

Device Developed At Universiti Malaya Enables Remote Monitoring Of Low Back Pain

Universiti Malaya



A wearable device for remotely assessing muscle activity, innovated at Universiti Malaya and developed by Nonivasi Care Sdn Bhd in Kuala Lumpur, Malaysia, is giving clinicians a data-driven means of tracking the rehabilitation of patients with low back pain without the need for in-person visits.

Generally, in patients receiving treatment for low back pain, rehabilitation clinicians will assess the treatment's effectiveness by asking the patient questions and doing a physical examination—but this observational method is often inaccurate. Computerized functional analysis systems are more accurate, but are also expensive and require dedicated space in a clinic or office.

Technology invented at Universiti Malaya by Professor Fatimah Ibrahim, in the department of Biomedical Engineering, offers a portable, affordable and reliable solution. PULIH—which means “recover” in Malay—is a wireless device that measures a patient's muscle activity during movement, analyzes the data using a cellphone app that sends the results to a clinician's office. The device, which is about the size of a wallet, can be used at a patient's home or in another convenient location, reducing the frequency and hassle of arranging office visits.

The technology is grounded in research showing that specific muscles in the lower back behave differently in people

with and without low back pain when bending forward at the waist from a standing position. During a [PULIH assessment](#), the patient attaches electrodes to the skin of their lower back, which detect muscle activity as the patient does a forward bend; the device then wirelessly sends the information to the clinician. As a patient's rehabilitation progresses, their muscle activity should gradually become more like what would be seen in a person without back pain. If the PULIH data suggests a lack of progress, additional treatments could be considered.

Universiti Malaya's technology transfer office, the Centre of Innovation and Enterprise, patented the technology (PI 2020003417) and licensed it in June 2021 to startup company Nonivasi Care Sdn Bhd. Commercialization of the device was assisted by a grant of RM 500,000 (about \$107,000 USD) from the Cradle Fund, a federal agency under the Ministry of Science, Technology & Innovation. The device received regulatory approval from the country's Medical Device Authority in 2023 and is currently being demonstrated and marketed the device to hospitals and clinics.

The Malaysian government has placed a strong emphasis on enhancing the country's technology transfer framework. The UM Centre of Innovation and Enterprise (UMCIE), plays an important role in the process of identifying the readiness of the technology to be translated into real-world solutions. UMCIE believes that the right commercial partner can help turn university technology into innovative products that bring value to the society and economy of the nation.

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