

December 2017



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List of new members

By Dieter Rosenbaum | December 2017

- Ross Sanders
- Saša Čuković
- Ursula Trinler
- Jordan Andersen
- Yo Shih
- Kristen Lipscomb
- chenglong feng
- Stephen Cobb
- Carlton Cooke
- Daiani de Campos
- Carl Berkowitz
- Emily Gerstle
- Angelo Macaro
- Ata Babazadeh
- Erica Casto
- Munavvar Juman
- John-Paul Donlon
- Pengfei Yang
- Joe Testa
- Moiyad Aljehani
- Maria Bisele
- Marc Portus
- Heiko Wagner
- Mahboobeh Mehdikhani
- Adam Hunter
- Adam Bryant
- Ross Wilkinson
- Tomas Rusnak
- Natalia Alfaro
- Molly Connolly
- Ben Bugden
- Robert Stephenson
- Gretchen Roman
- Ramona Ritzmann

Matching Dissertation Grant Reports - K.M. Rowley

By Dieter Rosenbaum | December 2017

- NEWSLETTER REPORT

Name of Investigators: K. Michael Rowley, BS, BA, **Advisor:** Kornelia Kulig, PT, PhD, FAPTA

Name of Grant: Interfering with conscious motor processing during dynamic balance: Investigating persons with and without recurrent low back pain

The International Society of Biomechanics' Matching Dissertation Grant was used to investigate the effects of dual-task interference on trunk control during a dynamic unstable balance task in participants with and without recurrent low back pain (LBP). Associations between these effects and psychometric and motor control measures were tested in order to better our understanding of interactions between cognition, posture, and a history of pain.

Twenty-one participants with recurrent low back pain and twenty-two pain-free control participants were recruited and tested. First, the balance-dexterity task was characterized by investigating associations between task performance, trunk coordination, and various electromyographic and psychometric measures. Then, groups were compared. Persons with a history of low back pain exhibited reduced trunk coupling - meaning more dissociated or independent motion of the thorax and pelvis segments. This reduced trunk coupling was associated with the ratio of lumbar multifidus activation to lumbar erector spinae activation. In pain-free control participants, there was no uniform change in trunk coupling from single- to dual-task conditions - some participants became more tightly coupled in the trunk and some increased independent motion of the trunk segments (less coupling). Participants with recurrent low back pain, however, showed a uniform increase in trunk coupling from single- to dual-task conditions.

These findings will support the use of the balance-dexterity task in clinical and research evaluations of trunk control. In addition, the findings are important for informing rehabilitation given that dual-tasking is often prescribed during rehab to practice real-life situations. Findings from continued work on this study will help us learn more about interactions between attention, psychometric measures, and motor control measures in patients with recurrent low back pain. Understanding these interactions will enhance multi-modal treatments, which up until now have been marginally successful.

I am very grateful to the International Society of Biomechanics for the support in completing this dissertation.

Student Travel Grant Reports - Dec. 2017

By Dieter Rosenbaum | December 2017

Student Travel Grant Report from Nuno Morais, Patrick Bakenecker & Allison Clouthier

- Nuno Morais

I would like to thank the ISB for the generous Congress Travel Grant of \$1000. This was a fundamental financial assistance to participate in the XXVI Congress of the International Society of Biomechanics, in Brisbane, Australia. I feel very privileged to have attended this congress, having the opportunity to discuss formally (during sessions) and informally (e.g., during coffee breaks) with well renowned researchers in biomechanics, particularly in musculoskeletal and clinical/rehabilitation biomechanics.

The congress was extremely well organized. Social activities, oral and poster presentations, keynote sessions, exhibitors' sessions were all orchestrated and the delegates could easily master the extensive program by simply navigating, selecting, and scheduling the events using the congress app. For example, the most relevant presentations in the field of my doctoral work (on shoulder kinematics and rehabilitation) were in different sessions but it was not difficult to plan to attend those with the highest significance using the congress app.

I would like to highlight the Student Round Table Lunch. This was a fundamental event to integrate all students in the spirit of sharing experiences, expectations, discuss career opportunities with some of the most influential researchers such as Professors Walter Herzog (winner of the Muybridge Award) and

Joseph Hammill.

A rewarding experience with the hope to repeat in the near future.

