Datao Xu

Ph.D. student

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ACADEMIC DEGREES

03/2022 **M.Sc. in Human Movement Science**
Title of thesis: *An investigation of lower limb biomechanical characteristics between pre-fatigue and post-fatigue landing*
Ningbo University, Research Academy of Grand Health, Faculty of Physical Education, Zhejiang, CHN

06/2019 **B.Sc. in Electrical Engineering and Automation**
Title of thesis: *Design and research of intelligent calendar reminder board based on BLE 4.0*
Jiangxi University of Science and Technology, Faculty of of Electrical Engineering and Automation, Ganzhou, Jiangxi, CHN

WORKPLACES

2020– **Ph.D. student**
University of Pannonia, Faculty of Engineering, Doctoral School of Chemical Engineering and Material Sciences: Chemical Engineering and Material Sciences

RESEARCH INTERESTS

- **Musculoskeletal Modelling Simulation, Finite Element Analysis, Sports Biomechanics:** Numerical modelling and experiments measurement of human movement; Musculoskeletal injuries mechanism of the lower limbs. Sport equipment research and development.
- **Biomechanics Pattern Recognition, Machine Learning, Injury risk prediction:** To constructe the XML model based on the neural network model with the best recognition performance combined with LRP to explain the model classification recognition results.

LANGUAGES

- English: writing, reading, speaking (fluent)
- Chinese: writing, reading, speaking (Native language)

SOFTWARES

- Machine learning software: Matlab, Python
- Finite element software: Ansys, Abaqus, HyperMesh
- Multi-body dynamics: Adams
- Musculoskeletal modelling simulation: OpenSim
- Medical imaging software: Mimics, 3-Matic
- Reverse engineering software: Geomagic Studio
- CAD software: SolidWorks
- Programme: Python
- Others: Visual 3D, Vicon System, Novel System

GRANTS, AWARDS, PRIZES

Awards (undergraduate/graduate)

2022-	Stipendium Hungaricum Scholarship (48 months)
2022	Outstanding Master Students of Ningbo University, China
2022	Outstanding Master Students of ZhejingProvince, China
2022	Outstanding Scientific Research Achievement Award of Ningbo University
2022	Ningbo University Zhuo Chuang Scientific Research Achievement Award
2021	Ningbo University Zhuo Chuang Scientific Research Achievement Award
2021	National Scholarship for postgraduate students
2021	1st prize Scholarship of Ningbo University, China
2020	1st prize Scholarship of Ningbo University, China

SCIENTIFIC ACTIVITIES

Scientific reviewer

- Physical activity and health
- Plos One
- Scientific Reports
- Frontiers in Physiology
- BMC Sports Science Medicine and Rehabilitation
- BMC Musculoskeletal Disorders
- Frontiers in Sports and Active Living
- Frontiers in Psychology
- International Journal of Biomedical Engineering and Technology
- European Journal of Integrative Medicine
- Biomed Research International
- Applied Bionics and Biomechanics
- Diagnostics
- Sports Biomechanics
- Applied Sciences

PUBLICATIONS

Peer Reviewed journal papers with impact factor:

1. **Xu D**, Zhou H, Jiang X, et al. New insights for the design of bionic robots: adaptive motion adjustments strategies during feline landings [J]. Frontiers in Veterinary Science, 2022, 9: 836043. DOI: 10.3389/fvets.2022.836043

2. **Xu D**, Zhou H, Baker J S, et al. An investigation of differences in lower extremity biomechanics during single-leg landing from height using bionic shoes and normal shoes [J]. Frontiers in Bioengineering and Biotechnology, 2021, 9: 679123. DOI: 10.3389/fbioe.2021.679123

3. **Xu D**, Zhou H, Zhang Q, et al. A new method proposed to explore the feline's paw bones of contributing most to landing pattern recognition when landed under different constraints [J]. Frontiers in Veterinary Science, 2022, 9: 1011357. DOI: 10.3389/fvets.2022.1011357

4. **Xu D**, Quan W, Zhou H, et al. Explaining the differences of gait patterns between high and low-mileage runners with machine learning [J]. Scientific reports, 2022, 12(1): 1-12. DOI: 10.1038/s41598-022-07054-1

5. **Xu D**, Jiang X, Cen X, et al. Single-leg landings following a volleyball spike may increase the risk of anterior cruciate ligament injury more than landing on both-legs [J]. Applied Sciences, 2020, 11(1): 130. DOI: 10.3390/app11010130

6. **Xu D**, Lu J, Baker J S, et al. Temporal kinematic and kinetics differences throughout different landing ways following volleyball spike shots [J]. Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology, 2021, 17543371211009485. DOI: 10.1177/17543371211009485

