Zonghao Ma
Assistant Professor, Associate Professor
Department of Biomedical Engineering and Sports Technology
PolyU Academy for Interdisciplinary Research
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## Biography

Dr. Christina Zong-Hao Ma is an Assistant Professor, a Certified Prosthetist and Orthotist (CPO, ISPO Category I), and a Certified Rehabilitation Therapist (CRT) at PolyU BME. Before her appointment at PolyU, she served as a Lecturer, later promoted to Assistant Professor (permanent position), in Prosthetics and Orthotics at Department of Rehabilitation, Jönköping University (JU), Sweden, from 2018 to 2020. She received her PhD from Faculty of Engineering, The Hong Kong Polytechnic University (2018); and BSc from West China School of Medicine, Sichuan University (2012). She also used to work as a Certified Prosthetist and Orthotist and a Clinical Instructor at China Rehabilitation Research Center (permanent employment, 2012-2013), and a Visiting Research Scholar in Mechanical Engineering at University of Michigan - Ann Arbor (2017).

Dr. Ma’s research is focused on:

investigating the mechanism of human posture and motion control;

promoting physical activity and active health; and

developing solutions for improving balance and preventing falls in older/disabled people.
To address these challenges, Dr. Ma has contributed to research and development (R&D) of a series of smart wearable devices that could monitor the postural balance, walking pattern, and muscle contraction performance; and then provide some real-time corresponding reminders/warnings to users for necessary motion adjustments. Such devices can not only act as balance/motion aids in daily life, but also facilitate community-/home-based training. Her research outcomes can benefit older adults, patients with stroke, trainers/trainees of muscular fitness training, lower-limb amputees, and patients with low back pain, etc.

As a CPO and Certified Rehabilitation Therapist who used to work in hospitals and rehabilitation centers, Dr. Ma is well-aware of how physical disability could significantly affect the quality of life of older adults and patients, as well as their families. This is why Dr. Ma has a genuine interest in promoting these persons’ quality of life with research and development. Dr. Ma's multidisciplinary academic background in Healthcare and Engineering and her clinical experience enabled her to employ various interdisciplinary approaches such as Biomechanics, Electronics, Rehabilitation, Biomedical Ultrasound Imaging, and Smart Wearable Technology to achieve her research goals.

## Qualifications

Prosthetics & Orthotics , Bachelor of Science, Sichuan University

Doctor of Philosophy, The Hong Kong Polytechnic University

19 May 2013 → … Certified Rehabilitation Therapist, Certified Rehabilitation Therapist

28 Jun 2012 → … Certified Prosthetist & Orthotist, Certified Prosthetist & Orthotist

## Employment

### Associate Professor

Associate Professor
Department of Biomedical Engineering and Sports Technology
The Hong Kong Polytechnic University
1 Jul 2026 → present

### Member of RISA, RISports

Assistant Professor
PolyU Academy for Interdisciplinary Research
The Hong Kong Polytechnic University
1 May 2021 → present

## Academic & Clinical Experience

Assistant Professor in Prosthetics and Orthotics (Universitetslektor, regular appointment),
Department of Rehabilitation, Jönköping University (JU), Jönköping, Sweden,
Apr 2020 → Jun 2020

Lecturer in Prosthetics and Orthotics (Universitetsadjunkt),
Department of Rehabilitation, Jönköping University (JU), Jönköping, Sweden,
Dec 2018 → Mar 2020

Postdoctoral Research Associate in Biomedical Ultrasound Imaging
Department of Biomedical Engineering, The Hong Kong Polytechnic University, HKSAR
Dec 2017 → Nov 2018

Visiting Research Scholar in Mechanical Engineering,
College of Engineering, University of Michigan (UM), Ann Arbor, USA
Jun 2017 → Dec 2017

Certified Prosthetist & Orthotist / Clinical Instructor (regular appointment),
Prosthetic and Orthotic Center, China Rehabilitation Research Center, Beijing, China,
Jul 2012 → Dec 2013

