



Eng Kuan Moo  
Postdoctoral fellow  
Human Performance Laboratory  
University of Calgary, Canada  
Telephone: +1 403-220 5450  
Email: [ekmoo@ucalgary.ca](mailto:ekmoo@ucalgary.ca)

**Current Position:**

Postdoctoral fellow – Supervisor: Dr. Walter Herzog  
Co-supervisor: Dr. Salvatore Federico

University of Calgary: May 2014 – Present ([http://www.ucalgary.ca/knes\\_info/profiles/eng-kuan-moo](http://www.ucalgary.ca/knes_info/profiles/eng-kuan-moo))

*Projects:*

1. The role of collagen fibers in protection of cartilage cell during impact loading
2. Sarcomere contractile dynamics observed in whole muscle of live animal using second harmonic-generation imaging
3. Three-dimensional micro-strain measurement in live cartilage

**Education:**

University of Malaya: Feb 2010 – April 2014

PhD. Biomedical Engineering – Supervisors: Dr. Belinda Murphy, Dr. Noor Azuan Abu Osman  
*Thesis*: In situ and in vitro chondrocyte biomechanics (Distinction Award)

University of Calgary: Oct 2012 – Dec 2013

Visiting Trainee – Supervisor: Dr. Walter Herzog,  
Co-supervisor: Dr. Salvatore Federico

*Project*: The role of extracellular matrix integrity in chondrocyte response to mechanical loading

University of Calgary: Sep 2011 – Aug 2012

Visiting Trainee – Supervisors: Dr. Walter Herzog,  
Co-supervisor: Dr. Salvatore Federico, Dr. Matthias Amrein

*Project*: Strain-rate dependence of membrane reservoir in chondrocytes

University of Calgary: May 2010 – Nov 2010

Visiting Trainee – Supervisors: Dr. Walter Herzog,  
Co-supervisors: Dr. Salvatore Federico, Dr. SangKuy Han

*Project*: Finite Element (FE) analysis of in situ chondrocyte response to different loading rate

University of Malaya: July 2005 – May 2009

Beng, Biomedical (Honours) - Supervisor: Dr. Noor Azuan Abu Osman

*Final year project*: Interface pressure profile analysis for patellar-tendon-bearing (PTB) socket and hydrostatic socket

**Highlighted Achievements:**

1. AIHS postdoctoral fellowship (CAD 55,000/year, renewable up to 3 years), Canada, 2016
2. CIHR postdoctoral fellowship (CAD 135,000/ 3 years), Canada, 2015
3. Finalist of the New Investigator Recognition Award (NIRA), Orthopaedic Research Society (ORS), Las Vegas, United States, 2015
4. Doctoral Thesis with Distinction, University of Malaya, Malaysia, 2014
5. David Winter Young Investigator Award (podium), International Society of Biomechanics, Natal, Brazil, 2013

**Main Research Interests:***Tissue Mechanics*

Mechanical behaviour of articular cartilage in response to cyclic loading and impact loading

Mechanism of progressive degradation of cartilage due to the formation of tissue lesion

*Cell Mechanics*

Cell morphological changes in response to mechanical loading

Cell membrane properties (membrane reservoir)

Mechanism of cell death at different loading rates

Multi-scale modeling of cell-matrix interaction

Distribution of sarcomere (functional unit of muscle) spacing in a whole muscle

*Imaging*

Confocal, dual photon and second harmonic generation (SHG) imaging of cartilage and chondrocytes as well as muscle and sarcomeres

Atomic force imaging of cell membrane properties

Transmission electron nano-imaging of membrane morphology

**Articles in Refereed International Journals – In Press**

1. Powers, K., Joumaa, V., Jinha, A., **Moo**, E. K., Smith, I. C., Nishikawa, K., Herzog, W. (2017) Titin force enhancement following active stretch of skinned skeletal muscle fibers. *Journal of Experimental Biology*, doi: 10.1242/jeb.153502 (In Press)

