Hyun Kyung Kim, Ph.D.

Curriculum Vitae
August 2022

School of Kinesiology
Louisiana State University
Baton Rouge
LA 70836 USA

Telephone: 225-578-3845
E-mail: hkkim@lsu.edu

EDUCATION

PhD	**Health Sciences** School of Medical Sciences University of Auckland, New Zealand *Dissertation*: Effect of Repetitive Loading on Tibiotalar Cartilage and Lower Limb Biomechanics	**2019**
MSc	**Sport and Exercise Sciences** (First class honours) Exercise Sciences Department University of Auckland, New Zealand *Dissertation*: The Application of Whole-Body Musculoskeletal Modelling and Simulation to Estimate Lumbar Spinal Loading and Muscle Forces in Lifting Activities	**2015**
PGDip	**Sports & Exercise**, Exercise Sciences Department Massey University, New Zealand	**2013**
BPhEd	**Physical Education** Korea National Sports University, South Korea	**2008**

PROFESSIONAL APPOINTMENTS

Assistant Professor	School of Kinesiology Louisiana State University	**2022-present**
Postdoc Associate	Department of Kinesiology Iowa State University *PI*: Li-Shan Chou, PhD	**2020-2022**
Postdoc Associate	Faculty of Medical and Health Sciences University of Auckland *PI:* Ali Mirjalili, MD, PhD	**2019-2020**
Research Assistant	Surgery Department, University of Auckland Auckland Bioengineering Institute, University of Auckland	**2018-2019**
Teaching Assistant	Biomechanics; Principle of Tissue Adaptation Exercise Sciences Department University of Auckland	**2017-2018**

RESEARCH INTERESTS

Relation of lower extremity muscle structure, mechanics, and disease

Gait balance and mobility impairment

Footwear and running biomechanics

Ankle and foot biomechanics

EXPERIMENTAL SKILLS

Musculoskeletal modeling (OpenSim)

Freehand 3D ultrasound system (3D muscle volume and architecture)

Motion capture systems (Vicon, Qualisys, OptiTrack)

Wearable sensors (Plantar pressure, IMU, EMG)

Python, MATLAB, *R*

Machine Learning (CNN)

HONORS/AWARDS

School of Medical Science Publication Funding **2018**
University of Auckland

Travel grant, Faculty of Medical and Health Sciences
University of Auckland **2018**

First Class Honors, Master of Sciences
University of Auckland **2015**

Scholarships for excellent grades **2004-2007**
Korea National Sport University

EDITORIAL BOARD MEMBER

Sports Biomechanics (Taylor & Francis) **2022-present**

Frontiers in Sports and Active Living **2021-present**

INVITED REVIEWER

Gait and Posture

Archives of physical medicine and rehabilitation

Ergonomics

Applied Bionics and Biomechanics

RESEARCH GRANTS

In preparation

Gait Imbalance Assessment using Wearable Sensors and Simulation in Older Adults **2022**
NIH R21
Role: co-investigator

Not funded

A Comprehensive Study of Early Muscle Degeneration in Cerebral Palsy: an Imaging, Modelling, and Anatomical Approaches. **2020**
Neurological Foundation.
Role: co-investigator

Muscle Growth in the Young Infant with Suspected Brain Injury. **2019**
Auckland Medical Research Foundation.
Role: co-investigator

INVITED TALK

Presentation in KIN 615 Doctoral Student Seminar (2021)
Title: Effect of repetitive loading on the tibiotalar cartilage and running biomechanics
Department: Kinesiology

PUBLICATIONS

Journal Articles, *corresponding author

1. Mei, Q., **Kim, HK**., Xiang, L., Yu, P., Shim, V., Wang, A., Baker, J., Fernandez, J., Gu, Y. (**2022**). A Narrative Review Towards Improved Understanding of Foot Shape, Foot Posture and Foot Biomechanics: Current Approaches and Future Perspectives. *Journal of Sport and Health Science.* (Submitted)

2. **Kim, HK**., Lu, SH., Lu, TW., Chou, LS. (**2022**). Contribution of Lower Extremity Muscles to Center of Mass Acceleration During Walking: Effect of Body Weight. *Journal of Biomechanics.* (Revision)

