

ROBOT THERAPIST HITS THE RIGHT SPOT WITH ATHLETES

Local start-up unveils prototype for sports rehabilitation

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SINGAPORE – Singapore national basketball player Chase Tan is a happy customer of his new physiotherapist, Emma.

“Emma’s back massages are quite good,” said the Mediacorp artiste. His only gripe, though, is that Emma does not talk.

That’s because Emma is a robot. Short for Expert Manipulative Massage Automation (Emma), it uses acupoint therapy to relieve muscle strains and injuries of its patients at the Singapore Sports Hub.

Developed by AiTreat, a start-up company incubated by Nanyang Technological University (NTU) and founded by NTU graduate Albert Zhang, Emma is now undergoing user trials at Kin Teck Tong’s Sports Science and Chinese Medicine Clinic at the Kallang Wave Mall.

Since trials started last week at Kin Teck Tong, Emma — a robotic arm with a 3D-printed massage tip that runs on proprietary software — has treated 50 patients with different conditions such as tennis elbow, stiff neck and shoulders, lower-back pain, as well as muscle pulls.

Tan, 26, who visited Emma for a back massage last week, said: “The experience I had with Emma was quite comfortable. Unlike the typical massage chair which has preset massage patterns, I feel that Emma is more precise and focused in targeting my back muscles.

“I think the younger generation



will be quite open to being massaged by Emma, especially when it can massage sore spots which can be quite hard to reach.

“This will be a big help. There are only so many massages a person can give before he or she gets tired. But with Emma, it can go on and on.”

Emma’s creator said it can resolve some of the challenges sports therapy clinics face, such as a shortage of trained therapists and a need for high quality, consistent therapy.

“We have designed Emma as a clinically precise tool that can automatically carry out treatment for patients as prescribed by a physiotherapist or Chinese physician,” said Zhang, who graduated in 2010 from NTU’s double degree programme in biomedical sciences and Chinese medicine.

“This is probably the first such

Massage robot ‘Emma’, operated by Albert Zhang, a 32-year-old NTU graduate and founder of start-up company AiTreat, gives a lower-back massage to Leon Kwek of the men’s national basketball team, at Kin Teck Tong’s Sports Science and Chinese Medicine Clinic yesterday.

PHOTO: DAMIEN TEO

robot in the world developed specifically for use by Traditional Chinese Medicine (TCM) physicians and sports therapists.

“Our aim is not to replace the therapists who are skilled in sports massage and acupoint therapy, but to improve productivity by enabling one therapist to treat multiple patients with the help of our robots.”

He added: “What we have demonstrated is the possibility of having a tireless clinical massage therapist that always delivers high quality treatment.”

Emma, which has a user-friendly interface and recommended guidelines for various sports injuries, was designed by Zhang based on his experience as a licensed TCM physician in Singapore for the past five years.

Coco Zhang, Kin Teck Tong’s

* WHO’S EMMA?

- Emma — short for Expert Manipulative Massage Automation — is a robot consisting of a single, six-axis robotic arm capable of highly articulated movements.

- It has a 3D-stereoscopic camera for vision, and a customised, fully rotatable 3D-printed massage tip. Several safety features, which work in tandem with advanced pressure sensors, are also in-built to ensure the comfort and the safety of its patients.

- To maintain a consistent quality of therapy, Emma has sensors and diagnostic functions that will measure the progress of the patient and the exact stiffness of a particular muscle or tendon.

- These detailed diagnostics are uploaded to a cloud-based system where the progress of each patient can be analysed and generated into a performance report. For the first time in TCM treatment, patients can accurately measure their recovery progress using precise empirical data.

- This is extremely valuable for athletes, as their injuries, treatment and recovery can now be measured and monitored by their physician and therapists. In addition, the treatment programmes can be adjusted according to the progress of the patients’ recovery.

executive director, said Emma has the potential to make a major impact in the TCM and sports science industry.

“Like many developed countries, Singapore has the problem of an ageing population. Over the next decade, more people are going to suffer from physical ailments such as arthritis and will be seeking treatment,” she said.

“However, as the younger generation prefers knowledge-based jobs rather than physically intensive jobs such as massage therapists, there will likely be a shortage of trained therapists in future.

“And since Kin Teck Tong is the exclusive TCM Partner of the Singapore Athletic Association and Basketball Association of Singapore, being able to deliver high quality therapy consistently is extremely important for the athletes’ recovery.”