

# EXOMOTUS - ASSISTED GAIT REHABILITATION FOR OLDER ADULTS

Cherie Ling (Project Lead), Nur Amalina Binte Mohamed Noor, Mavis Low, Li-Ping Yap, Jiaying Lin

## 1. WHY IT MATTERS



- Older adults with significant physical impairments may face challenges due to reduced muscle strength, poor balance and coordination difficulties.
- These challenges may limit early rehabilitation participation and increase the physical demands placed on therapists.
- ExoMotus robotic exoskeleton is introduced as an adjunct to conventional therapy to support movement and improve stability.
- It enables safer and more supported gait training for older adults with higher rehabilitation needs.



**GOAL:** Evaluate the feasibility and preliminary outcomes of ExoMotus-assisted gait rehabilitation alongside conventional rehabilitation therapy.

## 2. METHODOLOGY



8

**Sessions**  
with conventional therapy



30/47

**Participants**  
completed the programme



21 Female

26 Male

Mean Age 73 years

### Participant Background

Neurological conditions requiring high assistance in mobility, such as:

- Cerebrovascular Accident
- Parkinson's Disease
- Dementia



Conducted by **Physiotherapist (PT)** or **Therapy Assistants (TA)**



Conducted at **Ren Ci Community Hospital** and **Day Rehabilitation Centre**

## 3. RESULTS

Among participants who completed the programme (n=30)



IMPROVEMENT  
IN BALANCE  
(BBS)



IMPROVEMENT  
IN MOBILITY  
(EMS)



IMPROVEMENT  
IN MOOD  
SCALE



Nil adverse events reported during the programme

Out of the 47 participants recruited, 30 completed the programme. Common reasons for non-completion included early discharge from the rehabilitation facility and intolerance to the training sessions, such as severe postural hypotension, pain, or fear.

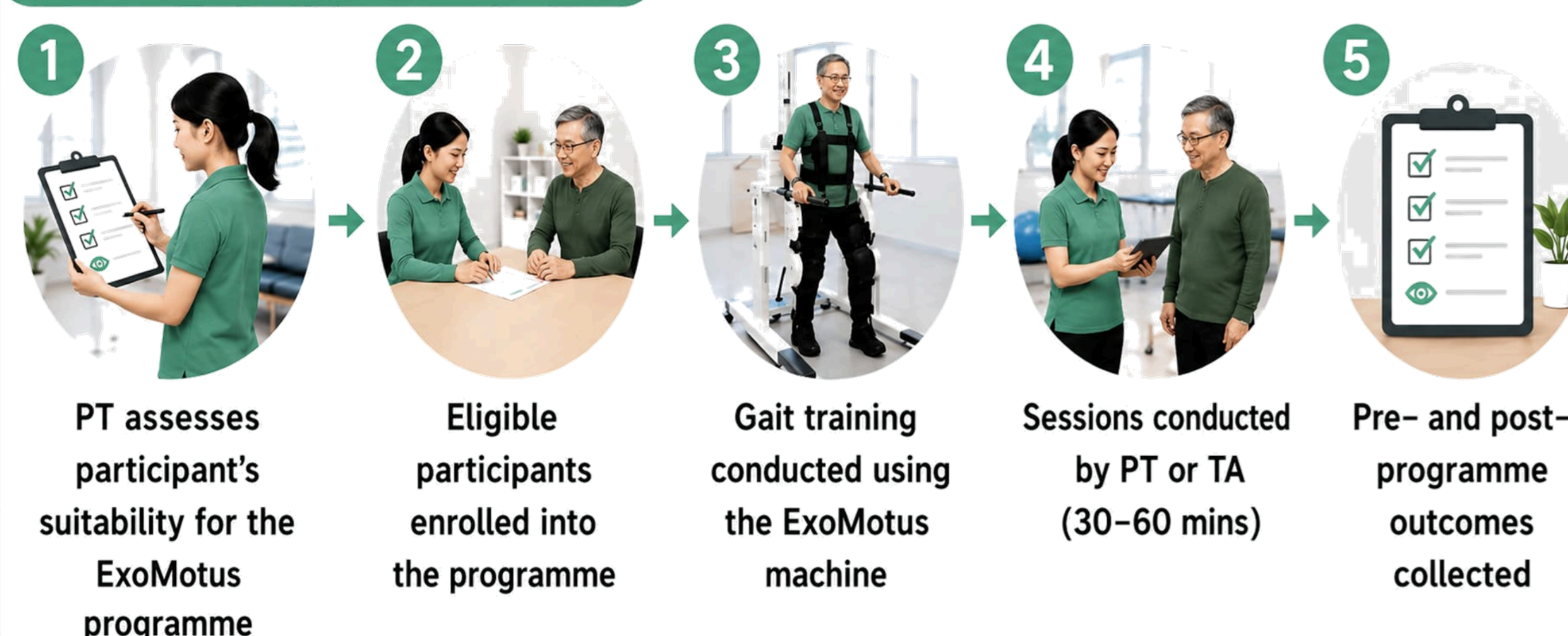
Three outcome measures were used in this programme:

- Berg Balance Scale (BBS)
- Elderly Mobility Scale (EMS)
- Mood scale

## PROGRAMME WORKFLOW

A single arm pre-post interventional study design was conducted at Ren Ci Community Hospital and Day Rehab Centre.

### PROGRAMME WORKFLOW



## 4. KEY CHALLENGES



### Recruitment

- Difficulties in recruitment initially as therapists were unclear about the referral criteria.



### Limitations in trained staff

- Limited number of trained staff available to run the programme due to competing clinical and administrative responsibilities.

## 5. KEY TAKEAWAYS



- Conducting briefing and training sessions improved therapists' understanding of referral criteria and participants suitability.



- Partnering with TAs in delivering lower-complexity sessions has the potential to improve service efficiency and optimise manpower utilisation while maintaining quality of care.

## 6. CONCLUSION



The ExoMotus-assisted gait rehabilitation programme improved mobility, balance, and mood among older adults with neurological conditions, demonstrating the potential of robotic-assisted rehabilitation as a safe and scalable complement to conventional therapy.

The programme also enhanced manpower utilisation by enabling trained Therapy Assistants to support lower-complexity sessions, allowing Physiotherapists to focus on higher-level clinical care while improving overall service efficiency.