Intern Prosthetist / Orthotist
Prosthetic and Orthotic Center, Sichuan Rehabilitation Center, Chengdu, China
Jan 2012 → Jun 2012

Intern Prosthetist / Orthotist
Prosthetic and Orthotic Center, West China Hospital, Chengdu, China
Jul 2011 → Dec 2011

## Research outputs

**Efficient Behavioral Context Recognition with Multi-Label Early-Exit and Dynamic Multimodal Aggregation on Edge Devices**
Liu, Y., Liu, H., Li, Z., Zou, Y., Liu, M., Ma, Z. & Wang, C., 4 Jun 2026, In: IEEE Sensors Journal. 26, 13, p. 19898-19911 14 p.

**Cortical mapping of real-time ultrasound-imaging visual feedback for ankle dorsiflexion in patients after stroke: a fNIRS study**
Wang, F. Y., Liang, H. B., Zhu, R. T. L., Xu, Y., Zhang, Q., Luo, Y. Y., Song, Z., Yang, Y. H., Wei, Q., Zheng, Y. P., Zhang, J. J. (Corresponding Author) & Ma, C. Z. H. (Corresponding Author), 13 Apr 2026, In: Journal of NeuroEngineering and Rehabilitation. 23, 1

**Different Trunk Muscle Responses to Unexpected Balance Perturbations Between Older Recurrent Fallers and Older Non-Fallers: A Combined Wearable Ultrasound Imaging and Electromyography (EMG) Study**
Liang, H., Zhu, T., Luo, Y., Song, Z., He, W., Yam, I.C.-Y., Lee, K. S., Ren, W., Li, K., Wang, F., Li, S., Hou, C., Wei, Q., Zheng, Y., Ye, X.-Q. & Ma, Z., 12 Feb 2026, In: BMC Geriatrics. 26, 1, 368.

**Can wearable real-time biofeedback gait training devices improve gait speed, balance, functional mobility and activities of daily living (ADL) in individuals post-stroke? A systematic review and meta-analysis of randomized controlled trials**
Wang, F. Y., Xu, Y., Luo, L. Y. Y., Liang, H. B., Jiang, Y. P., Bai, Z. Q., Huang, M. Z., Wong, A. Y. L., Yang, L., Zhang, M., Yang, Y. H. & Ma, C. Z. H. (Corresponding Author), 28 Dec 2025, In: Journal of NeuroEngineering and Rehabilitation. 23, 1, p. 47 1 p.

**Reliability of Muscle Architecture Assessment using clinical ultrasound in post-stroke patients: a systematic review**
Li, Y., Liu, W., Luo, C., Feng, S.-F., Wu, H., Li, L., Chen, S.-C. & Ma, Z., 14 Nov 2025, In: BMC Musculoskeletal Disorders.

**Advancing Biomechanics-Based Motion Analysis from Methodology to Application**
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**Biomechanics and Motion Analysis: From Human Performance to Clinical Practice**
He, C., Fu, H. & Ma, Z., 17 Oct 2025, In: Bioengineering. 12, 10

**Automated Muscle Analysis with Wearable Ultrasound and Motion Sensors**
Song, Z., Nazari, V., Li, S., Luo, Y., Zhou, Y., Ma, Z. & Zheng, Y., 15 Oct 2025, In: IEEE Sensors Journal. 25, 20

**Could Novel Spinal Braces with Flexibility, Robotic Components, and Individualized Design Generate Sufficient Biomechanical Treatment Efficacy in Patients with Scoliosis?**
He, C., Xie, J., Pang, R., Hu, B. & Ma, Z., 5 Oct 2025, In: Bioengineering. 12, 10

**Effects of Single-Session Perturbation-Based Balance Training with Progressive Intensities on Resilience and Dynamic Gait Stability in Healthy Older Adults.**
Zhu, T., Schulte, F. A., Singh, N. B., Ma, Z., Easthope, C. A. & Ravi, D. K., 29 Aug 2025, In: Frontiers in Bioengineering and Biotechnology. 13, 2025

**A High-Fidelity mmWave Radar Dataset for Privacy-Sensitive Human Pose Estimation**
Su, Y., Hou, H., Lan, H. & Ma, C. Z. H., Aug 2025, In: Bioengineering. 12, 8, 891.