**Articles in Refereed International Journals – Published**

1. **Moo**, E. K., Peterson, D. R., Leonard, T. R., Kaya, M., Herzog, W. (2017) In vivo muscle force and muscle power during near-maximal frog jumps. *Plos One*, 12(3), doi: e0173415, 10.1371/journal.pone.0173415
2. **Moo**, E. K., Herzog, W. (2017) Unfolding of membrane ruffles protects chondrocytes against death. *Journal of Orthopaedic Research*, 35(2), 302-310, doi: 10.1002/jor.23260
3. **Moo**, E.K., Fortuna, R., Sibole S.C., Abusara, Z., Herzog, W. (2016) In vivo sarcomere lengths and sarcomere elongations are not uniform across an intact muscle. *Frontiers in Physiology (Striated Muscle Physiology)*, 7:187, doi: 10.3389/fphys.2016.00187
4. Bourne, D., **Moo**, E. K., Herzog, W. (2015). Cartilage and chondrocyte response to extreme muscular loading and impact loading. Can in vivo pre-load decrease impact-induced cell death? *Clinical Biomechanics*, 30(6), 537-545, doi: 10.1016/j.clinbiomech.2015.04.009
5. **Moo**, E.K., Han, S.K., Federico, S., Sibole, S.C., Jinha, A., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. (2014). Extracellular matrix integrity affects the mechanical behaviour of in-situ chondrocytes under compression. *Journal of Biomechanics*, 47(5), 1004-1013, doi: 10.1016/j.jbiomech.2014.01.003
6. **Moo**, E.K., Amrein, M., Epstein, M., Duvall, M., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. (2013). The properties of chondrocyte membrane reservoirs and their role in impact-induced cell death. *Biophysical Journal*, 105(7), 1590-1600, doi: 10.1016/j.bpj.2013.08.035
7. **Moo**, E.K., Abusara, Z., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. (2013). Dual photon excitation microscopy and image threshold segmentation in live cell imaging during compression testing. *Journal of Biomechanics*, 46(12), 2024-2031, doi: 10.1016/j.jbiomech.2013.06.007

8. **Moo**, E. K., Herzog, W., Han, S. K., Abu Osman, N. A., Pinguan-Murphy, B., Federico, S. (2012). Mechanical behaviour of in-situ chondrocytes subjected to different loading rates: a finite element study. *Biomechanics and Modeling in Mechanobiology*, 11(7), 983-93, doi: 10.1007/s10237-011-0367-2
9. **Moo**, E. K., Abu Osman, N. A., Pinguan-Murphy, B.(2011). The metabolic dynamics of cartilage explants over a long-term culture period, *Clinics (Sao Paulo)*, 66 (8), 1431-36, doi: 10.1590/S1807-59322011000800021
10. **Moo**, E. K., Abu Osman, N. A., Pinguan-Murphy, B., Wan Abas, W. A. B., Spence, W. D., Solomonidis, S. E. (2009). Interface pressure profile analysis for patellar tendon-bearing socket and hydrostatic socket. *Acta of Bioengineering and Biomechanics / Wrocław University of Technology*, 11(4), 37-43.

