting the ISB [2017 Registration Page](#).

In closing I would like to encourage you all to join us in Brisbane for the XXVI Congress of the International Society of Biomechanics. Your participation in the congress will go a long way toward

maintaining the sustainability of the society and its future congresses.

Until then...

Kind regards

*Andrew*