


# Massage robot to start product evaluation in the US and clinical trial in Singapore

 [roboticsandautomationnews.com/2023/02/14/massage-robot-to-start-product-evaluation-in-the-us-and-clinical-trial-in-singapore/60259/](https://roboticsandautomationnews.com/2023/02/14/massage-robot-to-start-product-evaluation-in-the-us-and-clinical-trial-in-singapore/60259/)

Mai Tao

February 14, 2023



**Singapore robotics firm AiTreat will be embarking on a new product evaluation in the United States for their massage robot powered by artificial intelligence at Mayo Clinic, USA.**

At the same time, a randomised controlled trial (RCT) comparing the efficacy of the massage robot with existing therapies such as manual Tuina – a massage used in Traditional Chinese Medicine (TCM) – in managing chronic low back pain is also being planned in Singapore.

The RCT will be jointly led by the biomedical sciences and Chinese medicine programme at Nanyang Technological University, Singapore (NTU Singapore) and Singapore General Hospital (SGH).

The above two research projects will be using EMMA – short for Expert Manipulative Massage Automation – the flagship product of AiTreat, a start-up incubated by NTU Singapore through its innovation and enterprise company, NTUitive.

EMMA aims to alleviate the manpower shortage of skilled massage therapists and possibly to augment the work of physiotherapists in managing less complex cases in Singapore and other countries, thus helping bring down treatment costs while providing consistent high-quality treatment to every patient.

Since 2019, the start-up has deployed over 19 EMMA units working in 14 locations in Singapore, China and the US, such as in TCM clinics, physiotherapy centres and hospitals, clocking over 41,500 treatment hours.

The new proposed RCT by NTU and SGH is in line with another earlier multi-centre research that compared the efficacy of Tuina with physiotherapy in helping to relieve chronic low back pain, conducted by Mayo Clinic in Minnesota, USA, SGH in Singapore, and Jinan University in Guangzhou, China.

The earlier multi-centre research used human Tuina therapists instead of robots, and was sponsored by The HEAD Foundation, an international charitable organisation that supports quality education and effective healthcare to improve lives in Asia.

## **How the proposed RCT will be conducted**

---

AiTreat hopes to enrol about 180 patients for the proposed RCT by the end of 2023. If the trial results are positive, it will pave the way for a robotic solution of an integrative East-West approach in the management of low back pain, to be accepted as part of musculoskeletal intervention in mainstream healthcare.

To set the stage for the proposed research collaboration, an EMMA demonstration was included in a four-day workshop held at the Mayo Clinic earlier last week.

The proposed clinical research protocol for the efficacy and safety of robotic Tuina was also presented by Associate Professor Linda Zhong, director of biomedical sciences and Chinese medicine at the School of Biological Sciences, NTU, and was followed by discussions among the workshop participants.

Assoc Prof Zhong, co-investigator of the proposed RCT, says: “The proposed multi-centre clinical study will combine the concepts of chronic low back pain’s diagnosis and TCM pattern differentiation criteria – which is the analysis and summarisation of the clinical symptoms obtained through four diagnostic methods: inspection, auscultation and smell, inquiry, and pulse taking and palpation.

“It seeks to assess the effectiveness and safety of robotic Tuina within different population groups more precisely and individually. It will also explore the feasibility of using robotic Tuina in Singapore’s daily clinical practice.”

Dr Brent Bauer, director of the Mayo Clinic complementary and integrative medicine programme, said: “Our multi-centre Tuina clinical trial has generated much interest, both from patients and physicians.

“However, we face a shortage of skilled practitioners in the US – and a growing reluctance in young people to pursue careers in the caring professions. So, we are heading to a perfect storm where we will have clinically proven efficacy, a nearly endless demand, and insufficient practitioners to meet that need.

“Robotic delivery of Tuina and other massage therapies seems inevitable. I am glad that we can help lead the way by conducting a clinical evaluation of this new technology.”

“As a foundation with a mission to help improve life, The HEAD Foundation supports the development of healthcare solutions that integrates Eastern medical practices and Western medical practices,” says Professor Cham Tao Soon, chairman of the advisory board of the HEAD Foundation.

“I am glad that we have the opportunity to support a start-up incubated at NTU while its innovative healthcare product is helping to relieve pain and improve health in our community. It is also a natural extension of the three-centre Tuina clinical research we are sponsoring,” adds Prof Cham, who is also president emeritus and the founding president of NTU.

Professor Chen Jiaxu, dean of the School of Traditional Chinese Medicine at Jinan University, Guangzhou, highlights the innovative use of AI and robotics for TCM: “Tuina is an essential form of TCM therapy while artificial intelligence is a very powerful new technology.

“I am glad they are now being integrated to benefit patients who are suffering from back pain and other musculoskeletal conditions. It will reduce the workload of TCM therapists significantly and allow them to focus on diagnosis and the more intricate parts of the treatment. It also shows that TCM is keeping pace with the progress of modern science and technology.”

Professor Tay Boon Keng, emeritus consultant, orthopaedic surgery at SGH, says more than 80 per cent of the adult population suffer from back pain at one time or another, which has a serious impact on productivity: “The challenge in Singapore and the rest of Southeast Asia is that we do not have enough qualified TCM practitioners and physiotherapists to treat the large number of patients.

“If an automated solution like EMMA is proven safe and effective, it will be of great help to both the healthcare community and our patients.”

## **AiTreat future plans**

---

Using the clinical treatment results gathered through the new trials and deployments, AiTreat will improve the AI algorithms and performance of its robot, and it seeks to launch the next-generation EMMA in Singapore, US and China markets by 2024.

AiTreat was founded in 2015 by Dr Albert Zhang, an alumnus from the NTU's pioneer batch of its Double Degree programme in Biomedical Sciences and Chinese Medicine. Since then, the start-up has completed a multi-million Series A funding round last year and is currently planning for its Series A+ fundraising later this year.

Investors of AiTreat include US-based venture capital firm BRC Innovation, leading robotics and AI company Flexiv, Tasly International Capital, the investment arm of pharmaceutical company Tasly; Comfort Enterprise, which represents Ogawa, a leading brand for healthcare and wellness.

*Main image: (Foreground in blue suit) AiTreat CEO and NTU alumnus Mr Albert Zhang doing a demonstration of the AiTreat EMMA massage robot at the workshop held at the Mayo Clinic in Minnesota, United States, and presenting to workshop participants.*