### Abstracts Published in Refereed Conference Proceedings

1. **Moo**, E. K., Leonard T. R., Herzog, W. In vivo sarcomere length distribution during a tetanic contraction. XXVI Congress of the International Society of Biomechanics (Brisbane, Australia, July 23- 27, 2017)- poster presentation
2. **Moo**, E. K., Sibole, S. C., Han, S. K., Herzog, W. In situ mapping of three-dimensional strain in live cartilage. XXVI Congress of the International Society of Biomechanics (Brisbane, Australia, July 23- 27, 2017)- poster presentation
3. **Moo**, E. K., Sibole, S.C., Han, S.K., Herzog, W. In situ mapping of three-dimensional strain in live cartilage using multi-photon microscopy. 4<sup>th</sup> Annual McCaig Meeting on Musculoskeletal Diseases (University of Calgary, Canada, May 12<sup>th</sup>, 2017) – podium presentation
4. **Moo**, E. K., Sibole, S.C., Herzog, W. A novel imaging approach for morphological analysis of the pericellular matrix in live cartilage. Orthopaedic Research Society (ORS) 2017 Annual Meeting (San Diego, California, United States, March 19<sup>th</sup>- 22<sup>nd</sup>, 2017) - poster presentation.
5. **Moo**, E. K., Sibole, S.C., Han, S. K., Herzog, W. Three-dimensional micro-scale strain mapping in live cartilage. Orthopaedic Research Society (ORS) 2017 Annual Meeting (San Diego, California, United States, March 19<sup>th</sup>- 22<sup>nd</sup>, 2017) - poster presentation.
6. **Moo**, E. K., Leonard, T.R., Herzog, W. Increased non-uniformity in *in vivo* sarcomere length during a tetanic contraction. Biophysical Society 61<sup>st</sup> Annual Meeting (New Orleans, Louisiana, United States, February 11<sup>th</sup>- 15<sup>th</sup>, 2017) - poster presentation #573
7. **Moo**, E. K., Fortuna, R., Abusara, Z., Herzog, W. *In vivo* sarcomere length and sarcomere elongations are not uniform. Proceedings of the 19th Biennial Meeting of the Canadian Society of Biomechanics (Hamilton, Canada, July 19<sup>th</sup>-22<sup>th</sup>, 2016)- podium presentation.
8. **Moo**, E. K., Fortuna, R., Abusara, Z., Herzog, W. Sarcomere length and passive sarcomere lengthening are location-dependent in live mouse tibialis anterior muscle. Biophysical Society 60<sup>th</sup> Annual Meeting (Los Angeles, California, United States, February 27<sup>th</sup>- March 2<sup>nd</sup>, 2016) - poster presentation #B457
9. Kuznetsova, S., Villemure, I., Abusara, Z., **Moo**, E. K., Al-Saffar, Y., Herzog, W. In situ chondrocyte viscoelasticity following static and dynamic compressions. Proceedings of the 16<sup>th</sup> Annual Alberta Biomedical Engineering Conference (Banff, Canada, November 6<sup>th</sup>- 8<sup>th</sup>, 2015)- poster presentation #27.

10. **Moo**, E. K., Kuznetsova, S., Herzog, W. Adaptation of chondrocytes to mechanical compression: are membrane ruffles unfolded for cell protection? XXV Congress of the International Society of Biomechanics (Glasgow, United Kingdom, July 12<sup>th</sup>- 16<sup>th</sup>, 2015)- podium presentation
11. **Moo**, E. K., Sibole, S. C., Herzog, W. A novel approach to visualise the morphology of pericellular matrix in live cartilage. XXV Congress of the International Society of Biomechanics (Glasgow, United Kingdom, July 12<sup>th</sup>- 16<sup>th</sup>, 2015)- podium presentation
12. **Moo**, E. K., Amrein, M., Epstein, M., Duvall, M., Abu Osman, N. A., Pinguan-Murphy, B., Herzog, W. Strain rate-dependent membrane reservoir- key to chondrocyte death by impact. 2<sup>nd</sup> Annual Alberta Nanotechnology Symposium (Banff, Canada, May 30<sup>th</sup>-31<sup>st</sup>, 2015) - podium presentation
13. **Moo**, E. K., Kuznetsova, S., Herzog, W. Adaptation of chondrocytes to mechanical compression: are membrane ruffles unfolded for cell protection? 2<sup>nd</sup> Annual McCaig Meeting on Musculoskeletal Diseases (University of Calgary, Canada, May 8<sup>th</sup>, 2015) – podium presentation
14. **Moo**, E. K., Herzog, W. Protective mechanism adopted by chondrocytes through unfolding of surface ruffles during mechanical compression. Orthopaedic Research Society (ORS) 2015 Annual Meeting (Las Vegas, Nevada, United States, March 28<sup>th</sup>- 31<sup>st</sup>, 2015)- poster, finalist of New Investigator Recognition Award (NIRA).
15. Kuznetsova, S., Villemure, I., Abusara, Z., **Moo**, E. K., Al-Saffar, Y., Herzog, W. In situ chondrocyte mechanics following static and dynamic compressive stresses. Proceedings of the 15<sup>th</sup> Annual Alberta Biomedical Engineering Conference (Banff, Canada, October 24<sup>th</sup>- 26<sup>th</sup>, 2014)- poster presentation #21.
16. **Moo**, E. K., Han, S. K., Federico, S., Sibole, S.C., Jinha, A., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. Extracellular matrix integrity affects the mechanical behaviour of in-situ chondrocytes under compression. VII World Congress of Biomechanics (Boston, Massachusetts, United States, July 6<sup>th</sup>- 11<sup>th</sup>, 2014)- poster presentation
17. **Moo**, E. K., Amrein, M., Epstein, M., Duvall, M., Abu Osman, N. A., Pinguan-Murphy, B., Herzog, W. Strain rate-dependent membrane reservoir- key to chondrocyte death by impact. Biophysical Society 58<sup>th</sup> Annual Meeting (San Francisco, California, United States, February 15<sup>th</sup>- 19<sup>th</sup>, 2014) - podium presentation
18. **Moo**, E. K., Pinguan-Murphy, B., Abu Osman, N. A., Herzog, W. The role of chondrocyte membrane reservoirs in buffering membrane strain. Proceedings of the 14<sup>th</sup> Annual Alberta Biomedical Engineering Conference, 90. (Banff, Canada, October 25<sup>th</sup>-27<sup>th</sup>, 2013)- podium presentation.
19. **Moo**, E. K., Han, S. K., Federico, S., Jinha, A., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. Structural integrity of extracellular matrix influences the mechanical behaviour of in-situ chondrocytes. XXIV Congress of the International Society of Biomechanics (Natal, Rio Grade do Norte, Brazil, August 4<sup>th</sup>- 9<sup>th</sup>, 2013)- podium presentation
20. **Moo**, E. K., Amrein, M., Duvall, M., Abu Osman, N. A., Pinguan-Murphy, B., Herzog, W. strain rate dependence of cell membrane reservoir is key to impact-induced chondrocyte death. XXIV Congress of the International Society of Biomechanics (Natal, Rio Grade do Norte, Brazil, August 4<sup>th</sup>- 9<sup>th</sup>, 2013)- podium presentation, awarded David Winter Young Investigator Award

