

1st EDITION UiTM GLOBAL PENANG Newsletter

GLOBAL INSIGHTS: NAVIGATING UNIVERSALITY WITH UiTM PULAU PINANG



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UiTM Global @ Office of International Affairs,
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Pulau Pinang,
Malaysia.

EXPLORING NEURO-ROBOTIC REHABILITATION: ACADEMIC VISIT TO THE ADVANCED MEDICAL AND DENTAL INSTITUTE, BERTAM

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BERTAM, PULAU PINANG 11 January 2024- In conjunction with the International Community Service between UiTM Pulau Pinang (UiTM CPP) Bertam Campus and Universitas Airlangga (UNAIR), Surabaya, Indonesia, the Physiotherapy Programme of the Faculty of Health Sciences, UiTM CPP Bertam Campus has organised an academic visit to the Physiotherapy Department and neuro-robotic clinic at Advanced Medical and Dental Institute (AMDI), Bertam. The delegation from UNAIR, consisting of 10 students and 2 lecturers from the Physiotherapy Programme, was accompanied by 3 lecturers from the Physiotherapy program, UiTM Bertam. The primary objective of the academic visit was to provide exposure to the current robotic technology utilized in the clinical setting in Malaysia. The application of robotics technology has expanded to provide both physical and mental assistance to humans. The field of rehabilitation robotics is experiencing growth, responding to the increasing demand for support in addressing neurological conditions and the health challenges associated with aging. The main goal of rehabilitation robotics is to enhance the rehabilitation process by integrating robotic technology, aiding physiotherapists in delivering optimal treatment to patients.

The neuro-robotic clinic at AMDI offers a few types of robots, including products from Cyberdyne Inc. from Tsukuba, Japan, and Reha Technology AG from Switzerland. Both robotic systems offer robotic-assisted gait training (RAGT) for neurological conditions such as stroke, spinal cord injury, Parkinson's disease, and traumatic brain injury. .



One of the therapy conducted

The Hybrid Assistive Limb (HAL)[®] is a robotic exoskeleton and wearable suit developed by Cyberdyne. It is designed to enhance the functional mobility of patients. HAL significantly augments an individual's ability to carry greater loads that were previously beyond their initial potential, in a rapid, efficient, and secure manner.

Cyberdyne's robotics utilises neuro-robotics and cybernetics technology to detect and examine bio-electrical signals found on the patient's skin. Afterwards, it identifies the particular skeletal muscles that need to move and adapts the joints, accordingly, enabling muscular movement that aligns with the patient's coordination and skills..

This clinic also offers HAL single joint and lumbar versions. Another RAGT option that is accessible for rehabilitation is the REHA G-EO robotic system developed by Reha Technology AG. This robotic system is categorized as a stationary Robotic Assisted Gait Training (RAGT) system. It assists in the process of relearning how to walk on a flat surface, as well as navigating steps, stairs, obstacles, and other uneven surfaces. Additionally, it is equipped with virtual reality technology that enhances the patient's gait training experience.

Patients can integrate walking training in various sceneries such as the garden or by the seaside, as well as hiking in the mountains. Moreover, the integration of functional electrical stimulation with walking training using the REHA G-EO system can augment the restoration of muscular function in individuals with neurological conditions.

The feedback from the UNAIR delegation about this robotic technology is highly positive. This is their initial encounter with robotic technology, which has been employed for rehabilitation purposes.

UNAIR students and lecturers have been granted an opportunity to explore and experienced various robotic technologies offered at this clinic. They have a positive and valuable experience with the HAL and REHA G-EO system and have a deep understanding of how this technology functions. Overall, this academic visit to the neuro-robotic clinic and Physiotherapy Department is a beneficial programme that provides a wealth of up-to-date knowledge on the current use of robotic technology in clinical settings.



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