

UGM Students Innovate Shoes to Prevent Ankle Contracture

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Three Universitas Gadjah Mada (UGM) students innovated anti-contracture shoes, named as Aveo-3, for patients of ankle paralysis.

Bryan Nuril Inzaghi, Andri Khoirul Huda, and Muhammad Fahmi Husaen made this third generation product to prevent contracture in the ankle.

Under the guidance of Budi Sumanto, S.Si., M.Eng., in Student Creativity Programme, the vocational school students developed the shoes since 2018. Aveo 3 uses motor stepper with 4.8 N.m torque that can move the ankle. The microcontroller uses arduino nano.

“Aveo 3 shoes are equipped with Mechanomyogram sensor series to detect muscle tension,” said Fahmi on Monday (19/8) at UGM campus.

He said it was installed with Electret Microphone sensors to read the muscle signals. It uses polyethylene and polylactic acid materials that are light but strong as well as comfortable.

“Temporary testing showed that the driving motor can be controlled through smartphones while Mechanomyogram can detect muscle contracture,” he revealed.

Fahmi said he developed the Aveo after his experience in having Duchenne Muscular Dystrophy (DMD) caused by the decrease of muscle functions which led to paralysis. Because he never did a physiotherapy, Fahmi’s ankle felt stiff and difficult to move.

This had inspired him to make a tool that would help prevent ankle contractures. The shoes can generate automatic movements like a physiotherapy so these can prevent the contracture.

“Hopefully, the Aveo 3 can benefit people with disabilities and used for therapy,” he said.

Aveo 3 shoes were not only a breakthrough for paralysis therapy, the shoes also made it to the National Student Scientific Week to be held at the end of August at Universitas Udayana Bali.

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