**Unilateral Ankle-Foot Exoneuromusculoskeleton with Balance-Sensing Feedback for Self-Help Telerehabilitation after Stroke**
Ye, F., Rong, W., Li, W. M., Wong, K. T., Pang, M. K. P., Wai, H. W., Hong, Z., Guo, S., Ma, Z., Zheng, Y., Zhang, M., Chow, N. C. H., Zhang, J. & Hu, X., 8 Jul 2025, In: Advanced robotics Research. 2, 2

**Robot-Assisted Multi-limb Joint Muscle Strength Training and Performance Evaluation**
Li, J., Zhang, W., Zuo, S., Ma, Z., Zhang, M. & Dong, M., Jul 2025, In: Journal of Bionic Engineering. 22, 4, p. 1758-1775 18 p., a029769.

**Wearable Ultrasound-Imaging-Based Visual Feedback (UVF) Training for Ankle Rehabilitation of Chronic Stroke Survivors: A Proof-of-Concept Randomized Crossover Study**
Luo, Y. Y., Huang, C., Song, Z., Nazari, V., Wong, A. Y. L., Yang, L., Dong, M., Zhang, M., Zheng, Y. P., Fu, A. S. N. & Ma, C. Z. H. (Corresponding Author), Jun 2025, In: Biosensors and Bioelectronics. 15, 6, 365.

**A Mathematical Analysis of a Biomechanical Model for an Innovative Spinal Decompression and Correction System for the Conservative Treatment of Scoliosis**
Jie, Y., Zhang, M., Li, M., Luo, C., Dong, A., Luo, Y. Y., Zheng, P., Zhang, X., Liu, Z., Li, J., Wong, M. S., Wang, A. Y., Ma, C. Z. H. & Zhang, M., 11 May 2025, In: Bioengineering. 12, 5, 509.

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Yan, W., Sun, C., Ma, Z. & Zhang, M., 1 May 2025, In: 中国康复医学杂志 (Chinese journal of rehabilitation medicine). 40, 4, p. 481-486 6 p., 1.

**Comparison Between a State-of-the-Art Mechanical 3D Scoliosis Correction Protocol and the Schroth Exercise on Spinal Flexibility of Patients With Adolescent Idiopathic Scoliosis: A Randomized Controlled Trial**
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**Predicting Surgical and Non-surgical Curvature Correction by Radiographic Spinal Flexibility Assessments for Patients with Adolescent Idiopathic Scoliosis: A Systematic Review and Meta-analysis**
Luo, Y.-Y., Hung, T. M., Zheng, Q., Wu, H. D., Wong, M. S., Bai, Z. & Ma, C.Z.-H., 20 Feb 2025, In: Global Spine Journal. 15, 5, p. 2822-2838 17 p.

**Association of lower-limb strength with different fall histories or prospective falls in community-dwelling older people: a systematic review and meta-analysis**
Zhu, R. T. L., Zuo, J. J. J., Li, K., Lam, M. H., Wong, Y. L., Yang, L., Bai, X., Wong, M. S., Kwok, T., Zheng, Y. & Ma, Z., 6 Feb 2025, In: BMC Geriatrics. 25, 1, p. 1-38 38 p., 83.

**Older Fallers' Comprehensive Neuromuscular and Kinematic Alterations in Reactive Balance Control: Indicators of Balance Decline or Compensation? A Pilot Study**
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**Enhancing university students' engagement in studying assistive technology by case-based active learning: a pilot study in Hong Kong**
Li, K., Zhou, Y., Wu, H., Luo, C., Liu, W., Hung, H. T. P., Wang, T., Hu, X., Wang, Y., Li, Y., Wen, C., Cheung, C. W. J., Fu, H., Wong, M. S. & Ma, Z., 4 Jan 2025, In: Disability and Rehabilitation: Assistive Technology. 20, 5, p. 1372-1384 13 p., 13.