3. Yeung, S., **Kim, HK**., Carleton, A., Munro, J., Ferguson, D., Monk AP., Zhang, J., Besier, T., Fernandez, J. (**2022**). Integrating Wearables and Modelling for Monitoring Rehabilitation following Total Knee Joint Replacement. *Computer Methods and Programs in Biomedicine*. 107063

4. **Kim, HK**., Dai, X., Lu, SH., Lu, TW., Chou, LS. (**2022**). Discriminating features of ground reaction forces in overweight old and young adults during walking using functional principal component analysis. *Gait and Posture.* 94, 166-172, doi.org/10.1016/j.gaitpost.2022.03.012

5. **Kim, HK**. & Chou, LS. (**2022**). Lower limb muscle activation for gait balance control during balance-related tasks in healthy elderly: a systematic review. *Gait and Posture*. 93, 166-176. doi.org/10.1016/j.gaitpost.2022.02.014

6. Bell, M., Fernandez J., Florez R., Mirjalili, A., **Kim, HK***. (**2022**). Three-dimensional Ultrasonographic Quantification of Hand and Calf Muscle Volume: Statistical Shape Modelling Approach. *Ultrasound in medicine and biology*. 48(3), 565-574. doi:org/10.1016/j.ultrasmedbio.2021.12.005

7. William S., Bell, M., **Kim, HK.,** Ghaliya Al Masruri., Mirjalili, A., Stott S. N. (**2021**). The reliability and validity of triceps surae muscle volume assessment using freehand three-dimensional ultrasound in typically developing infants. *Journal of Anatomy.* 240 (3), 567-578*.* doi: 10.1111/joa.13565

8. **Kim, HK*.,** Mei, Q., Gu, Y., Mirjalili, A., Fernandez, J (**2021**). Reduced Joint Reaction and Muscle Forces with Barefoot Running. *Computer Methods in Biomechanics and Biomedical Engineering*. 24(11), 1263-1273. doi: 10.1080/10255842.2021.1880572

9. **Kim, HK.**, Mirjalili, A., Zhang, Y., Liangliang, X., Gu, Y., Fernandez, J. **(2021)**. Effect of runners' running experience and gender on lower limb biomechanics following 5km barefoot running. *Sports biomechanics.* doi.org/10.1080/14763141.2020.1829021

10. **Kim, HK**., Fernandez, J., Logan, C., Tarr, PG., Doyle, A., Mirjalili, SA. (**2019**). T2 Relaxation Time Measurements in Tibiotalar Cartilage after Barefoot Running and its Relationship to Ankle Biomechanics. *Journal of Biomechanics,* 90, 103-112

11. **Kim, HK**., Mirjalili, A., Doyle, A., & Fernandez, J. (**2019**). Tibiotalar Cartilage Stress Corresponds to T2 Mapping: Application to Barefoot Running in Novice and Marathon-Experienced Runners. *Computer Methods in Biomechanics and Biomedical Engineering*. doi.org/10.1080/10255842.2019.1645133

12. **Kim, HK**., Fernandez, J., Mirjalili, SA. (**2019**). Non-Symptomatic Diagnosed Inflammation on the Cuneiforms on T2* maps and its Relationship to Plantar Pressure: A Case Report. *Biology, Engineering and Medicine*. 4, 1-3. doi: 10.15761/BEM.1000171

13. **Kim, HK**., Mirjalili, SA., Fernandez, J. (**2018**). Gait Kinetics, Kinematics, Spatiotemporal and Foot Plantar Pressure Alteration in Response to Long-Distance Running: Systematic Review. *Human Movement Science.* 10.1016/j.humov.2017.09.012

14. **Kim, HK**., & Zhang, Y. (**2017**). Estimation of Lumbar Spinal Loading and Trunk Muscle Forces during Asymmetric Lifting Tasks: Application of Whole-body Musculoskeletal Modelling in OpenSim. *Ergonomics*, 60(4), 563-576.

