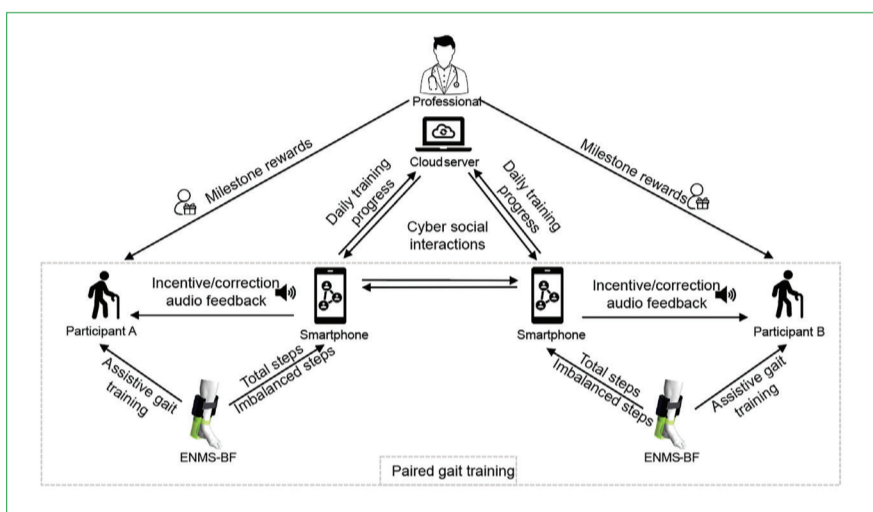


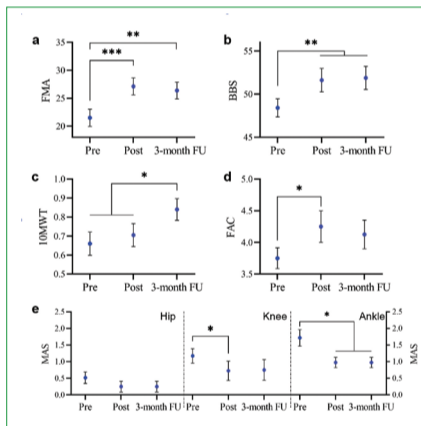
# 智雲行健步儀 Mobile Ankle-foot Exoneuromusculoskeleton

用於卒中後遠程復康的物聯網多模態踝足機器人  
Hybrid robotic IoT for ankle-foot telerehabilitation after stroke

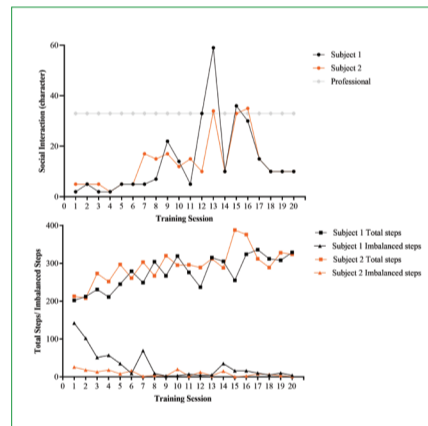
由於傳統醫療資源不足，卒中後的長期復康服務已成為社會的挑戰。智雲行健步儀是一款輕穎的用於卒中後踝足復康的多模態可穿戴機器人。它整合了外骨骼、人工氣動肌肉、神經肌肉電刺激和觸覺感知反饋為一體，通過糾正足下垂和足內翻重塑中風患者的步態。它可作為物聯網設備經不同的網絡激勵機制實現多用戶遠程復康進程管理。



應用於遠程復康的智雲行健步儀物聯網示意圖  
The robotic IoT for telerehabilitation



經20堂訓練後，病人的下肢步行能力大幅改善  
Motor improvements achieved after 20-session training



遠程復康訓練中的人員社交互動  
Remote social interactions based on the robotic IoT for telerehabilitation management

Long-term rehabilitation after stroke is challenging, because of insufficient professional manpower for one-to-one intervention manually, expanding stroke populations and disturbances to the traditional service in a pandemic. Mobile ankle-foot exoneuromusculoskeleton is a hybrid robot for poststroke ankle-foot rehabilitation. The robot integrates multi-modal advantages of exoskeleton, soft pneumatic muscle, neuromuscular electrical stimulation (NMES) and tactile sensory feedback in one system for a light-weight wearable design to correct poststroke foot-drop and foot-inversion effectively. The robot is an IoT device networking the professionals and multiple users in distributed locations for managing rehabilitation progresses and preventing drop-out in the training with incentive schemes.

## Principal Investigator

Dr Xiaoling Hu

Department of Biomedical Engineering

## Contact Details

Knowledge Transfer and Entrepreneurship Office

Tel: (852) 3400 2929 Email: info.kteo@polyu.edu.hk

專利編號：PCT/CN2022/073495, CN 202110733839.6

## 特色與優點

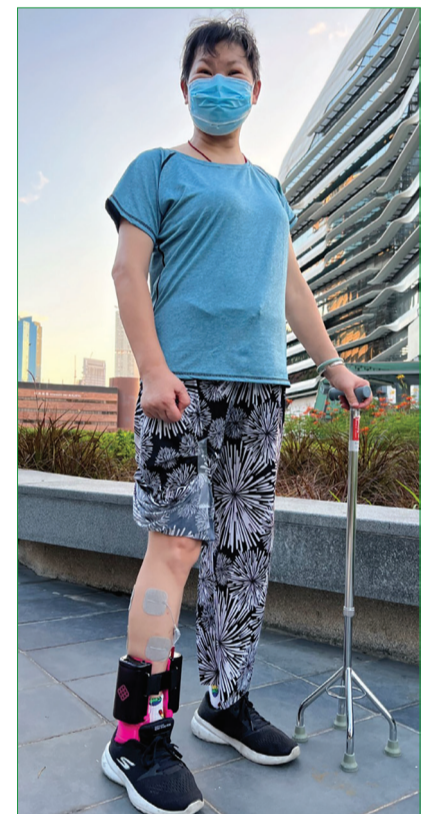
- 改善癱瘓肌肉肌力和協調、有效糾正足下垂和足內翻
- 戶外運動外觀設計、穿戴輕巧舒適，適合單邊下肢訓練
- 手機App無線控制、基於移動通訊的物聯網遠程復康管理

## 應用

- 卒中後踝足功能訓練
- 遠程康復多用戶管理
- 可廣泛應用於不同場所，如醫院、診所，及個人家庭



智雲行健步儀  
The mobile ankle-foot exoneuromusculoskeleton



中風人士穿著智雲行健步儀進行室內和室外的步行訓練  
Persons after stroke wearing the systems for outdoor and indoor training

Patent Application No. PCT/CN2022/073495, CN 202110733839.6

## Special Features and Advantages

- Effective correction of foot-drop and foot-inversion by improving muscle strength and coordination at the ankle-foot
- Compact out-door sportswear design with a light weight for poststroke unilateral gait restoration and comfortable wearing experience
- Easy-to-use mobile App wirelessly interfaced with the robot for mobile rehabilitation management among different patients/professionals

## Applications

- Improve motor function of the ankle-foot after stroke
- Mobile telerehabilitation in long-term service via remote coordination among patients and professionals
- Suitable for wide applications in hospitals, clinics, and individual users at home



Access More info via mobile