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**The Biomechanics of Spinal Orthoses for Adolescent Idiopathic Scoliosis: A Systematic Review of the Controlling Forces**
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**Effect of Ankle-Foot Orthosis on Paretic Gastrocnemius and Tibialis Anterior Muscle Contraction of Stroke Survivors During Walking: A Pilot Study**
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**Advances in prosthetics and orthotics**
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**Response to Letter to the Editor: Effect of a Mindfulness and Motivational Interviewing-Oriented Physical-Psychological Integrative Intervention for Community-Dwelling Spinal Cord Injury Survivors: A Mixed-Methods Randomized Controlled Trial**
Li, Y., Li, M. (Corresponding Author), Bressington, D., Li, K., Wong, A. Y. L., Molassiotis, A., Ma, C. Z. H., Kor, P. P. K. & Yeung, W. F., Dec 2024, In: Archives of Physical Medicine and Rehabilitation. 105, 12, p. 2394-2395 2 p.

**Synthesizing Real-Time Ultrasound Images of Muscle Based on Biomechanical Simulation and Conditional Diffusion Network**
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**Effect of a mindfulness and motivational interviewing-oriented physical-psychological integrative intervention for community-dwelling spinal cord injury survivors: A mixed-methods randomized controlled trial: A Mixed-Methods Randomized Controlled Trial**
Li, Y., Li, M., Bressington, D., Li, K., Wong, A. Y., Chung, W. M., Molassiotis, A., Ma, C. Z. H., Kor, P. P. K. & Yeung, W. F. , Sept 2024, In: Archives of Physical Medicine and Rehabilitation. 105, 9, p. 1632-1641 10 p.

**The effect of adding real-time postural feedback in balance and mobility training in older adults: A systematic review and meta-analysis**
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**Investigating a Novel Non-Surgical Management for Adolescent and Adult Scoliosis Using Digitalized 3D Correction and Ultrasound Assessment: A Preliminary Feasibility Study**
Luo, Y., JIE, Y., Luo, C., Li, M., Zheng, Y., Wong, M. S. & Ma, Z., 23 Jun 2024, (Not published / presented only).

**Effect of Ultrasound-Imaging-Based Visual Feedback System for Ankle Dorsiflexor Strengthening in Stroke Survivors**
Huang, C., Song, Z., Luo, Y., Wong, Y. L., Yang, L., Zheng, Y., Fu, S. N. & Ma, Z., 1 Jun 2024.

**How ankle muscles contract internally while stroke survivors walking with ankle-foot-orthosis?**
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**Editorial: Balance-controlling mechanism and fall-prevention strategy**
Ma, Z. (Corresponding Author), Zhu, T., Huang, M. Z., Lee, W. C. C., Yang, Y. & He, C., 5 Mar 2024, In: Frontiers in Neurology. 15, 1385917.

**Smart active approaches to evaluate and prevent falls of community-dwelling older people**
Ma, Z., 27 Dec 2023, (Not published / presented only).

**Associations between spinal flexibility and bracing outcomes in adolescent idiopathic scoliosis: a literature review**
Luo, C. L., Ma, Z., Zou, Y. Y., Zhang, L. S. & Wong, M. S., 11 Dec 2023, In: Journal of Orthopaedic Surgery and Research. 18, 1, 955.

**Exploring Muscle Activity in Older Fallers and Non-fallers with Wearable Ultrasound Imaging**
Luo, Y., Zhou, Y. & Ma, Z., 26 Nov 2023, (Not published / presented only).

**Fallers use more lower-limb muscle activation and power to maintain reactive balance**
Zhu, T. & Ma, Z., 26 Nov 2023, (Not published / presented only).