15. **Kim, HK**., Fernandez, J., Mirjalili, SA. (**2017**). Evaluation of MR Images of the Ankle and Foot in Response to Long-Distance Running: A Systematic Review. *Advanced Techniques in A Biology & Medicine*. 5(222). doi: 10.4172/2379-1764.1000222

Book chapter

1. Zhu, XY., **Kim, HK**., & Zhang, Y. (**2017**). Development of an Enhanced Musculoskeletal Model for Simulating Lumbar Spine Loading During Manual Lifting Tasks*. Lecture Notes in Computer Science* (pp. 229-237). Springer, Cham

Conference Papers & Abstracts

1. Florez, R., **Kim, HK**., Bell, M., Stott, S., Mirjalili, A., Williams, S., Besier, T., Fernandez, J. **(2022)**. Infant gastrocnemius growth in the first two years of life. *27th Congress of the European Society of Biomechanics.*

2. **Kim, HK**., Dai, X., Lu, SH., Lu, TW., Chou, LS. (**2022**). Age- and Body Size-related Differences in Ground Reaction Forces during Walking: A Functional Principal Component Analysis. *World Congress of Biomechanics. Taiwan.*

3. **Kim, HK**., Lu, SH., Lu, TW., Chou, LS. (**2022**). Contribution of Lower Limb Muscle Activation to Center of Mass Acceleration During Walking: Effect of Body Weight. *World Congress of Biomechanics. Taiwan.*

4. **Kim, HK**., Lu, SH., Lu, TW., Chou, LS. (**2022**). Contribution of Lower Limb Muscle Activation to Center of Mass Acceleration During Walking: Effect of Body Weight*. Great Plains Biomechanics. Nebraska. USA.*

5. **Kim, HK.,** & Chou, LS. **(2021).** Use of Musculoskeletal Modeling to Examine Lower Limb Muscle Contribution to Gait Balance Control: Effects of Overweight. *Oral presentation* at the *IEEE Digital Health*.

6. **Kim, HK**., & Chou, LS. (**2021**). Muscle contributions to the whole-body COM acceleration during walking in overweight individuals: a preliminary study. *Oral presentation* at 16th *International Symposium of 3D-Analysis of Human Movement.*

7. **Kim, HK**., Mirjalili, SA., Doyle, A., Fernandez, J. (31 July- 04 August **2019**). Novice and experienced barefoot running response revealed using T2 maps, FE modelling and gait analysis. Poster *presentation at ISB/ASB.*

8. **Kim, HK**., Fernandez, J., Doyle, A., Mirjalili, SA. (25-30 November **2018**). Effect of Running Barefoot on T2 Relaxation Time in Tibiotalar Cartilage and Ankle Biomechanics. *Oral presentation at the Radiological Society of North America.*

9. **Kim, HK**., Fernandez, J., Doyle, A., Mirjalili, SA. (18-20 October **2018**). Effect of Excessive Loading on Ankle Cartilage and Plantar Pressure: Application to Barefoot Running. *Oral presentation at the 7th Asian Society of Sport Biomechanics.*

10. **Kim, HK**., Fernandez, J., Doyle, A., Mirjalili, SA. (10-14 September **2018**). Effect of long-distance unshod running on the ankle cartilage and its relationship to the lower limb biomechanics. *Poster at the U21 Health Sciences Group Doctoral Student Forum.*

11. **Kim, HK**., Mirjalili, SA., Fernandez, J. (8-12 July **2018**). Effect of Running Barefoot on T2 Relaxation Time in Tibiotalar Cartilage and its Relationship to Running Biomechanics. *Oral presentation at the 8th World Congress of Biomechanics*

12. **Kim, HK.,** Mirjalili, SA., Fernandez, J. (4-6 December **2017**). Barefoot running modifies lower limbs kinetics and kinematics. *Oral presentation at the Australian and New Zealand Association of Clinical Anatomists*

13. **Kim, HK**., Pontre, B., Mirjalili, SA., Fernandez, J. (23-27 July **2017**). Barefoot Running Modified Foot Pressure and T2* Relaxation Time: Evaluation of a Dancers Foot using Pressure Maps and T2 MRI. *Poster at the XXVI Congress of the International Society of Biomechanics*