21. **Moo**, E. K., Han, S. K., Federico, S., Jinha, A., Abusara, Z., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. Effect of structural damage of extracellular matrix on the mechanical behavior of in-situ chondrocytes. Proceedings of the 11th International Symposium, Computer Methods in Biomechanics and Biomedical Engineering (Salt Lake City, Utah, United States, April 3<sup>rd</sup>- 7<sup>th</sup>, 2013)- podium presentation.
22. **Moo**, E. K., Amrein, M., Abu Osman, N. A., Pinguan-Murphy, B., Herzog, W. Chondrocyte Membrane Mechanics at Different Loading Rates. Orthopaedic Research Society (ORS) 2013 Annual Meeting (San Antonio, Texas, United States, January 26<sup>th</sup>- 29<sup>th</sup>, 2013)- poster.
23. **Moo**, E. K., Han, S. K., Jinha, A., Abusara, Z., Federico, S., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. Mechanics of in-situ Chondrocytes Near Cartilage Lesions: Experimental and Finite Element Study. Orthopaedic Research Society (ORS) 2013 Annual Meeting (San Antonio, Texas, United States, January 26<sup>th</sup>- 29<sup>th</sup>, 2013)- poster.
24. **Moo**, E. K., Amrein, M., Abu Osman, N. A., Pinguan-Murphy, B., Herzog, W. Chondrocyte Membrane Mechanics at Different Loading Rates. Proceedings of the 13<sup>th</sup> Annual Alberta Biomedical Engineering Conference, 103. (Banff, Canada, October 19<sup>th</sup>-21<sup>st</sup>, 2012)- podium presentation.
25. **Moo**, E. K., Han, S. K., Jinha, A., Abusara, Z., Abu Osman, N.A., Pinguan-Murphy, B., Herzog, W. Boundary Conditions Affect Mechanical Behaviour of *in-situ* Chondrocytes. 36<sup>th</sup> Annual Meeting of the American Society of Biomechanics (Gainesville, Florida, United States, August 15<sup>th</sup>-18<sup>th</sup>, 2012)- poster.
26. **Moo**, E. K., Federico, S., Han, S. K., Abu Osman, N. A., Pinguan-Murphy, B, Herzog, W. Articular Chondrocyte Mechanics at Different Loading Rates. Proceedings of the 17th Biennial Meeting of the Canadian Society of Biomechanics (Vancouver, Canada, June 6<sup>th</sup>- 9<sup>th</sup>, 2012 )- poster.
27. **Moo**, E. K., Herzog, W., Han, S. K., Abu Osman, N. A., Pinguan-Murphy, B., Federico, S. In-situ Chondrocyte Mechanics at Different Loading Rates: A Finite Element Study. Proceedings of the 12<sup>th</sup> Annual Alberta Biomedical Engineering Conference, 29. (Banff, Canada, October 21<sup>st</sup>-23<sup>rd</sup>, 2011) )- podium presentation.
28. **Moo**, E. K., Abu Osman, N. A., Pinguan-Murphy, B., Han, S. K., Federico, S., Herzog, W. (2011). Mechanical Behavior of in-situ Chondrocyte at Different Loading Rates: A Finite Element Study. Biomed2011, IFMBE Proceedings 35, 182-186. (Kuala Lumpur, Malaysia, June 20<sup>th</sup> -23<sup>rd</sup>, 2011)- podium presentation.
29. **Moo**, E. K., Han, S. K., Federico, S., Herzog, W. (2010). Computational Modeling of Chondrocyte Mechanics at Different Loading Rates. Proceedings of the 11<sup>th</sup> Annual Alberta Biomedical Engineering Conference, 28 (Banff, Canada, October 22-24, 2010)- podium presentation.