**Fall prediction of older people using wearable devices and AI technology**
Li, J. & Ma, Z., 26 Nov 2023, (Not published / presented only).

**Fall Risk Identification in Community-dwelling Older People Using Inertial Measurement Unit (IMU)**
Li, K. & Ma, Z., 26 Nov 2023, (Not published / presented only).

**Reliability, Validity, and Identification Ability of a Commercialized Waist-Attached Inertial Measurement Unit (IMU) Sensor-Based System in Fall Risk Assessment of Older People**
Li, K. J., Wong, N. L. Y., Law, M. C., Lam, F. M. H., Wong, H. C., Chan, T. O., Wong, K. N., Zheng, Y. P., Huang, Q. Y., Wong, A. Y. L., Kwok, T. C. Y. & Ma, C. Z. H. (Corresponding Author), 25 Nov 2023, In: Biosensors and Bioelectronics. 13 , 12, 998.

**The effect of adding real-time postural feedback in balance and mobility training in older adults: a systematic review and meta-analysis**
Liang, G., Fan, E. S. L., LAM, P. K., Kwok, W. T., Ma, Z. & Lam, M. H., 23 Nov 2023.

**儿童扁平足早期识别与康复指导**
JIE, Y. (Editor) & Ma, Z., 1 Nov 2023, 1 ed. 郑州: 郑州大学出版社. 104 p. (关爱儿童康复科普丛书)

**Smart wearable system to improve balance and prevent falls**
Ma, Z., 16 Sept 2023, (Not published / presented only).

**Exploring postural balance control in community-dwelling older adults with high fall risks: biomechanical and electromyographic (EMG) analyses**
Zhu, T. & Ma, Z., 7 Sept 2023, (Not published / presented only).

**A feasibility study of applying two-dimensional photogrammetry for screening and monitoring of patients with adolescent idiopathic scoliosis in clinical practice**
Zheng, Q., Xie, L., Xu, J., Xia, N. & Ma, C. Z. H., 31 Aug 2023, In: Scientific Reports. 13, 1, 14273.

**提升平衡预防跌倒的智能鞋垫系统**
Ma, Z., 3 Aug 2023, (Not published / presented only).

**Biomechanics-Based Motion Analysis**
Ma, Z. (Editor), He, C. (Editor) & Li, Z. (Editor), 17 Jul 2023, 1 ed. Basel, Switzerland: MDPI AG. 386 p.

**Muscular and Kinematic Responses to Unexpected Translational Balance Perturbation: A Pilot Study in Healthy Young Adults**
Tong, C. Y., Zhu, T., Ling, Y. T., Scheeren, E. M., Lam, M. H., Fu, H. & Ma, Z. (Corresponding Author), 13 Jul 2023, In: Bioengineering. 10, 7, 831.

**Reliability and validity of assessing lower-limb muscle architecture of patients with cerebral palsy (CP) using ultrasound: A systematic review**
Liu, W., Wu, H., Ling, Y. T., Shea, Q. T. K., Nazari, V., Zheng, Y. P. & Ma, C. Z. H., 18 Jun 2023, In: Journal of Clinical Ultrasound.

**欧美与香港地区青少年特发性脊柱侧弯的防控与防治措施**
Ma, Z., 10 Jun 2023, (Not published / presented only).

**Advances in Biomechanics-Based Motion Analysis**
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**Can Computer-Aided Design and Computer-Aided Manufacturing Integrating with/without Biomechanical Simulation Improve the Effectiveness of Spinal Braces on Adolescent Idiopathic Scoliosis?**
Zheng, Q., He, C., Huang, Y., Xu, T., Jie, Y. & Ma, C.Z.-H., Jun 2023, In: Children. 10, 6, 927.

