

Hyun Kyung Kim, Ph.D.

Curriculum Vitae

August 2024

School of Kinesiology
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EDUCATION

- **PhD.** Health Sciences, School of Medical Sciences, University of Auckland, NZ, 2019
- **Master of Science.** Sport and Exercise Sciences, Exercise Sciences Department, University of Auckland, NZ, 2016
- **Undergraduate.** Physical Education, Korea National Sports University, South Korea, 2008

PROFESSIONAL APPOINTMENTS

- Assistant Professor. School of Kinesiology, Louisiana State University, 2022-present
- Editorial board member. Sports Biomechanics (Taylor & Francis), 2022-present
- Editorial board member. Frontiers in Sports and Active Living, 2022-present
- Postdoc Associate. Department of Kinesiology, Iowa State University, 2020-2022
- Postdoc Associate. Faculty of Medical and Health Sciences, University of Auckland, 2019-2020
- Research Assistant. Surgery Department, University of Auckland, 2018-2019
- Research Assistant. Auckland Bioengineering Institute, University of Auckland, 2018-2019
- Teaching Assistant. Biomechanics (EXERSCI 203), Exercise Sciences Department, University of Auckland, 2017-2018
- Teaching Assistant. Principle of Tissue Adaptation (EXERSCI 202), Exercise Sciences Department, University of Auckland, 2017-2018

HONORS/AWARDS

- ORED Summer Grant Institute Louisiana State University [\$1,200], 2023
- First Class Honors MSc, University of Auckland, 2016
- Scholarships for excellent grades Korea National Sport University, 2004-2007

RESEARCH GRANTS

Funded

- A Research Competitiveness Subprogram [RCS], Role: PI. 6/1/24-6/1/27
Muscle-Centric Approach to Personalized Prevention of Patellar Tendinopathy: Wearable Sensors, Muscle Function Analysis, and AI Integration [\$159,000]
- Patella Tendinopathy research - Preliminary data collection, Role: PI. 2023/2024

LSU, CHSE [\$7,991]

- LSU, School of Kinesiology, Scholarship First Research Grants, Role: PI. 2023/2024 Detecting Early Patella Tendinopathy and Simulating Personalized Muscle-Strengthening Intervention: Preliminary Study Phase [\$3,920]
- LSU, Summer Stipend program, Role: PI. 2023 Detecting and Simulating Joint Disease Risk in Adults using Wearable Sensors, [\$6,000]
- LSU, Provost's Fund for Innovation in Research, Role: PI. 2023 State-of-the-Art Wearable Sensors for Detecting Early Knee Tendonitis, [\$3,000]
- University of Auckland, School of Medical Science Publication Funding. 2018 [\$5,000 NZD]
- University of Auckland, Travel grant, Faculty of Medical and Health Sciences. 2018 [\$1,000 NZD]

Not Funded

- NIH R01 AM240136, Role: PI, 2024-2028 Detecting Early Patella Tendinopathy and Simulating Personalized Muscle-Strengthening Intervention: A Hybrid Approach with Wearable Sensors and Ultrasound Imaging [\$1,310,682]
- Restore Center, Role: Co-I. 2023. Validating Markerless Motion Capture of the Supine-to-Stand [\$30,000].
- Neurological foundation project funding, Mirjalili A (PI). Role: Co-I, 2020. Muscle Growth in the Young Infant with Suspected Brain Injury [\$189,481 NZD]
- Cure kids project funding, Mirjalili A (PI). Role: Co-I, 2020. Muscle Growth in the Young Infant with Suspected Brain Injury [\$108,147 NZD]
- AMRF project funding, Mirjalili A (PI). Role: Co-I, 2018. Muscle Growth in the Young Infant with Suspected Brain Injury [\$147,197 NZD]
- Kate Edger, Mirjalili A (PI). Role: Co-I, 2019. Muscle Development in the Young Infant. [\$16,000 NZD]
- Lottery Health, Mirjalili A (PI). Role: Co-I, 2019. Muscle Development in the Young Infant. [\$110,445 NZD]
- AMRF, Fernandez (PI). Role: Co-I, 2018. Effect of excessive loading on ankle biomechanics [\$46,000, NZD]

PUBLICATIONS

Journal Articles, *corresponding author

1. **Kim, HK***, Mirjalili, A. (2024). Differences in Lower limb Biomechanics and Tibiotalar

Cartilage T2 Relaxation Time between Runners with and without Asymptomatic Bone Marrow Edema on Tibial Sesamoid- Clinical Case Series. *Sports Biomechanics*.

2. **Kim, HK.**, Mirjalili, A., Zhang, Y., Liangliang, X., Gu, Y., Fernandez, J. (2024). Effect of runners' running experience and gender on lower limb biomechanics following 5km barefoot running. *Sports biomechanics*. 23.1, 95-108
3. **Kim, HK.**, Hang, Q; Chou, LS. (2024). Plantar pressure distribution response to various gait speeds and its relationship with gait balance in overweight adults. *Gait and Posture*. 108, 307-312
4. **Kim, HK.**, Lu, SH., Lu, TW., Chou, LS. (2023). Contribution of Lower Extremity Muscles to Center of Mass Acceleration During Walking: Effect of Body Weight. *Journal of Biomechanics*. 146, 111398
5. 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. *Frontiers in Physiology*. 13, 2581
6. 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
7. **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
8. **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
9. 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
10. William S., Bell, M., **Kim, HK.**, Ghaliya Al Masruri., Mirjalili, A., Stott S. N. (2022). 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
11. **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
12. **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
13. **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
14. **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
15. **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
16. **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.

17. **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

Submitted

1. **Kim, HK***, Azandariani. KA., (2024). Heel Fat Pad Thickness and its Impact on Lower limb Biomechanics during Running. *Sports Biomechanics*.

In preparation

1. **Kim, HK***, et al. (2024). Stress Fractures of Metatarsals in an Adolescent Cross-Country Runner - Case Study. *Frontiers in Physiology*
2. Bradshaw. L., **Kim, HK.**, Fernandez, J., Mirjalili., A. Principal component analysis of the calcaneus bone and exploring the loading on the joint using gait data. (2024)

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 Abstracts

1. Azandariani. A., Mirjalili, SA, **Kim, HK***. Plantar Fat Pad Thickness and its Impact on Ankle Biomechanics in Amateur Runners (2024), ACSM (Boston, USA).
2. **Kim, HK.**, Qu, Hang, Chou, Li-Shan (2023). Plantar pressure distribution response to various gait speeds and its relationship with gait balance in overweight adults. Congress of the International Society of Biomechanics (Japan).
3. 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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **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.
9. **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.

10. **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.
11. **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.
12. **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.
13. **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
14. **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
15. **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

TEACHING

Graduate Courses

- KIN 7508 Analysis of Human Movement.

Undergraduate Courses

- KIN 3514 Biomechanical Basis of Kinesiology
- KIN 4900 Independent Research

MENTORING

PhD student as a main advisor

- Megan Gordon. Fall 2024 - present
- Ali Karimi Azandariani. Fall 2023 - present

Committee Member for Master

- Andrew Killgore. 2024

PROFESSIONAL SERVICE

School Service

- LSU Ad-hoc distinguished dissertation award selection committee. 2022-2023

Department Service

- LSU Assistant/Associate Professor Search Committee – Motor Behavior. 2023-2024
- LSU Assistant/Associate Professor Search Committee – Biotechnology. 2023-2024
- LSU Assistant/Associate Professor-Professional Practice Search Committee. 2022-2023