

Muhammad Nur Shahril Iskandar

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EDUCATION

Nanyang Technological University (NTU)

Department: Physical Education and Sports Science Academic Group

Singapore

Jun 2023

- B.S., Sport Science and Management with Honours ([Highest Distinction](#))

RESEARCH EXPERIENCE

Research Assistant, Nanyang Technological University

Singapore

Sports Biomechanics Lab | Principal Investigators: Phillis Teng, PhD & Kong Pui Wah, PhD

Aug 2023 - Present

- Assisting in 2 projects; 1) Screening and Biomechanical Risk Factors for Early Knee Osteoarthritis, and 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 foot pressure mapping, tensiomyography and thermal camera.
- Developing a R script to automatically create different mask region of the foot after obtaining data from Novel Pedar insoles.
- 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 [[P2](#)].
- Involved in sourcing of walking videos, labeling of anatomical landmarks and training a model using DeepLabCut.
- 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](#)].

Honors Thesis (Grade: A+), Nanyang Technological University

Singapore

Sports Biomechanics Lab | Principal Investigators: John Cher Chay Tan, PhD & Sofyan Sahrom, PhD

Apr 2022 - Nov 2022

- Collaborated with National Youth Sports Institute and Singapore Weightlifting Federation.
- Led the application of research ethics and designed the study protocol of evaluating the validity of a velocity-based training device in weightlifting exercises using VICON 3D motion capture cameras [[P1](#)].
- Wrote a MATLAB script to extract data from c3d files to perform Bland-Altman analysis. [🔗](#)
- Awarded Best Poster Presentation [award](#) at the 11th Lau Teng Chuan Physical Education & Sports Science Symposium. [📄](#)

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


Peer-reviewed Journal Articles

- [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 Proceeding

- [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 Abstract

- [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.

In Progress

- [P2] Zhou, T., **Iskandar, M. N. S.**, & Chiam, K. H.* (Under Review). Diffusion Models Enable Zero-Shot Pose Estimation for Lower-Limb Prosthetic Users. 
- [P1] **Iskandar, M. N. S.***, Tan, J. C. C., Wong, H., Low, A., & Sahrom, S. B. (In preparation). Criterion Validity of The FLEX Device Measuring Barbell Velocity in Weightlifting Exercises Across the Load-Velocity Profile. 

CONFERENCE ORAL PRESENTATIONS

- [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

Mentored 2 students weekly in mathematics for their Primary School Leaving Examination (PSLE) in Singapore.

2020

Updated: 2 Aug 2024

AWARDS

Anugerah Cemerlang MENDAKI Award 	2023
<i>Awarded by Yayasan MENDAKI to undergraduate Malay students for graduating with first-class honors/highest distinction.</i>	
Internship Commendation Award 	2023
<i>Awarded by NTU to the top 15% of the cohort for excellent work performed during the undergraduate internship.</i>	
Best Thesis Oral Presentation Award 	2022
<i>Awarded by NTU at the 11th Lau Teng Chuan Physical Education & Sports Science Symposium.</i>	
ISBS Student Travel Grant	2022
<i>Awarded by ISBS to attend the 40th ISBS Conference.</i>	

SKILLS

Programming: Python, MATLAB, R, Excel VBA, HTML/CSS

Software: SPSS, JASP, OpenSim, Visual3D, VICON Nexus

Languages: English (Native), Malay