**Effect of Schroth Exercise on Pulmonary Function and Exercise Capacity in Patients with Severe Adolescent Idiopathic Scoliosis**
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**Evaluation of a Physical-Psychological Integrative (PPI) intervention for community-dwelling spinal cord injury survivors: Study protocol of a preliminary randomized controlled trial**
Li, Y., Wong, A., Chung, W. M., Li, M. (Corresponding Author), Molasiotis, A., Bressington, D., Ma, C. Z. H., Kor, P. P. K. & Yeung, W. F., Mar 2023, In: PLoS ONE. 18, 3 March, e0282846.

**Automated Student Classroom Behaviors' Perception and Identification Using Motion Sensors**
Wang, H., Gao, C., Fu, H., Ma, C. Z. H., Wang, Q., He, Z. & Li, M., 18 Jan 2023, In: Bioengineering. 10, 2, 127.

**How Does Lower Limb Respond to Unexpected Balance Perturbations? New Insights from Synchronized Human Kinetics, Kinematics, Muscle Electromyography (EMG) and Mechanomyography (MMG) Data**
Zhu, T., Lyu, P., Li, S., Tong, C. Y., Ling, Y. T. & Ma, Z. (Corresponding Author), 18 Jun 2022, In: Biosensors. 12, 6, 430.

**How eight major leg muscles respond to unexpected perturbations and maintain standing balance in healthy young adults?**
Zhu, T., Lyu, P., Li, S., Tong, C. Y. & Ma, Z., Jun 2022, (Not published / presented only).

**How do Paraspinal Muscles Contract during the Schroth Exercise Treatment in Patients with Adolescent Idiopathic Scoliosis (AIS)?**
He, C., Yang , J.-T. (Corresponding Author), Zheng, Q., Mei, Z. & Ma, Z., 27 May 2022, In: Bioengineering. 9, 6, 234.

**How Paretic and Non-Paretic Ankle Muscles Contract during Walking in Stroke Survivors: New Insight Using Novel Wearable Ultrasound Imaging and Sensing Technology**
Lyu, P., Zhu, T., Ling, Y. T., Wang, L., Zheng, Y. & Ma, Z. (Corresponding Author), 18 May 2022, In: Biosensors. 12, 5, 349.

**一种平衡和步态的训练方法、系统及终端**
Ma, Z. (Inventor), Huang, Z. (Inventor) & Zheng, Y. (Inventor), 3 May 2022, Patent No. CN 109147904 , 30 Aug 2018, Priority date 4 Jan 2019, Priority No. 109147904A

**一种平衡和步态的训练方法、系统及终端**
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**Reducing Slip Risk: A Feasibility Study of Gait Training with Semi-Real-Time Feedback of Foot–Floor Contact Angle**
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**Changes in muscle hardness from resting to mid-range lengthened positions detected by shear wave elastography (SWE) with a novel protocol of ultrasound probe placement**
Ma, C. Z. H., Zheng, Y. P., Cheng, L. K. & Ren, L., 1 Jan 2021, In: Applied Sciences (Switzerland). 11, 1, p. 1-10 10 p., 452.

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Ma, C. Z. H., Ren, L. J., Cheng, C. L. K. & Zheng, Y. P., 2 Dec 2020, In: Sensors (Switzerland). 20, 24, p. 1-16 16 p., 7317.

**膝矫形器的制作与应用**
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**足部矫形器的制作与应用**
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**Sonomechanomyography (SMMG): Mapping of skeletal muscle motion onset during contraction using ultrafast ultrasound imaging and multiple motion sensors**
Ling, Y. T., Ma, C. Z. H., Shea, Q. T. K. & Zheng, Y. P., 1 Oct 2020, In: Sensors (Switzerland). 20, 19, p. 1-13 13 p., 5513.

**Can insoles be used to improve static and dynamic balance of community-dwelling older adults? A systematic review on recent advances and future perspectives**
Ma, C. Z. H., Lam, W. K., Chang, B. C. & Lee, W. C. C., 4 Jun 2020, In: Journal of Aging and Physical Activity. 28, 6, p. 971-986 16 p.

