Research

PhyMill is created to aid therapists and paediatric patients to undergo physiotherapy treatment

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The sympathy towards children who face difficulties in controlling their bodies' position and activation due to damage to their developing brain, or better known as cerebral palsy, inspired a group of Universiti Malaysia Pahang (UMP) researchers to develop the Smart Physio-Treadmill (PhyMill) to aid patients in training their walking movements.

According to the project leader, who is also a lecturer at the Faculty of Mechanical and Automotive Engineering Technology, UMP, Ts. Dr. Mohd Azrul Hisham Mohd Adib, PhyMill is an automatic exercise device to train walking movements for patients undergoing treatment.

"PhyMill is also designed specially to help therapists rehabilitate patients during physiotherapy sessions, especially involving movement in the lower extremities or lower body parts.

"Until now, most rehab products require care and management by the therapists.

"The existing rehab devices are also manual, with most of them obtained from overseas at incredibly high prices.

"The development of this product was achieved with help and advice from a physiotherapy expert in Kuantan Physical Therapy-Physiotherapy Centre, Narimah Daud.

"The fusion of ideas between physiotherapy experts and researchers greatly simplified the creation of PhyMill, allowing it to be more user-friendly and to fulfil the patients' needs," he said in the PhyMill handing-over ceremony for use by the centre on the 17 January 2020 in Kuantan.

He further added that its small size allows portability according to the patient's needs and requirements.

"PhyMill has three modes of usage; the first mode can control the patient's movements walking forwards and backwards.

"This movement is controlled fully automatically simply by pressing the allocated button. Speed control is also provided to enable the patient to adjust the speed according to the rehabilitation level specified by the therapist.

"Meanwhile, the second mode is the automatic height adjustment. PhyMill lets patients set the level of the handle according to their body height.

"The third more is a special screen to catch the patients' attention and to avoid boredom while undergoing a rehabilitation session.

“PhyMill can also be used by children as young as 4–7 years old and can support up to 30 kg,” he said.

He hopes that this product can be a pioneer in the field of medical rehabilitation in Malaysia, aside from being an enabling device for therapists in reaching their goal towards ‘zero lifelong treatment’ for all patients.

As a researcher, there are plans to improve the current prototype, especially from an aesthetic and functional standpoint.

“By adding a few more specialised functions such as remote control and illuminating the patient’s legs, we can let this product achieve specification towards patients’ active movement treatment.

“I also intend to commercialise this product to make it more accessible for paediatric physiotherapy experts in Malaysia.

“However, cooperation from the industry or either government or private institutions is very much needed, especially hospitals and rehabilitation centres,” he said.

This product has received recognitions at research displays, winning a silver medal at the Creation, Innovation, Technology & Research Exposition (CITREX 2019) and also in the International Festival of Innovation in Green Technology (i-FINOG 2019).

PhyMill was developed fully by Tim Rehab under the Human Engineering Group (HEG) from the Faculty of Mechanical and Automotive Engineering Technology, assisted by Dr. Nurul Shahida Shalahim, Idris Mat Sahat, Dr. Zakri Ghazalli, Dr. Muhammad Hilmi Jalil, and graduates under the Integrated Design Project (IDP), namely Afiq Ikmal Zahir, Ahmad Hijran Nasaruddin, Muhammad Shazzuan Sharudin, and Muhammad Rais Rahim.

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