

A combination of physiotherapy and engineering skills has created BackHug, a robotic gamechanger for those suffering from back pain, reveals **Ann Wallace**

point the fingers

WHILE working as a physiotherapist in Edinburgh, Chongsu Lee developed an innovative technique to help people with chronic back pain, including many with MS and Parkinson's.

It involved the gentle manipulation of the spine and soft tissue, to release tension and allow better movement of the neck, shoulders and back. As that tension eased off, blood and lymph circulation and nerve function gradually improved.

BackHug was born when Chongsu – who was an engineer before he became a physiotherapist – replaced the manual technique with robotic fingers.

“Automated massage technologies have been around since the 1950s, but they haven't evolved from their basic concept,” he explains.

“What we want to do is revolutionise the sector by using technology.”

Chongsu was an international troubleshooter for car giant Hyundai, based in his home country of South Korea, when he developed an interest in massage therapy.

“I was volunteering at a local clinic which delivered physio, massage and acupuncture, and, while I liked my job very much, I found this extra work gave me a much bigger sense of satisfaction,” he says.

“I couldn't shake off the feeling, so I decided to go back to university and study physiotherapy.”

A chance meeting with a Scottish businessman on a backpacking trip in the Czech Republic several years before had sparked Chongsu's interest in Edinburgh, so in 2006, he decided to move to the capital and started a Masters in Physiotherapy at Queen Margaret University.



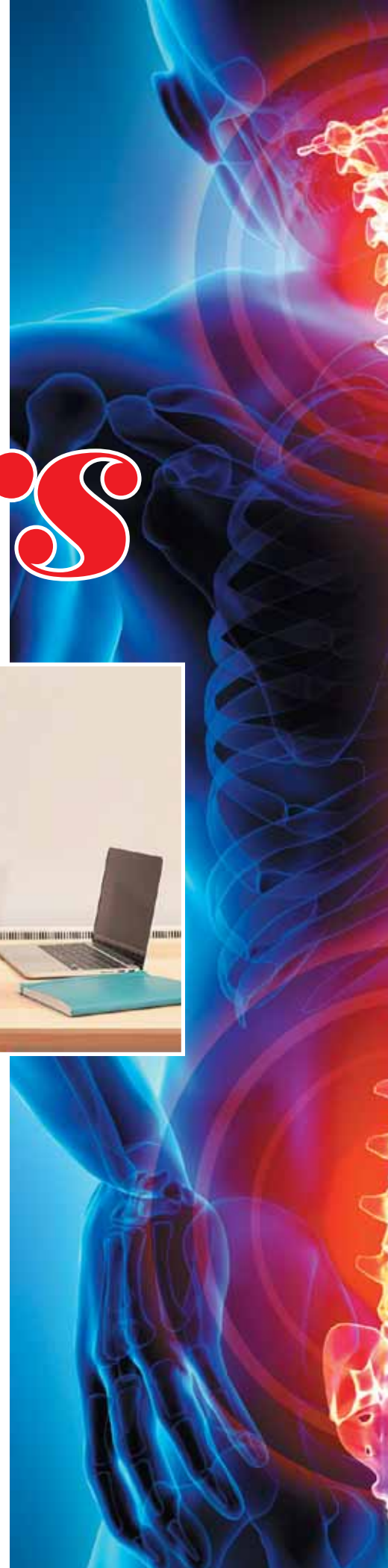
Chongsu Lee has developed an innovative technique and robot to help people with chronic back pain

“It was a big challenge, of course – I had some English but not much, and the culture and education system were very different,” he says.

“The course was fantastic. It allowed me to develop my interest in holistic approaches to improving health.”

After a spell as a sports physiotherapist working with the under-11s at Dunfermline Athletic – “It was so much fun, as I travelled around Scotland with them and now Dunfermline is definitely my team,” he laughs – Chongsu set up Point One clinics in Edinburgh and Glasgow.

His innovative spine manipulation technique quickly became popular, particularly with patients who had multiple sclerosis and were looking for relief from pain in the back and neck. Some patients travelled long distances from around the





The BackHug chair follows the curvature of the spine while robotic fingers massage and relieve tension

country to visit the clinics. As he refined the technique, and more and more patients told him about improvements to their health and mobility as a result, Chongsu decided to combine his physiotherapy skills with his engineering background.

“I have always considered the relationship between client and practitioner, and how that can change and improve with a little extra effort from the practitioner,” he says.

“The technique I was developing concentrated on the centre of the back. Our backs stiffen with age, lack of exercise and too much sitting, so this was the area which needed much more work.

“But the method was time-consuming, and needed considerable force over sustained time to push and hold and for a practitioner it is hard to maintain that force.

“Thinking about that, and using my engineering background, I came up with the idea for BackHug, a therapeutic robot which presses the back, releasing stress and can be used by patients at home.”

Funding from a raft of organisations, including a £100,000 grant from Scottish Enterprise, venture capital investment and a crowdfunding campaign which raised £800,000, helped Chongsu to get his invention off the ground.

The first version, made into a batch of 40 units in December 2017, was aimed solely at patients with MS and it was a great success. Users lie down on the BackHug chair, which follows the curvature of the spine, and the robotic “fingers” massage and relieve tension and stiffness.

The gentle rocking movement on the user’s back only carries up to 15kg of force, compared to the 60kg of force typically applied by other therapeutic devices that have been operating in the market for

decades. Chongsu says: “Of course, it was not curing MS, but for some patients it helped a lot, and as word spread, people with other back and neck conditions and issues were keen to try it.”

Now Chongsu is targeting workspaces, gyms and hotels where users can book and pay for the service inside smart, self-service cubicles, using the mobile app.

BackHug has installed its first two cubicles in the Aberdeen Standard Offices in Edinburgh and at RBS Drummond House, with a further 15 installations planned across the UK before Christmas, and another 30 before the first quarter of 2020.

With back tension affecting 65 per cent of the adult population each month, Chongsu believes his technology – which has had backing from the Scottish Government – could change thousands of lives.

Chongsu and the 14-strong finance, business development, marketing, graphics and software team now working for his start-up company Pacla Medical, are “cautiously optimistic” about the future.

“It is still very early days and we will be testing the market response over the next six months to a year, but we are pleased with what we have achieved so far,” says Chongsu.

“We plan to look beyond the UK market into Europe and the US after next summer.”

He adds: “It is a team journey – I work with great people and as we develop the business, we all have opportunities to grow as individuals too.

“I feel very blessed, too, to have had the support of my wife, Soo, who has been 100 per cent supportive.

“It has been an interesting journey for all of us.” ■

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