7. **Xu D**, Lu Z, Shen S, et al. The Differences in Lower Extremity Joints Energy Dissipation Strategy during Landing between Athletes with Symptomatic Patellar Tendinopathy (PT) and without Patellar Tendinopathy (UPT) [J]. Molecular Cell Biomechanics, 2021, 18(2): 107-118. DOI: 10.32604/mcb.2021.015453

8. **Xu D**, Cen X, Wang M, et al. Temporal kinematic differences between forward and backward jump-landing [J]. International Journal of Environmental Research and Public Health, 2020, 17(18): 6669. DOI: 10.3390/ijerph17186669

9. **Xu D**, Song Y, Meng Y, et al. Relationship between Firefighter Physical Fitness and Special Ability Performance: Predictive Research Based on Machine Learning Algorithms [J]. International Journal of Environmental Research and Public Health, 2020, 17(20): 7689. DOI: 10.3390/ijerph17207689

10. **Xu D**, Fekete G, Song Y, et al. The Application of Medical Imaging on Disabled Athletes in Winter Paralympic Games: A Systematic Review [J]. Journal of Medical Imaging and Health Informatics, 2021, 11(8): 2054-2061. DOI:10.1166/jmihi.2021.3576

11. Zhou H, **Xu D**, Quan W, et al. A Pilot Study of Muscle Force between Normal Shoes and Bionic Shoes during Men Walking and Running Stance Phase Using Opensim [J]. Actuators, 2021, 10(10): 1-12. DOI: 10.3390/act10100274

12. Zhou H, **Xu D**, Chen C, et al. Analysis of different stop-jumping strategies on the biomechanical changes in the lower limbs [J]. Applied Sciences, 2021, 11(10): 1-17. DOI: 10.3390/app11104633

13. Lu J, **Xu D**, Quan W, et al. Effects of Forefoot Shoe on Knee and Ankle Loading during Running in Male Recreational Runners [J]. Molecular Cell Biomechanics, 2022, 19(2): 61-75. DOI: 10.32604/mcb.2022.019978

14. Cen X, **Xu D**, Baker J S, et al. Association of arch stiffness with plantar impulse distribution during walking, running, and gait termination [J]. International Journal of Environmental Research and Public Health, 2020, 17(6): 2090. DOI: 10.3390/ijerph17062090

15. Cen X, **Xu D**, Baker J S, et al. Effect of additional body weight on arch index and dynamic plantar pressure distribution during walking and gait termination [J]. PeerJ, 2020, 8(e8998. DOI: 10.7717/peerj.8998

16. Chen X, **Xu D**. Effects of Tai Chi Chuan on the physical and mental health of the elderly: a systematic review [J]. Physical Activity and Health, 2021, 5(1): 21–27. DOI: 10.5334/paah.70

17. Zhou H, Chen C, **Xu D**, et al. Biomechanical Characteristics between Bionic Shoes and Normal Shoes during the Drop-Landing Phase: A Pilot Study [J]. International Journal of Environmental Research and Public Health, 2021, 18(6): 3223. DOI: 10.3390/ijerph18063223

18. Xiang L, Mei Q, **Xu D**, et al. Multi-segmental motion in foot during counter-movement jump with toe manipulation [J]. Applied Sciences, 2020, 10(5): 1893. DOI: 10.3390/app10051893

19. Sun Z, Zhang Y, **Xu D**, et al. The Effects of Six-Month Subalpine Training on the Physical Functions and Athletic Performance of Elite Chinese Cross-Country Skiers [J]. Applied Sciences, 2022, 12(1): 421. DOI: 10.3390/app12010421

20. Quan W, Zhou H, **Xu D**, et al. Competitive and Recreational Running Kinematics Examined Using Principal Components Analysis [J]. Healthcare, 2021, 9(10):1321. DOI: 10.3390/healthcare9101321

21. Quan W, Ren F, **Xu D**, et al. Effects of Fatigue Running on Joint Mechanics in Female Runners: A Prediction Study Based on a Partial Least Squares Algorithm [J]. Frontiers in Bioengineering and Biotechnology, 2021, 9:746761. DOI: 10.3389/fbioe.2021.746761

22. Lu Z, Sun D, **Xu D**, et al. Gait Characteristics and Fatigue Profiles When Standing on Surfaces with Different Hardness: Gait Analysis and Machine Learning Algorithms [J]. Biology, 2021, 10(11): 1083. DOI: 10.3390/biology10111083

23. Li F, Zhou H, **Xu D**, et al. Comparison of Biomechanical Characteristics during the Second Landing Phase in Female Latin Dancers: Evaluation of the Bounce and Side Chasse Step [J]. Molecular and Cellular Biomechanics, 2022, 19(3): 115-129. DOI: 10.32604/mcb.2022.022658