**Advanced smart insole system to improve outcome of balance training and walking ability**
Ma, Z., Chung, K. L., Ling, Y. T., Huang, Z., Cheng, L. K. & Zheng, Y., 2020, (Not published / presented only).

**121 A Newly-Developed Smart Insole System with Instant Reminder: Paves the Way towards Integrating Artificial Intelligence (AI) Technology to Improve Balance and Prevent Falls**
Ma, C.Z.-H., Chung, A.K.-L., Ling, Y. T., Huang, Z., Cheng, C.L.-K. & Zheng, Y.-P., 20 Dec 2019, In: Age and Ageing. 48, Supplement_4, p. iv28-iv33 ISSN: 0002-0729; EISSN: 1468-2834.

**Effect of conventional physiotherapy on pain and muscle stiffness in patients with low back pain assessed by a wireless hand-held Tissue Ultrasound Palpation System (TUPS)**
Ren, L. J., Wang, L. K., Ma, C.Z.-H., Yang, Y. X. & Zheng, Y. P., 18 Mar 2019, In: International Journal of Physical Medicine Rehabilitation. 7, 2, p. 1-5 5 p.

**Towards wearable comprehensive capture and analysis of skeletal muscle activity during human locomotion**
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**Advanced smart insole system to improve outcomes of balance training and walking ability**
Ma, Z., Chung, K. L., Ling, Y. T., Huang, Z., Cheng, L. K. & Zheng, Y., 2019, (Not published / presented only).

**A feasibility study for gait training with foot-floor contact angle feedback**
Ma, Z., Bao, T., Le, V., Chambers, A., Shull, P., Zheng, Y., Cham, R. & Sienko, K., 2019, (Not published / presented only).

**Smart insole and smartwatch system with big data analytics to improve balance training**
Ma, Z., Chung, K. L., Ling, Y. T., Huang, Z., Cheng, L. K. & Zheng, Y., 2019, (Not published / presented only).

**Spatial differentiation of muscle contraction onset using sono-mechano-myo-graphy (SMMG)**
Ling, Y. T., Ma, Z., Shea, T. K. & Zheng, Y., 2019, (Not published / presented only).

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**Vibrotactile wearable biofeedback system integrated with force sensors at plantar foot could relieve foot varus deformity in patients with stroke**
Ma, Z., Zheng, Y. & Lee, W. C. C., May 2017, (Not published / presented only).

**Wearable Vibrotactile Biofeedback Device Allowing Identification of Different Floor Conditions for Lower-Limb Amputees**
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**Balance improvement effects of biofeedback systems with state-of-the-art wearable sensors: A systematic review**
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**Foot orthosis could improve elderly balance and gait control by changing plantar mechanical stimulations**
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**Smart wearable vibrotactile biofeedback systems could enhance balance and gait control in older adults and patients with stroke**
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**A vibrotactile and plantar force measurement-based biofeedback system: Paving the way towards wearable balance-improving devices**
Ma, C. Z. H., Wan, A. H. P., Wong, D. W. C., Zheng, Y. P. & Lee, W. C. C., 15 Dec 2015, In: Sensors (Switzerland). 15, 12 , p. 31709-31722 14 p.

**A new wearable haptic biofeedback device contributes to more successful floor identification in lower-limb amputees**
Wan, A. H. P., Wong, D.W.-C., Ma, Z., Zhang, M. & Lee, W. C. C., Sept 2015, (Not published / presented only).

**Falls in elderly**
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**Gait changes after long distance walking among healthy elderly people with different walking abilities**
Elhadi, M. M. O., Ma, Z., Wong, D.W.-C., Wan, A. H. P. & Lee, W. C. C., Sept 2015, (Not published / presented only).

**Different arch supports and metatarsal pads of orthopaedic insoles induce different effects on postural balance**
Ma, Z., Wong, D.W.-C., Wan, A. H. P., Elhadi, M. M. O. & Lee, W. C. C., 2015.

**Insoles and plantar-force based vibrotactile biofeedback system improve elderly standing balance**
Ma, Z., Wan, A. H. P., Wong, D.W.-C., Zheng, Y. & Lee, W. C. C., 2015, (Not published / presented only).