Sincerely, Nuno Morais 31 October 2017

Polytechnic Institute of Leiria School of Health Sciences (ESSLei) Leiria - PORTUGAL

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- Patrick Bakenecker

For me the ISB2017 was a very successful and interesting conference in the field of biomechanics attending very interesting talks and meeting many other delegates working in my field of expertise. Thank you for the opportunity to attend and having a contribution to the Congress. It was an exciting event, which had wonderful vibe and atmosphere over the five days.

The conference started for me on Sunday with the offered tutorials. For me it began with the tutorial to “biologically-inspired concepts guiding lower-limb exoskeleton design” which focused on the basic science of human-machine interaction in the context of lower-limb exoskeletons that target the human ankle during locomotion. The most interesting part was a live demonstration showcasing the function of an unpowered elastic ankle exoskeleton that can reduce the metabolic energy cost of human walking. I also attended the tutorial to “ultrasound techniques for muscle-tendon imaging” which was very interesting for me, because I am also using ultrasound to detect fascicle behavior during my PhD work. This tutorial presented an overview of the ultrasound methods that enable muscle and tendinous tissues to be imaged in real time. It introduced B-mode imaging and advanced methods to assess displacements within the muscle-tendon unit and the issue of probe positioning for 2-D measurements were discussed through examples of the human medial gastrocnemius muscle.

In the following days I mostly attended the sessions with talks to Musculoskeletal Biomechanics with amazing speakers like Taija Finni, Ben Hoffman, Bart Bolsterlee, Taylor Dick or Dominic Farris. But there were also some interesting talks under the topic of Motor Control. There was the talk from Glen Lichtwark to “the potential influence of tendon compliance on sensory feedback from lower limb muscles” which I still have in mind.

The contribution to the congress on my site was my poster presentation where I had the opportunity to present a part of my PhD work with the topic “residual force enhancement is muscle length-dependent in the human knee extensors”. I can say that it was a successful poster presentation as I had very interesting discussions with other delegates who showed interest into my work.

At the end the most inspiring talk gave Walter Herzog during the Muybrige Award Lecture with the topic “Reflections on Muscle: or the Accidental Scientist” where he spoke about his whole scientific career with all his challenges and the way to success while working in your passion.

The conference ended with a great closing ceremony. The dinner and the entertainment were fantastic and enjoyed it very much.

Beside the conference it was a pleasure to visit Brisbane as a wonderful city with so much opportunities to have great food and many activities to do in your spare time.

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- Allison Clouthier

I was able to attend the International Society of Biomechanics conference in Brisbane this July. Travelling from Canada to Australia is expensive, and the Congress Travel Grant made my travel possible. The

conference was an amazing experience. I had the opportunity to share my research and receive useful feedback, to engage with other researchers in my area, and to learn about the new and exciting research happening in biomechanics around the world. The mentorship programs provided a great way to meet people with established careers in biomechanics and receive useful advice. I was able to meet up with old colleagues and to make new contacts and organization and content of the conference was exceptional.

Thank you to the ISB for providing me with this grant that made travel to a fantastic conference possible!

Allison Clouthier

EDC Officer's Report - Dec. 2017

By Dieter Rosenbaum | December 2017

EDC Officer Report - Felipe P Carpes

Dear ISB members. 2017 is almost over, but we still have time to send some information regarding the biomechanics in the EDC.

Biomechanics library and a new laboratory in Cuba

Books donated by professor Julie Steele arrived in Cuba. Professor Carlos Días sent photos of the lab organization and a message of thanks to Julie and ISB for making the arrangement so that his group is now benefit by a number of books and journals about biomechanics. But this is not the only advance of Biomechanics in Cuba. After a couple of months negotiating, professor Días told us that his institution was able to buy a 3D motion capture system, which means that the island will have the first motion capture laboratory to leverage biomechanics research. This is a historic fact, and ISB will be following and supporting professor Días group as possible towards the full establishment of the laboratory and the research group. If you want to help, please let us know.

A new Biomechanics society is born

We have been in contact with a very active group of biomechanists from Pakistan. In the past two years or so, a biomechanics society has been organized in Pakistan. In 2017, the society was registered as the Pakistan Society of Sports Biomechanics. The first president is professor Muhammad Asghar Javed. Everybody who wants to learn about the society is invited to make contact by the e-mail address pakistansportsbiomech@gmail.com or cell phone # 00923334395306 + whatsapp.

