

# Australian & New Zealand Society of Biomechanics



## Newsletter, April 2016

### ANZSB Committee

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### Note from the Editor

Welcome to the first issue of the newsletter for 2016. With ABC10 around the corner this is a big year for ANZSB. While we have been a little bit quiet at the start of the year we have lots to announce this newsletter including award winners, applications for more awards and of course ABC10 getting up and running.

I have included a section on Biomechanics in the news in this edition. If you get interviewed or your work gets picked up let me know to include in future editions. It also makes from some great content to include on our Twitter feed and Facebook page.

Alasdair Dempsey  
a.dempsey@murdoch.edu.au

### Did you know?

ANZSB have two representatives on the Editorial Board of the Journal of Biomechanics.

# Presidents Report

**The ABC10 webpage is now live and abstract submission is open!** A huge thank you to the ABC10 Organising Committee, particularly Peter Pivonka, as well as members of the ANZSB Executive Committee, for their hard work in getting the ABC10 website up and running, setting up a program, organising excellent international speakers and many, many other behind the scene tasks. Please take a look at the ABC10 flyer included in this newsletter and visit the website for further information about the conference (<https://www.ivvy.com/event/ABC10/>). Most importantly, don't forget to submit your abstracts (deadline approaching! May 16th!) and register early to receive the early bird discount. Also, if you renew your ANZSB membership at the same time, you will receive a 20% discount on membership.

ANZSB is also contributing to organisation of **ISB2017**. Their website is also up and running (<http://www.biomech2017.com>) and you will notice that ANZSB has been distributing their newsletters to keep you updated about activities and key dates.

In this newsletter we also announce the **ANZSB publication of the year 2015**. This award highlights and celebrates the exceptional biomechanics research being conducted in ANZ Biomechanics community. Thank you to Rod Barrett for organising a team of independent, international biomechanics experts to review the applications and manuscripts to select the best paper, and well done to our winner (I won't spoil it – see over the page!).

Last but not least, we have some important expressions of interest coming up and we need you (yes you!) to put up your hand and volunteer for our great society. In this newsletter, we are calling for **expressions of interest to host ABC11**. I know ABC10 is still gearing up, but if possible we'd like to announce the host of ABC11 at the ABC10 meeting, so please discuss with your colleagues and seriously consider this great opportunity to organise our conference in your city (see below for details). In addition to the ABC11 EOI, we will shortly be calling for nominations for positions on the **next ANZSB Executive Committee**. We will hand over to the next committee at ABC10 in Melbourne, so in the meantime we will be calling for nominations and organising and counting votes. Please seriously consider putting up your hand to serve your society. If you're thinking about it but not sure what's involved, or if you want to ask other questions, please feel free to email me or post on the ANZSB facebook group. The call will come out soon so watch this space!

**Liz Clarke**

[elizabeth.clarke@sydney.edu.au](mailto:elizabeth.clarke@sydney.edu.au)

## Members in the News

Prof Julie Steele and the team from Wollongong and the Bionic Bras starred recently on Catalyst. Check out the story at <http://www.abc.net.au/catalyst/stories/4441863.htm>

Prof David Lloyd and the team at Griffith University explaining some of their work on tendon injury loading <https://au.news.yahoo.com/thewest/video/watch/30859494/bringing-an-end-of-to-debilitating-muscle-conditions-like-osteoarthritis/?cmp=st#page1>

A/Prof Thor Besier and colleagues from Auckland University on the development of an exoskeleton [http://www.nzherald.co.nz/technology/news/article.cfm?c\\_id=5&objectid=11556636](http://www.nzherald.co.nz/technology/news/article.cfm?c_id=5&objectid=11556636)

A/Prof David Eager from UTS talking about how danger can be good in a playground <http://www.adelaidenow.com.au/news/playground-safety-expert-associate-professor-david-eager-says-children-learn-by-being-exposed-to-controlled-risk/news-story/01f23f07c2a18610055f798bf3356e4d>

# ANZSB

## Publication of the Year

At the end of 2016 ANZSB decided to initiate a new award to recognise the high quality of journal publications by our members across a number of biomechanical fields. The award comprises of \$250 and a certificate. The award is judged purely on the quality of paper, with the award shared between all the co-authors.

There were six papers nominated for the award. Four finalist were selected by non-conflicted members of the executive committee which were then sent to two senior independent assessors in the field of Biomechanics with no conflicts of interest, one national and one international. Both commented that all papers were of high quality and the decision was difficult. However the result was unanimous with the inaugural winning being

Pizzolato, C., Lloyd, D. G., Sartori, M., Ceseracciu, E., Besier, T. F., Fregly, B. J., & Reggiani, M. (2015). CEINMS: A toolbox to investigate the influence of different neural control solutions on the prediction of muscle excitation and joint moments during dynamic motor tasks. *J Biomech*, 48(14), 3929-3936. doi: [10.1016/j.jbiomech.2015.09.021](https://doi.org/10.1016/j.jbiomech.2015.09.021)

Congratulations to all authors but in particular the ANZSB member Claudio Pizzolato and David Lloyd from Griffith University and Thor Besier from the University of Auckland

The paper is Open Access and the abstract is provided below

Personalized neuromusculoskeletal (NMS) models can represent the neurological, physiological, and anatomical characteristics of an individual and can be used to estimate the forces generated inside the human body. Currently, publicly available software to calculate muscle forces are restricted to static and dynamic optimisation methods, or limited to isometric tasks only. We have created and made freely available for the research community the Calibrated EMG-Informed NMS Modelling Toolbox (CEINMS), an OpenSim plug-in that enables investigators to predict different neural control solutions for the same musculoskeletal geometry and measured movements. CEINMS comprises EMG-driven and EMG-informed algorithms that have been previously published and tested. It operates on dynamic skeletal models possessing any number of degrees of freedom and musculotendon units and can be calibrated to the individual to predict measured joint moments and EMG patterns. In this paper we describe the components of CEINMS and its integration with OpenSim. We then analyse how EMG-driven, EMG-assisted, and static optimisation neural control solutions affect the estimated joint moments, muscle forces, and muscle excitations, including muscle co-contraction.



