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25<sup>th</sup> Congress of the European Society of Biomechanics

July 7 – 10, 2019

The University of Vienna, Austria



IET Travel Award 2019 (May round)

Award value: £500

### **Short Synopsis**

First, I would like to offer my profound gratitude to the Institution of Engineering and Technology Postgraduate and Travel Award Panel for granting me the £500 travel award. The money was used to cover my flights and accommodation, without which I would not have been able to attend the 25<sup>th</sup> Congress of the European Society of Biomechanics in Vienna, Austria.

My attendance and participation on this congress has made an immense contribution towards my research as I was able to gain insights on how I can improve my research methods to make my work more robust. I was also able to gain a better understanding of the research techniques I will be working on during my planned visit to the University of Melbourne next year.

Overall, it was an educative and fulfilling experience that would not have been possible without the travel award grant from the IET

### **Main Report**

The European Society of Biomechanics (ESB) was founded in 1976 at a meeting of 20 scientists. The goal of the ESB was “to encourage, foster, promote and develop research, progress and information concerning the science of Biomechanics”. In light of this, the society holds an annual international scientific conference to provide the most up to date research in biomechanics and to provide a forum of discussion. The 2019 edition was held at the University of Vienna, Austria, from 7 to 10 July. Researchers from various fields related to Biomechanics attend to present their current research either as a podium or poster presentation and to learn about the work of their fellow scientists. The ESB 2019 conference chairmen were Phillipp Thurner, Dieter Pahr and Christian Hellmich.

Podium and poster presentations were divided into different tracks covering different aspects of biomechanics like ageing, animal biomechanics, biomaterials, biotribology and biorheology, cardiovascular biomechanics and computational biology, amongst others.

The keynote lectures were both enlightening and versatile in nature. Dr Kalpana Katti’s team in North Dakota State University is currently working on the engineering a viable cancer test bed that can replicate humanoid conditions to allow scientists gain a better understanding of how cancer cells metastasise particularly in breast and prostate cancer. This would go a long way towards helping scientist develop anti-cancer drugs and reduce cancer mortalities particularly since metastasis of cancer cells is the leading cause of cancer mortalities.

The highlight of the keynote lectures was that by Dr Laurence Vico, Research Director at INSERM. Her research has shown that spaceflight can be linked to loss of bone and muscle volume, which is never fully regained upon landing. Actually, bone mass in less weight bearing segments of the skeleton are known to continue deteriorating after landing. She is working on fully understanding how spaceflight affects the musculoskeletal system in order to develop

countermeasures. It was interesting to learn about how spaceflights can lead to changes in our musculoskeletal system.

As a budding researcher, attending the congress exposed me to different areas of biomechanics, giving me the opportunity to network as well as develop new research interests. The presentation by Dr Dale Robinson was of particular interest as it was related to my work on the use of acoustic emission in orthopaedics. His presentation as well as the conversation we had afterwards was enlightening. I now have further ideas on new methods that I can incorporate in my research especially for the analysis of result. Networking with him was also beneficial as he is a part of the team I would be working with at the University of Melbourne during my research visit next year.

The presentation by Maria Luia Ruspi from Universita di Bologna in Italy was also beneficial as it was on using Digital Image Correlation (DIC) to measure full field surface strain in porcine intervertebral discs. DIC involves the use of image analysis for full field deformation and strain measurement. It has been used in the strain analysis of bones and implants as well as in the validation of patient-specific implants. The research I plan to carry out at University of Melbourne next week would involve using DIC in the mechanical characterisation of lumbar spinal implant materials and her presentation provided me with further insights on how the technique works and other possible applications.

During the biotribology and biorheology session, I presented my work on the use of acoustic emission in monitoring biotribological phenomena of artificial joints. The diverse nature of the presentations in that session gave me an opportunity to find out about other research in biotribology that I hadn't come across previously such as the work by Professor Seunghwan Lee on the biotribological properties of mucins and mucus.

In addition to the presentations, there was also a congress dinner and student night out. These two social events gave the attendees a chance to experience life in Vienna. We were able to see iconic venues such as TUtheSky and Vienna town hall. The social settings also allowed us to network with other attendees in an informal setting allowing for a more relaxed discussion and exchanging of research ideas.

Overall, attending the 25<sup>th</sup> Congress of the European Society of Biomechanics was a fulfilling, rewarding and enlightening experience. I am thankful to the IET for providing me with the required funding.