Muhammad Nur Shahril Iskandar

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Education

Griffith University — Australia
School of Health Sciences and Social Work, Australian Centre for Precision Health and Technology (PRECISE) — Present
- Doctor of Philosophy (PhD) in Biomechanics
- Research focus: Personalised biomechanics and precision technology for treatment of hip osteoarthritis

Nanyang Technological University (NTU) — Singapore
Department: Physical Education and Sports Science Academic Group — Jun 2023
- B.S., Sport Science and Management with Honours (Highest Distinction)

Research Experience

Senior Research Assistant, Nanyang Technological University — Singapore
Sports Biomechanics Lab | Principal Investigators: Phillis Teng, PhD & Kong Pui Wah, PhD — Aug 2023 - Feb 2025
- Assisting in 2 main projects; 1) Screening and Biomechanical Risk Factors for Early Knee Osteoarthritis, 2) Coaching table tennis to individuals with physical disabilities.
- Contributing to the development of the research design and ethics application.
- Conducting a systematic review on the use of ultrasonography to diagnose early knee osteoarthritis using Covidence.
- Mentoring and coordinating with 2 undergraduate students in data collection in utilizing various equipment such as plantar pressure mapping, tensiomyography and thermal camera.
- Investigating the use of monocular camera to obtain biomechanical data in table tennis through markerless motion capture.
- Published a first-author conference paper on the use of markerless motion capture system in running [C3].

Research Intern, Agency for Science, Technology and Research, Bioinformatics Institute — Singapore
Biophysical Modelling Lab | Principal Investigator: Chiam Keng Hwee, PhD — Jan 2023 - Jun 2023
- Contributed to a project on data-driven gait rehabilitation of lower limb amputees.
- Implemented generative AI using Stable Diffusion to enhance existing open-source pose estimation algorithm (OpenPose & DeepLabCut) in identifying lower limb amputee's anatomical landmarks for gait analysis [J5].
- Involved in sourcing of walking videos, labeling of anatomical landmarks and training a model using DeepLapCut.
- Wrote a Python script to perform data processing and analysis.

Undergraduate Research Assistant, Nanyang Technological University — Singapore
Sports Biomechanics Lab | Principal Investigator: Kong Pui Wah, PhD — Apr 2022 - May 2023
- Contributed to a project analyzing the biomechanical effects of exoskeletal in military personnel.
- Assisted in the synchronized gait data collections using VICON Nexus on Bertec split-belt instrumented treadmill, Delsys EMG system and loadsol® sensors.
- Wrote MATLAB and Python scripts to extract data and conduct data analysis of ground reaction forces using statistical parametric mapping, spm1d.
- Publications: 2 conference abstract [CA2, CA3] and 2 journal articles [J2, J4].

Undergraduate Research Programme (URECA), Nanyang Technological University — Singapore
Sports Biomechanics Lab | Principal Investigator: Kong Pui Wah, PhD — Aug 2021 - Aug 2022
- Contributed to the development of a video-based analysis model for assessing treadmill running biomechanics.
- Facilitated over 40 participants' recruitment and utilized Kinovea to analyze running kinematics.
- Conferred the title "NTU President Research Scholar" for completing the programme with Distinction.
- Publications: 2 conference papers [C1, C2], 2 journal articles [J1, J3].

Undergraduate Research Assistant, Nanyang Technological University — Singapore
Human Bioenergetics Lab | Principal Investigator: Yang Yifan, PhD — Sep 2020 - Mar 2021
- Contributed to the project assessing the dose-response of leucine on muscle maintenance during weight loss.
- Independently recruited over 20 participants and coordinated weekly anthropometric measurements.
- Verified accuracy of participant's data entry for daily physical activity, sleep, and dietary intake log.

Publications

* indicates corresponding author, † indicates equal contribution

Peer-reviewed Journal Articles

[J5] Zhou, T†, **Iskandar, M. N. S.**†, & Chiam, K. H.* (2025). Diffusion Models Enable Zero-Shot Pose Estimation for Lower-Limb Prosthetic Users. *PLOS Digital Health*. 4(3), e0000745. doi: 10.1371/journal.pdig.0000745

[J4] Kong, P. W.*, Koh, A. H., Ho, M. Y. M., **Iskandar, M. N. S.**, & Lim, C. X. E. (2024). Effectiveness of A Passive Military Exoskeleton in Offloading Weight during Static and Dynamic Load Carriage: A Randomised Cross-Over Study. *Applied Ergonomics*. 119, 104293. doi: 10.1016/j.apergo.2024.104293

[J3] **Iskandar, M. N. S.**, Loh, R. B. C., Ho, M. Y. M., Pan, J. W. & Kong, P. W.* (2023). Crossover Gait in Running and Measuring Foot Inversion Angle at Initial Foot Strike: A Front-View Video Analysis Approach. *Frontiers in Bioengineering and Biotechnology*. 11, 1210049. doi: 10.3389/fbioe.2023.1210049