Student grants to join Technical Group Meetings

EDC students are encouraged to apply for the technical group meeting travel grant program. This grant is offered to the student members of the ISB attending the affiliated Technical Group meetings. It helps reducing the travel expenses to attend meetings of the 3-D Analysis of Human Movement (3DAHM), International Shoulder Group (ISG), Footwear Biomechanics Group (FBG), and Technical Group on Computer Simulation (TGCS). By virtue of the need to move the meetings among different continents, it is often very difficult for students to afford to travel to the meetings or to pay the registration fee if they can travel. However, we will offer travel grants (up to \$US 500) to the students who will be presenting their research results at the aforementioned Technical Group meetings. Application forms are available in the ISB website and applications are to be received by February 28th 2018. Applicants will be notified by May 1st 2018.

Student's Corner

By Dieter Rosenbaum | December 2017

Students' Corner

First, I'd like to give a huge thanks to Kirsty McDonald for all of her work as Student Representative the past two years. She has led great efforts throughout her term and the student events she organized at the XXVI Congress in Brisbane all went exceptionally well.

Past Student Representative, Kirsty (left), and incoming Student Representative, Melissa (right) in Brisbane.

ISB 2017: Brisbane

The students at ISB enjoyed events both during and outside of the congress. Thank you to everyone who helped with planning, volunteered time at, and participated in these events!

Both mentoring roundtable lunches were very successful, and students received great advice from the mentors who participated.

Student Night Out: We also enjoyed a fun night out together in Brisbane!

Recommended Reads in Biomechanics

Before her term concluded, Kirsty reached out to ISB Fellows who kindly put together a set of 'Recommended Reads.' This was a great idea and an excellent source of biomechanics readings, which can be found [here](#).

World Congress of Biomechanics Student Event

We will hold an event for the ISB students in Dublin during the World Congress of Biomechanics. The event will be held on Sunday evening, the first day of the congress (8 July 2018), with more details to follow. Looking forward to seeing familiar faces from Brisbane and meeting new student members!

Connect with ISB on Social Media

Keep up to date with ISB by liking our [ISB Facebook Page](#), joining the [Student Members Facebook Page](#) and following [ISB on Twitter](#)! If you have any feedback, comments, suggestions or questions please feel free to contact me at isb.studentrepresentative@gmail.com.

Kind regards,

Melissa Boswell

ISB 2019 - Save the Date

By Dieter Rosenbaum | December 2017

Save the Date: ISB 2019

Preparations for ISB 2019 in Calgary are going well. The Convention Center is booked, hotel

arrangements for your convenience have been made, and a preliminary schedule will be posted on the ISB 2019 website early in the New Year (www.ISB2019.com).

Most important, at this point, is to reserve the dates:

July 31st to Aug 4th, 2019

The ISB conference will be held in conjunction with the meeting of the American Society of Biomechanics and the support of the Canadian Society for Biomechanics.

The Footwear Biomechanics Group has already scheduled a satellite symposium at the beautiful Kananaskis Delta Hotel preceding the ISB conference (July 27-July 30, 2019).

Also at the Kananaskis Delta Hotel, we are planning a symposium on skeletal muscle mechanics (from Molecules to Muscle Function, July 27-July 29, 2019).

We have received great support from various faculties, departments and institutes of the University of Calgary, and from Delsys Inc., for travel/reduced registration for students from economically developing countries attending ISB 2019. Details of this program will be forthcoming.

Brisbane 2017 has barely gone, and what a success it was! And here we are, with ISB 2019 just around the corner (at least from our point of view). Please send us any ideas about special symposia and featured speakers that you might like to see. We are starting to prepare the program at this time and any input is greatly appreciated and welcome.

On behalf of the organizing committee, we are looking forward to welcoming you all to beautiful Calgary and the incomparable Rocky Mountains.

With warm regards,

Walter Herzog

Save the Date: National Biomechanics Day, April 11, 2018

By Dieter Rosenbaum | December 2017

Save the Date: National Biomechanics Day, April 11, 2018

Hello Biomechanists Worldwide,

Ready...Set...Blast Off, NBD 2018!