## Book

1. Abu Osman, N.A., Yusof, N., **Moo**, E.K. An Integrated Approach for 3D Model: Theoretical Background (2010) Pearson Malaysia, Prentice Hall Publication. ISBN 978-967-349-035-6, url={<http://books.google.ca/books?id=wEIAngEACAAJ>}

**Awards and Honours**

<b>Prize/Honors/Award</b>	<b>Awarded By</b>	<b>Location/ Provincial, National, or International</b>	<b>Year Won/Held</b>
AIHS postdoctoral fellowship (CAD 5,000/year, renewable up to 3 years)	Alberta Innovates Health Solutions (AIHS)	Calgary, Canada/ Provincial	February 2016
NSERC CREATE Travel Award (CAD 1,000)	NSERC CREATE	Calgary, Canada/Local	June 2015
CIHR postdoctoral fellowship (CAD 135,000/3 years)	Canadian Institutes of Health Research (CIHR)	Calgary, Canada/National	May 2015
New Investigator Recognition Award- finalist	2015 Annual Meeting of Orthopaedic Research Society (ORS)	Las Vegas, USA/ International	March 2015
NSERC Collaborative Research and Training Experience (CREATE) Postdoctoral fellowship (CAD 10,000)	National Sciences and Engineering Research Council of Canada (NSERC)	Calgary, Canada/ Local	September 2014 – August 2015
Alberta Osteoarthritis (OA) Team Grant Studentship (CAD 10,000)	Alberta Osteoarthritis Team Grant	Calgary, Canada/ Provincial	July 2014 – December 2014
NSERC CREATE Travel Award (CAD 500)	NSERC CREATE	Calgary, Canada/ Local	July 2014
Alberta Osteoarthritis (OA) Team Grant Travel Award (CAD 800)	Alberta Osteoarthritis Team Grant	Calgary, Canada/ Provincial	July 2014
International Relations Committee Travel Award (USD 750)	Biophysical Society (58 <sup>th</sup> Annual Meeting)	San Francisco, USA/ International	February 2014
International Society of Biomechanics (ISB) Student Congress Travel Grant (CAD 1,000)	International Society of Biomechanics (XXIV Annual Congress)	Natal, Brazil/ International	August 2013
David Winter Young Investigator Award (Best	International Society of Biomechanics	Natal, Brazil/ International	August 2013