# abc10



**10<sup>th</sup> australasian biomechanics conference**  
December 4<sup>th</sup> - 6<sup>th</sup> 2016 Melbourne, Australia

**'MECHANOBIOLOGY ACROSS THE SCALES'**  
Showcasing the latest in Biomechanics Research

**10<sup>th</sup> Biennial Scientific Meeting of the Australian  
New Zealand Society of Biomechanics**  
University of Melbourne, Australia



**ANZSB**  
anzsb.asn.au



THE UNIVERSITY OF  
**MELBOURNE**



## KEYNOTE SPEAKERS

**Prof. Ralph Müller**

Director of Institute for Biomechanics  
Dept. Health Sciences & Technology  
ETH Zürich, Switzerland



**A/Prof. David Cooper**

Canada Research Chair, Bone Imaging  
Dept. of Anatomy and Cell Biology  
University of Saskatchewan, Canada



## CONTACT

[abc-10@unimelb.edu.au](mailto:abc-10@unimelb.edu.au)  
[www.ivvy.com/event/ABC10](http://www.ivvy.com/event/ABC10)



For more details visit <https://www.ivvy.com/event/ABC10/>

# Up Coming Conferences

Conference	Venue	Date	Abstracts Due
<a href="#">International Foot &amp; Ankle Biomechanics (iFAB)</a>	Berlin	23-25 June 2016	Passed
<a href="#">International Society of Electrophysiology and Kinesiology</a>	Chicago	6-8 July 2016	Passed
<a href="#">European College of Sports Science</a>	Vienna	6-9 July 2016	Passed
<a href="#">European Society of Biomechanics</a>	Lyon	10-13 July 2016	Passed
<a href="#">International Society of Biomechanics in Sports</a>	Tsukuba	18-22 July 2016	Passed
<a href="#">Expert Scientific Meeting</a>	Lisbon	27-30 July 2016	Passed
<a href="#">American Society of Biomechanics</a>	Raleigh	2-5 August	Passed
<a href="#">Sports Medicine Australia</a>	Melbourne	12-15 October 2016	20th April 2016
<a href="#">International Conference on NeuroRehabilitation/International Workshop on Wearable Robotics</a>	Segovia	18-21 October 2016	Passed
<a href="#">ANZ Orthopaedic Research Society (ANZORS)</a>	Melbourne	13-15 October 2016	TBC
<a href="#">Australian Biomedical Engineering Conference</a>	Brisbane	30 Oct—2 Nov 2016	TBC
<a href="#">Australasian Biomechanics Conference 10 (ABC10)</a>	Melbourne	4-6 December 2016	16 May 2016
<a href="#">IOC World Congress on Prevention of Injury and Illness in Sport</a>	Monaco	16-18 March 2017	1 September 2016
<a href="#">International Society of Biomechanics</a>	Brisbane	23-27 July 2017	13 January 2017

**Check out the latest information about ISB 2017**

<http://www.biomech2017.com/news/3.html>

# Call for proposals to host ABC11

The executive board of the Australian & New Zealand Society of Biomechanics (ANZSB) invites proposals from organisations interested in hosting the 11th Australasian Biomechanics Conference (ABC11) scheduled to be held in late 2018.

The aim of ABC is to bring together researchers engaged in the scientific study and application of biomechanics to share, listen to, and actively discuss their most recent findings in order to promote the exchange of ideas and stimulate further cutting edge biomechanics research. Since the first conference in 1996, ABC has gained a reputation as a venue for high quality research presented in a welcoming community setting, with a particular focus on student and ECR engagement. Potential hosts of ABC should therefore consider creating a student-friendly conference as a central principle in their bid.

ANZSB will select a host and location from the proposals that are received in response to this call. Proposals should be submitted by ANZSB members affiliated with a university, agency, or institution. An Expression of Interest to host ABC11 should be made, in writing, to the Conference Liaison Officer. **If you would like to host ABC11**, please discuss your interest with Karen Mickle in the first instance, and submit your formal expression of interest **by July 31, 2016** to [Karen.Mickle@vu.edu.au](mailto:Karen.Mickle@vu.edu.au)(03 9919 5611).

## Travel Awards Now Open

As part of our ongoing mission to support young and upcoming researchers we are now calling applications for student travel awards. There will be one award of \$500 to support travel to one of the following 2016 conferences:

International Society of Biomechanics in Sport  
American Society of Biomechanics  
European Society of Biomechanics  
International Society of Electromyography and Kinesiology

To be eligible you must

- Be currently enrolled in a higher degree by research course
- Be a member of ANZSB as well as your supervisor being a member. To become a member please visit <http://www.anzsb.asn.au/membership/membership.htm>
- Be the presenting author, must attend the conference, must acknowledge support from ANZSB in their presentation, and be willing to write a review of the conference for an ANZSB newsletter

To submit an application submit the following to Professor Rob Herbert (ANZSB Secretary/Treasurer) at [austnzbiomech@gmail.com](mailto:austnzbiomech@gmail.com) by 13th of May. You should receive a confirmation email.

- Your abstract (including title and author list)
- Confirmation of acceptance at the conference
- the name of your university and supervisor.

Winners will be notified by email and the ANZSB communication channels.