Registration is now open for the third annual **National Biomechanics Day**. We stunned ourselves by hosting over 7,000+ high school students in synchronized, around-the-world NBD events in 2017! Now we are ready to stun the world with truly vast numbers of Biomechanists and high schoolers participating in National Biomechanics Day 2018. Our goal is 20,000 to 30,000 high school students enjoying NBD 2018 and we can reach this goal with your participation. We all make NBD so successful and greater than the sum of its parts because through NBD we've created a collaborative framework within which we all enthusiastically and jointly celebrate Biomechanics. While many people host wonderful individual Biomechanics demonstrations, our combined NBD events unify Biomechanics around the world providing a coordinated and exciting Biomechanics extravaganza. Pretty cool. Those of you new to NBD will be so

surprised by the joy created through NBD participation, joy in Biomechanists and joy in high schoolers. I am not kidding or exaggerating.

While many people have made similar statements here I include Justus Ortega's simple wisdom about NBD 2017, "It was awesome...and it was inspiring." This year we enact our mantra, we make Biomechanics the Breakthrough Science of the 21st Century.

Click Here to register for NBD 2018: <http://nationalbiomechanicsday.asbweb.org/registration/>

President's Blog - Dec. 2017

By Dieter Rosenbaum | December 2017

It has been several months since we last met in Brisbane, Australia for the ISB Congress that was, in everyone's eyes, a very successful event. I would like to belatedly congratulate the organizers of that Congress, including ISB President Andrew Cresswell, for their hard work. There were a number of other ISB members on the organizing committee that I will not mention specifically but they should be noted for their excellent work. More than 80% of delegates came from over 50 countries, thus the aim of hosting a truly international congress was achieved. Personally, this congress was the epitome of what a scientific congress should be and I hope that future ISB congresses follow the example of the XXVI Congress.

Many ISB members are now gearing up for the World Congress of Biomechanics meeting in Dublin, Ireland this summer (July 8-12, 2018). ISB will have a significant presence at this Congress with a plenary session and three sessions sponsored and organized by ISB. The invited speaker for the plenary session is Professor Toni Arndt from Sweden, currently the ISB President-Elect. The three other sessions were organized by two ISB Technical Groups and an ISB Working Group. Each of these three sessions will have two keynote speakers and several speakers who submitted abstracts specifically for these sessions. ISB session 1, organized by the **Technical Group on Computer Simulation** is titled 'Computer Simulation of Human Movement and will have keynote speakers Brian Umberger (University of Massachusetts Amherst, USA) and Jeff Reinbolt (University of Tennessee, USA). ISB session 2 was organized by the **Footwear Biomechanics Group** and will have keynote speakers Sharon Dixon (University of Exeter, UK) and Wolfgang Potthast (German Sports University Cologne, Germany). The third session is being organized by the **Motor Control** working group with keynote speakers Antonie van den Bogert (Cleveland State University, USA) and Robert Gregg (University of Texas-Dallas, USA). In addition, there are several ISB members who are organizing other sessions for the WCB meeting.

<http://www.wcb2018.com/>

ISB will also be prominent at the International Society of Electrophysiology and Kinesiology (ISEK) meeting that will also be held in Dublin (June 30-July 2, 2018). ISB speakers at this conference will include Roger Enoka (University of Colorado, USA), Walter Herzog (University of Calgary, Canada) and Taija Finni (University of Jyväskylä, Finland).

<https://isek.org/2018>

Finally, I would like to announce the formation of a committee of accomplished ISB scientists to produce an ISB White Paper regarding the standardization of kinetic results for presentations at professional symposia and publishing in professional journals. This committee is ably led by Professor Tim Derrick (Iowa State University, USA) with members Alberto Leardini (Istituto Ortopedico Rizzoli, Italy), Andrea Cereatti (University of Sassari, Italy), Antonie van den Bogert (Cleveland State University, USA), Glen Lichtwark (University of Queensland, Australia), Raphael Dumas (University of Lyon, France) and Silvia

Fantozzi (University of Bologna, Italy).

At this time of year, we all look forward to our holidays and I wish all a pleasant holiday and a Happy New Year.

Joseph Hamill, Professor Emeritus, University of Massachusetts Amherst, USA

President, International Society of Biomechanics