Podium Presentation) (USD 750)	(XXIV Annual Congress)		
Canadian Society of Biomechanics (CSB) Student Travel Award (CAD 350)	Canadian Society of Biomechanics (17 <sup>th</sup> Biennial Meeting)	Calgary, Canada/ National	July 2012
Alberta Osteoarthritis (OA) Team Grant Travel Award (CAD 850)	Alberta Osteoarthritis Team Grant	Calgary, Canada/ Provincial	May 2012
Most Outstanding Podium Award- third prize (CAD 100)	Alberta Biomedical Engineering Conference (12 <sup>th</sup> Annual Meeting)	Banff, Canada/ Provincial	October 2011
International Society of Biomechanics (ISB) Student Travel Award- for visiting laboratory in University of Calgary (USD 2,500)	International Society of Biomechanics (ISB)	Kuala Lumpur, Malaysia/ International	2011
Travel grant (eq. 3,400)	Malaysia University of Malaya/ Ministry of High Education High Impact Research grant	Kuala Lumpur, Malaysia/ Local	May 2010
Postgraduate Research Grant (no: PS108/2010A) (eq. CAD 9,092)	University of Malaya, Institute of Graduate Study	Kuala Lumpur, Malaysia/ Local	April 2010 – October 2011
University of Malaya Fellowship Scheme (eq. 28,560)	University of Malaya, Institute of Graduate Study	Kuala Lumpur, Malaysia/ Local	February 2010 – August 2013
Dean Certificate	University of Malaya, Faculty of Engineering	Kuala Lumpur, Malaysia/ Local	Semester I 05/06, Semester II 05/06, Semester I 07/08, Semester I 08/09
High Distinction in Malaysian National Chemistry Quiz	Malaysian Chemistry Institution, with collaboration of Ministry of Education Malaysia	Johor, Malaysia/ National	2001

\* Conversion rate from Malaysian (MYR) to Canadian (CAD) currency: 0.34

#### Referee for International Scientific Journal

1. Biophysical Journal
2. Journal of the Mechanical Behavior of Biomedical Materials
3. Biomechanics and Modeling in Mechanobiology
4. Journal of Biomechanics
5. Proceedings of the Institution of Mechanical Engineers (Meche), Part H: Journal of Engineering in Medicine
6. Journal of Tissue Engineering and Regenerative Medicine
7. Arthritis Research & Therapy
8. Transaction on Neural Systems and Rehabilitation Engineering
9. Plos One

### **Referee for Conference Abstracts**

1. XXIV Congress of the International Society of Biomechanics (ISB) 2013

### **Memberships**

1. Year 2010-present, International Society of Biomechanics (ISB)
2. Year 2012-present, Canadian Society of Biomechanics (CSB)
3. Year 2012-present, American Society of Biomechanics (ASB)
4. Year 2013-present, Biophysical Society
5. Year 2014-present, Orthopaedic Research Society (ORS)

### **Seminars and invited talks**

1. Research talk at the Roger Jackson Center Meeting, titled 'Mechanobiology of articular cartilage during impact loading', at the University of Calgary, Nov 1<sup>st</sup>, 2016
2. Demonstration to SHAD high school students in the Human Performance Laboratory, titled 'The magic of light filter' at the University of Calgary, July 12<sup>th</sup>, 2016
3. Human Performance Laboratory (HPL) Seminar, titled "In vivo striation pattern of muscle: why do we care?" , at the University of Calgary, Canada, June 16th, 2016
4. Postdoctoral Seminar Series (3min/3slides), titled "How strong is the cell membrane as the first line of defense for cartilage cells", at the University of Calgary, Canada, November 24<sup>th</sup>, 2015
5. Arthritis Awareness night, organized by the Arthritis Club at University of Calgary, titled 'Membrane ruffles – why cells need them' on October 8<sup>th</sup>, 2015
6. Academic talk at University of Malaya, titled "How does cell membrane protect cartilage cells" on March 4<sup>th</sup>, 2015
7. Human Performance Laboratory biannual open house, titled 'Multi-photon microscopy' on Oct 15<sup>th</sup>, 2014
8. Arthritis Awareness night, organized by the Arthritis Club at University of Calgary, titled 'The concept of membrane reservoir and its role in impact-induced cell death' on October 9<sup>th</sup>, 2014
9. Human Performance Laboratory open house in conjunction with 'International Calgary Running Symposium', titled 'How does cartilage and its cells behave during walking/running?' on August 15<sup>th</sup>, 2014
10. Human Performance Laboratory (HPL) Seminar, titled "Strain rate dependence of cell membrane reservoir is key to impact-induced chondrocyte death" , at the University of Calgary, Canada, September 12th, 2013