[J2] Kong, P. W.*, **Iskandar, M. N. S.**, Koh, A. H., Ho, M. Y. M., & Lim, C. X. E. (2023). Validation of In-Shoe Force Sensors During Loaded Walking In Military Personnel. *Sensors*. 23(14), 6465. doi: 10.3390/s23146465

[J1] Pan, J. W., Ho, M. Y. M., Loh, R. B. C., **Iskandar, M. N. S.**, & Kong, P. W.* (2023). Foot Morphology and Running Gait Pattern between the Left and Right Limbs in Recreational Runners. *Physical Activity and Health*, 7(1), 43–52. doi: 10.5334/paah.226

Peer-reviewed Conference Proceedings

[C3] **Iskandar, M. N. S.**, & Teng, P. S. P.* (2024). Kinematics Comparison of OpenCap and IMU with Marker-Based Motion Capture In Treadmill Running: A Pilot Study. *Proceedings of the 42nd International Society of Biomechanics in Sports Conference.*

[C2] Loh, R. B. C., Ho, M. Y. M., **Iskandar, M. N. S.**, & Kong, P. W.* (2024). Two-Dimensional Kinematics Differences Between Sexes In Runners With and Without Patellofemoral Pain. *Proceedings of the 42nd International Society of Biomechanics in Sports Conference.*

[C1] **Iskandar, M. N. S.**, Loh, R. B. C., Ho, M. Y. M., Pan, J. W., & Kong, P. W.* (2022). Comparison of Rearfoot Inversion Angle at Initial Footstrike Measured From Front And Back View Videos. *Proceedings of the 40th International Society of Biomechanics in Sports Conference*, 40(1), 291.

Conference Abstracts

[CA4] **Iskandar, M. N. S.**, Quek, B. T. L., Liu, H., Ma, C. M. S., & Kong, P. W. Feasibility of Markerless Motion Capture in Non-Standardised Conditions - A Case Study on a Table Tennis Player with Physical Disabilities. *10th Asian Society of Sport Biomechanics Conference*. December 2024.

[CA3] Lim, C., Kong, P. W., Koh, A. H., Ho, M., & **Iskandar, M. N. S.**. The physiological and biomechanical effects of a full-body passive exoskeleton on military load carriage. *6th International Congress on Soldiers' Physical Performance*. September 2023.

[CA2] **Iskandar, M. N. S.**, Koh, A. H., Ho, M. Y. M., Lim, C. X. E., & Kong, P. W. Validation of the loadsol® in-shoe force sensors during walking in military boots under heavy load carriage. *9th Asian Society of Sport Biomechanics Conference*. August 2023.

[CA1] Loh, R. B. C., Ho, M. Y., **Iskandar, M. N. S.**, Pan, J. W., & Kong, P. W. Reliability of video-based running gait analysis in recreational runners. *XXII International Conference on Mechanics in Medicine and Biology*. August 2022.

Conference Oral Presentations

[CP4] Feasibility of Markerless Motion Capture in Non-Standardised Conditions - A Case Study on a Table Tennis Player with Physical Disabilities, *10th Asian Society of Sports Biomechanics (ASSB) Conference*, Kuala Lumpur, Malaysia, December 2024

[CP3] Validation of the loadsol® in-shoe force sensors during walking in military boots under heavy load carriage, *9th Asian Society of Sports Biomechanics (ASSB) Conference*, Bangkok, Thailand, August 2023

[CP2] Two-Dimensional Video Analysis of the Rearfoot Inversion Angle at Initial Footstrike in Treadmill Running, *10th International Conference of Undergraduate Research (ICUR)*, Virtual presentation, September 2022

[CP1] Comparison of Rearfoot Inversion Angle at Initial Footstrike Measured From Front And Back View Videos, *40th International Society of Biomechanics in Sports (ISBS) Conference*, Liverpool, United Kingdom, July 2022

Community Service

Yayasan MENDAKI PSLE Math Tutor 2020
Mentored 2 students weekly in mathematics for their Primary School Leaving Examination (PSLE) in Singapore.

Awards

Anugerah Cemerlang MENDAKI Award 2023
Awarded by Yayasan MENDAKI to undergraduate Malay students for graduating with first-class honors/highest distinction.

Internship Commendation Award 2023
Awarded by NTU to the top 15% of the cohort for excellent work performed during the undergraduate internship.

Best Thesis Oral Presentation Award 2022
Awarded by NTU at the 11^{th} Lau Teng Chuan Physical Education & Sports Science Symposium.

ISBS Student Travel Grant 2022
Awarded by ISBS to attend the 40^{th} ISBS Conference.

Skills

Programming: Python, MATLAB, R, Excel VBA, HTML/CSS
Software: SPSS, JASP, OpenSim, Visual3D, VICON Nexus
Languages: English (Native), Malay