TAYÔ PROJECT:
Robotic Rehabilitation for the Trunk and Lower Extremity

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THE PROBLEM

Stroke and injury are two of the leading causes of long-term disability worldwide. A solution to treat these stroke or injury sufferers is rehabilitation through physical therapy. Due to limited rehabilitation devices and labor-intensive conventional therapies, research and development on lower limb rehabilitation robots has been continuously growing. Through the years, it was concluded that usage of robots as therapy aid devices give efficient rehabilitation similar to manual, conventional practices. However, translating these researches into commercially-viable products and reaching the end-users have been a problem. Moreover, although proven efficient, the role of robotic rehabilitation devices or exoskeletons remain to be supplementary rather than necessary.

THE SOLUTION

The Institute of Biomedical Engineering and Health Technologies (IBEHT), under De La Salle University, and in collaboration with the De La Salle Medical and Health Sciences Institute, developed and designed **TAYO**, a robotic rehabilitation for the trunk and lower extremity. TAYO would feature a multifunctional system that can move from supine to sitting or sitting to supine positions and has surface electromyography (sEMG) to quantify patients' ability and progress. The device allows range of motion (ROM) exercises to be performed while the patient is in supine or sitting positions and through passive, active-assist, or active-resist (strengthening) training modes. The ROMs include hip flexion-extension, hip abduction-adduction, knee flexion-extension, trunk flexion, and trunk lateral flexion. Furthermore, games using Kinect v2.0 sensors were developed to help motivate patients to perform such gait training exercises.

TECHNOLOGY GENERATOR

De La Salle University
Project leader: Dr. Armyn C. Sy

TECHNOLOGY DEVELOPMENT

The device is currently at Technology Readiness Level (TRL) 4. The system is in the safety testing stage wherein testing such as mechanical testing, electrical testing, and Electro-Magnetic Compatibility (EMC) testing are performed to ensure that the device conforms to local and international safety and compliance standards. A clinical trial is also being prepared this year with the clearance of the Ethics Review Board (ERB) to perform testing with healthy human participants. Currently, the research team is looking for potential R&D partners in the area of robotics rehabilitation, assistive technologies and biomechanics.

Interested technology adopters may send a letter of intent addressed to:

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