11. Human Performance Laboratory (HPL) Seminar, titled “How impact loading causes articular cartilage cell death”, at the University of Calgary, Canada, January 24th, 2013
12. Osteoarthritis (OA) team meeting- trainee presentation, Edmonton, Canada, October 16th, 2012
13. Seminar in Department of Biomedical Engineering, University of Malaya, Malaysia, October 11th, 2012

### **Academic Experience:**

1. Leadership experience
  - a. Co-supervision of research project (undergraduate level)
    - (i) Mr. Koen Wishaupt, the Hague University, Netherlands (& University of Amsterdam)  
Visiting undergraduate student (Aug 29 - Dec 9, 2016) under IEC Program (International Experience Canada)  
Primary supervisor: Dr. Walter Herzog  
Research title: Understanding the failure mechanism of collagen fibril network in articular cartilage
    - (ii) Mr. Dening Wang, Schulich School of Engineering, University of Calgary, Canada  
NSERC CREATE summer research 2015  
Primary supervisor: Dr. Walter Herzog  
Research title: Phototoxic effect of Calcium imaging in in-situ chondrocytes
    - (iii) Mr. Kiril Benov, Faculty of Kinesiology, University of Calgary, Canada  
Final year Honors Research Project, Year 2014/2015  
Primary supervisors: Dr. Walter Herzog  
Research title: Effect of cartilage tissue cracks on in situ chondrocyte mechanics
    - (iv) Ms. Svetlana Kuznetsova, Department of Physics and Astronomy, University of Calgary, Canada  
NSERC CREATE summer research 2014  
Primary supervisors: Dr. Walter Herzog, Dr. Ziad Abusara, Dr. Isabelle Villemure  
Research title: In situ chondrocyte mechanics following static and dynamic compressive stresses
    - (v) Mr. Manu Jacob George, Department of Biological Sciences, Zoology, University of Calgary, Canada  
Final Year Honors Research Project (530), Year 2013/2014  
Primary supervisor: Dr. Walter Herzog  
Research title: Effect of cyclic loading on mechanical properties of articular cartilage under extreme exercise regime
  - b. Co-supervision of research project (Graduate level)
    - (i) Mr. Robbin Romijnders, Department of Biomedical Engineering, Eindhoven University of Technology  
Visiting Master student (Aug 2013 - Dec 2013)  
Primary supervisor: Dr. Walter Herzog  
Research title: Cartilage cell mechanics near lesions when subject to indentation testing: Developing a three-dimensional biphasic Finite Element model
  - c. Postdoctoral representative in the Faculty of Kinesiology Strategic Research and Innovation Committee (SRIC), year 2015- 2017
  - d. Postdoctoral representative for Faculty of Kinesiology in the Postdoctoral Association of the University of Calgary (PDAC), year 2015- 2017
  - e. Trainee Leaders Committee (TLC) in Osteoarthritis (OA) Team, division of Ethics and Biostatistics Committee, year 2014

