



**Researchers:**

**ASSOC. PROF. DR. JAMALUDDIN ABDULLAH**

Dr. Muhammad Hafiz Hanafi  
Dr. Muhammad Fauzinizam Razali  
Dr. Mohamad Aizat Abas  
Dr. Al-Hafiz Ibrahim  
Zolkifli Jusoh  
Norijas Aziz  
Ong Xhin Jie

**INTELLECTUAL PROPERTY:**

▶ COPYRIGHT (LY2019001997)

# Sustainable Ankle Foot Equipment (SAFE)



**Introduction**

- Ankle deformity caused by weakness or paralysis of the muscles involved in lifting the front part of the foot.
- High steppage gait makes walking difficult or impossible – need to lift thigh higher to avoid dragging their toes during walking.
- The most common cause of foot drop is injury to the peroneal nerve; occurs on patient with stroke, cerebral palsy, spinal injury or head injury

**Problem Statement**

- Easily get sweating which causes skin infection
- Difficult to walk on sloped surface due to rigid ankle joint
- Less adoption by patient due to discomfort and inconvenience
- Unable to monitor patient's usage and treatment progress accurately
- Imported model is expensive (~RM1000 each)

**Inventiveness and Novelty**

- Breathable and lighter design
- Flexible ankle allows mobility
- Easily adjustable strap for comfort fit
- Easy wear slipper for outdoor use
- Wireless monitoring with unique mobile apps

**Intellectual Property Status**

- IP protected (Copyright) for the design and monitoring module

**Usefulness and Application**

- Comfortable design for treatment of ankle deformity
- Monitoring of steps, calories and distant travelled
- Practical design for indoor and outdoor use
- Affordable to low income group

**Status of Invention**

- Completed prototype for laboratory testing

**Commercial Potential**

- Similar product has been used in HUSM
- 220 hospitals nationwide with annual market size of RM2.2 millions

**Potential Partners**

- Hospital USM
- Malaysian hospitals
- Healthcare

**Knowledge Management (Grant/Publication/etc)**

- 3 Journal publications

**Impact of the Product**

- Enhanced treatment effectiveness
- Affordable to lower income group
- Improved quality of life



Contact Person: ○

ASSOC. PROF. DR. JAMALUDDIN ABDULLAH

School of Mechanical Engineering, Engineering Campus, Universiti Sains Malaysia, Penang, MALAYSIA

Tel: +604 599 6301 Fax: +604 599 6912 E-mail: mejamal@usm.my