



# Muhammad Nur Shahril Iskandar

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## EDUCATION

### Nanyang Technological University (NTU)

Singapore

Department: National Institute of Education, Physical Education and Sports Science Academic Group

Apr 2020 - Jun 2023

- B.S., Sport Science and Management with Honours (Highest Distinction) | GPA: 4.56/5.00

### Republic Polytechnic (RP)

Singapore

Department: School of Sports, Health and Leisure

Apr 2014 - Apr 2017

- Diploma in Sports and Exercise Sciences with Merit | GPA: 3.75/4.00

## RESEARCH EXPERIENCE

### Research Assistant, Nanyang Technological University

Sports Biomechanics Lab | Principal Investigator: Phillis Teng, PhD & Dr Swarup Mukherjee


Aug 2023 - Present

- Assisting in a project titled, "Screening and Biomechanical Risk Factors for Early Knee Osteoarthritis".
- The project aims to develop a novel screening method to identify biomechanical markers for recreational runners identified to be at risk of early knee osteoarthritis, by utilizing various equipment such as foot pressure mapping, ultrasound, tensiomyography, DEXA and markerless motion capture.

### Research Intern, Agency for Science, Technology and Research, Bioinformatics Institute

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 (Stable Diffusion) to enhance existing open-source pose estimation algorithm (OpenPose & DeepLabCut) in identifying lower limb amputee's anatomical landmarks for the purpose of gait analysis [[S1](#), .

### Undergraduate Research Assistant, Nanyang Technological University

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.
- Coordinated synchronized gait data collections using VICON on Bertec split-belt instrumented treadmill, Delsys EMG system and loadsol<sup>®</sup> sensors.
- Wrote MATLAB and Python scripts to extract data and conduct data analysis of ground reaction forces using statistical parametric mapping (SPM) Python package, spm1d (.
- Presented findings at an academic conference [[CP3](#)] and co-authored a journal article [[J2](#)].

### Final-Year Thesis, Nanyang Technological University

Sports Biomechanics Lab | Principal Investigator: John 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 efficiently extract data from c3d files to perform Bland-Altman analysis (.
- Received the Best Poster Presentation award at the 11<sup>th</sup> Lau Teng Chuan Physical Education & Sports Science Symposium.

### Undergraduate Research Programme (URECA), Nanyang Technological University

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.
- Presented findings at 2 academic conferences [[CP1](#), [CP2](#)] and published 2 journal articles [[J1](#), [J3](#)].
- Conferred the title "NTU President Research Scholar" for completing the programme with Distinction.

### Undergraduate Research Assistant, Nanyang Technological University

Human Bioenergetics Lab | Principal Investigator: Yang Yifan, PhD

Nov 2020 - Feb 2021

- Contributed to the project assessing the dose-response of leucine on muscle maintenance during weight loss.
- Independently recruited over 20 participants and assisted in anthropometric measurements.
- Verified accuracy of participant's data entry for daily physical activity, sleep, and dietary intake log.

### Final-Year Thesis, Republic Polytechnic

Biomechanics Lab | Principal Investigator: Shigetada Kudo, PhD & Alexander Ong, PhD




Apr 2016 - Oct 2016

- Collaborated with Singapore Sports Institute and Singapore Swimming Association.
- Conducted springboard diving kinematics analysis using 2 software, Kinovea and Mokka.


## PUBLICATIONS

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### Journal Articles

- [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: <https://doi.org/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: <https://doi.org/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: <https://doi.org/10.5334/paah.226> 

### Refereed Conference Proceedings

- [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 40<sup>th</sup> International Society of Biomechanics in Sports*, 40(1), 291. 

### Submitted for Publication

- [S1] Zhou, T., **Iskandar, M. N. S.**, & Chiam, K. H. (Submitted). Diffusion Models Enable Zero-Shot Pose Estimation for Lower-Limb Prosthetic Users.

### In Preparation

- [P1] **Iskandar, M. N. S.**, Tan, J. C. C., & 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

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- [CP3] Validation of the loadsol® in-shoe force sensors during walking in military boots under heavy load carriage, 9<sup>th</sup> 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, 10<sup>th</sup> 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, 40<sup>th</sup> International Society of Biomechanics in Sports (ISBS) Conference, Liverpool, United Kingdom, July 2022

## PROFESSIONAL MEMBERSHIP

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Student Member - International Society of Biomechanics in Sports

## AWARDS

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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 11<sup>th</sup> Lau Teng Chuan Physical Education &amp; Sports Science Symposium.</i>	
ISBS Student Travel Grant	2022
<i>Awarded by ISBS to attend the 40<sup>th</sup> ISBS Conference.</i>	
Module Prize in Sports and Exercise Biomechanics	2017
<i>Awarded by RP to the top student of the cohort.</i>	

## SKILLS

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

**Software:** SPSS, JASP, OpenSim

**Languages:** English (Native), Malay