- f. Trainee Leaders Committee (TLC) in Osteoarthritis (OA) Team, division of Project Coordination Committee, year 2013
2. Guest Lecture
    - KNES 393 – Research seminar I
      - Discussion about the seminar given in Human Performance Laboratory seminar series
      - One class (April 6, 2017)
    - KNES 259 – Human Anatomy & Physiology I
      - Introduction of muscle physiology
      - Two classes (June 25<sup>th</sup>, June 27<sup>th</sup>, 2016)
    - BMEN 301- Introduction to Biomedical Engineering
      - Touring of Human Performance Laboratory (introducing motion capture system, ultrasound imaging, and multi-photon laser scanning microscopy)
      - Two classes (October 20<sup>th</sup>, October 27, 2015)
    - KNES 363 – Biomechanics of Biological Materials
      - Introduction of the structure, composition and function of articular cartilage
      - Two classes (November 26<sup>th</sup>, December 1<sup>st</sup>, 2015)
  3. Program organizer
    - a. Leader of the organizing committee of the monthly postdoctoral seminar series (3min/3slides) in the Faculty of Kinesiology, University of Calgary, starting from November 2015- present
    - b. Organizing committee of the professional development event entitled “Roundtable Discussion for Academic Interview”, held on January 19<sup>th</sup>, 2016
    - c. Organizing committee of the 9<sup>th</sup> annual Biomedical Engineering and NSERC CREATE Summer Research symposium, held on August 18<sup>th</sup>, 2015
    - d. Co-coordinator of the Kinesiology undergraduate poster competition in ‘Science in Seconds’ event, held on January 21<sup>st</sup>, 2015
  4. Other volunteering events
    - a. Podium session chair for the 17<sup>th</sup> Annual Alberta Biomedical Engineering Conference (Banff, Canada, October 21<sup>st</sup>-23<sup>rd</sup>, 2016)
    - b. Podium session chair for the 19<sup>th</sup> Biennial Meeting of the Canadian Society of Biomechanics (Hamilton, Canada, July 19<sup>th</sup>-22<sup>th</sup>, 2016)
    - c. Reviewer of the Kinesiology’s Undergraduate NSERC USRA applications, 2016
    - d. Podium session chair for the 16<sup>th</sup> Annual Alberta Biomedical Engineering Conference (Banff, Canada, November 6<sup>th</sup>-8<sup>th</sup>, 2015)
    - e. Podium session judge for the 2<sup>nd</sup> Annual Alberta Nanotechnology Symposium (Banff, Canada, May 30<sup>th</sup>-31<sup>st</sup>, 2015)
    - f. Reviewer of the NSERC CREATE CUSP applications, 2015
    - g. Poster judge for the undergraduate and graduate poster competition in the 3<sup>rd</sup> annual ‘Science in Seconds’ event, held on January 21<sup>st</sup>, 2015
    - h. Podium session chair for the 15<sup>th</sup> Annual Alberta Biomedical Engineering Conference (Banff, Canada, October 24<sup>th</sup>-26<sup>th</sup>, 2014)
    - i. Sessional judge for the 8<sup>th</sup> annual Biomedical Engineering and NSERC CREATE Summer Research symposium, held on August 20<sup>th</sup>, 2014
    - j. Reviewer for Journal of Undergraduate Research in Alberta (JURA), University of Calgary (2014-present)

## Research Assistantship

Department of Biomedical Engineering, Faculty of Engineering, University of Malaya, Malaysia.  
May 2009- January 2010. *Supervisor: Dr. Belinda Pinguan-Murphy*

**Other experiences**

1. Industrial trainee in Healthtronics (M) Sdn. Bhd., Petaling Jaya, Malaysia.  
Main task: Condition appraisal of diagnostic Imaging department in Penang General Hospital  
Period: May 2007 – July 2007
2. Elementary school teacher in Chian Bee primary school, Johor, Malaysia  
Period: January 2005 – June 2005
3. Elementary school teacher in Yu Ming primary school, Johor, Malaysia  
Period: March 2006 – July 2006

## References

### *Canada*

Prof. Dr. Walter Herzog  
Human Performance Laboratory, Faculty of Kinesiology, The University of Calgary, Canada  
Tel.: +1-403-220-8525, Fax: +1-403-284-3553, Email: whertzog@ucalgary.ca

Assoc. Prof. Dr. Salvatore Federico  
Department of Mechanical and Manufacturing Engineering, Schulich School of Engineering,  
The University of Calgary, Canada  
Tel: +1-403-220-5790, Fax: +1-403-282-8406, Email: salvatore.federico@ucalgary.ca

Dr. Venus Joumaa  
Human Performance Laboratory, Faculty of Kinesiology, The University of Calgary, Canada  
Tel.: +1-403-220-4639, Email: vjoumaa@ucalgary.ca

### *South Korea*

Dr. Sang Kuy Han  
Advanced Biomedical and Welfare Technology R&BD group, Korea Institute of Industrial  
Technology, Cheonan, Korea  
Email: sangkuy.han@hotmail.com

### *Malaysia*

Assoc. Prof. Dr. Belinda Pinguan-Murphy  
Department of Biomedical Engineering, Faculty of Engineering, University of Malaya,  
Malaysia  
Tel.: +603-7967 4491, Fax: +603-7967 4579, Email: bpingguan@um.edu.my

Prof. Dr. Noor Azuan Abu Osman  
Department of Biomedical Engineering, Faculty of Engineering, University of Malaya,  
Malaysia  
Tel.: +603-7967 5200, Fax: +603-7956 1378, Email: azuan@um.edu.my