**Improving postural control using a portable plantar pressure-based vibrotactile biofeedback system**
Ma, C. Z., Wan, A. H. P., Wong, D. W. C., Zheng, Y. P. & Lee, W. C. C., 2014, *IECBES 2014, Conference Proceedings - 2014 IEEE Conference on Biomedical Engineering and Sciences: "Miri, Where Engineering in Medicine and Biology and Humanity Meet"*. Institute of Electrical and Electronics Engineers Inc., p. 855-860 6 p. 7047632. (IECBES 2014, Conference Proceedings - 2014 IEEE Conference on Biomedical Engineering and Sciences: "Miri, Where Engineering in Medicine and Biology and Humanity Meet").

**Technologies for enhancing elderly balance**
Ma, Z., Wan, A. H. P., Wong, D.W.-C., Zheng, Y. & Lee, W. C. C., 2014, p. A-1. 1 p.

## Activities

**BMC Musculoskeletal Disorders (Journal)**
Ma, Z. (Guest editor) & Moisan, G. (Guest editor)
23 Sept 2023 → 22 Jun 2024

**Frontiers in Sports and Active Living (Journal)**
Ma, Z. (Guest editor), Lee, W. C. C. (Guest editor) & ung, C.-W. L. (Guest editor)
4 Sept 2023 → 9 Apr 2024

**Bioengineering (Journal)**
Ma, Z. (Guest editor) & Fu, H. (Guest editor)
17 Jan 2023 → 29 Feb 2024

**Frontiers in Neurology (Journal)**
Ma, Z. (Guest editor), Huang, M. Z. (Guest editor), Lee, W. C. C. (Guest editor), Yang, Y. (Guest editor) & He, C. (Guest editor)
11 Aug 2022 → 11 Mar 2024

**Hong Kong Medical and Healthcare Device Industries Association (External organisation)**
Ma, Z. (Member)
20 Jun 2022 → …

**ISPO Auditor, Education Committee - Accreditation Sub-Committee, International Society for Prosthetics and Orthotics (ISPO) (External organisation)**
Ma, Z. (Chair / President)
1 Mar 2022 → …

**Bioengineering (Journal)**
Ma, Z. (Guest editor)
20 Jan 2022 → 30 Jul 2022

**Global Rehabilitation Health Worker Certification (Publisher)**
Ma, Z. (Reviewer)
16 Jun 2021 → …

**BMC Musculoskeletal Disorders (Journal)**
Ma, Z. (Editorial board member)
31 Mar 2021 → …

**Effect and Rehabilitation Engineering Management of Ankle-Foot Deformity on Postural Balance**
Ma, Z. (Invited speaker)
19 Dec 2020 → 20 Dec 2020

**Atlantis Highlights in Medical Sciences (Journal)**
Ma, Z. (Editor)
1 Aug 2020 → …

**Smart Wearable Technology for Motion Analysis & Improvement: Research and Application**
Ma, Z. (Invited speaker)
14 May 2020

**Biofeedback in Orthotics: Research and Application**
Ma, Z. (Invited speaker)
5 Nov 2019 → 6 Nov 2019

## Prizes

**Pedagogic Award 2020**
Ma, Z. (Recipient), 21 Oct 2020

**Travel Sponsorship to attend the 17th ISPO World Congress 2019**
Ma, Z. (Recipient), 5 Oct 2019

**Distinguished Alumni Award**
Ma, Z. (Recipient), 4 Nov 2018

**Travel Stipend to attend the 16th ISPO World Congress 2017**
Ma, Z. (Recipient), Nov 2017

**Reaching Out Award**
Ma, Z. (Recipient), Jun 2017

**Student Research Award (Top Prize)**
Ma, Z. (Recipient), Dec 2016

**Outstanding Paper Award**
Ma, Z. (Recipient), 13 Sept 2015

## Projects