Peer-supported AI app creates personalised rehab programmes

Good Boost is a mission-led organisation that provides affordable and accessible therapeutic exercise programmes for both in water and on land via an AI app. We spoke to its founder, Ben Wilkins, about Good Boost's impact on the rehab realm and the importance of team motivation to propel its success.

How did you come up with the idea for Good Boost?

I originally trained as an osteopath, but realised before graduating that I was more interested in public health and health systems, so I went off to do an MSc at Oxford University in musculoskeletal science.

I completed research while I was there and published papers looking into aquatic rehab and community rehabilitation, including the role of peers and how peers can support each other as patients. I also worked for some social enterprises and some charities, and one of my roles was running one of the largest physical activity programmes for older adults.

The idea for *Good Boost* came partly because of patients I was seeing, both

within organisations and clinical practice and also due to my mum's experience of knee pain. If you're on a waiting list for a hip or knee replacement, walking and standing is painful, so being told to do some squats to build some strength up pre-operation just isn't an option. However, being in water is low-impact and low-pain, so I invited a few people to a pool to trial a pilot, and people loved it.

We're now a team of nine people, made up of physiotherapists, clinicians, researchers, engineers, and operation specialists. We have a very specialist – yet broad – skill set, so we're able to do some really cool stuff.

What steps did you take to make the idea a reality?

I was on a bus when I came up with the idea. I thought about using a local swimming pool and how we could have ten people with completely different conditions join a group class. It needed to be suitable for a diverse group of people and joint problems, not just one specific condition.

We decided to run a pilot and posted about it on local social media pages in Oxford. We spoke to local swimming pools and arranged to hire a pool for an hour over a few weeks. We had eight people come along for the pilot and we gave each person a different set of exercises to do in the pool based on their condition.

Before we started the pilot, we printed out lots of aqua exercises, drew sketches of our own and laminated them so every participant could have their personalised waterproof programme. The pilot classes ran for six weeks.

We asked people before, during and after how they were feeling and how they felt they were able to better self-manage their condition. At the end of it, people said they wanted to continue, so we spoke to the swimming pool and found a way to continue hiring it long-term.

People started paying and then around six months later, we thought about expanding to more pools. We tried, and it was a nightmare because of scheduling – we were all still working clinicians. We thought about how we could do this without a clinician involved, and that's where we started thinking about *technology and AI* – that was about four years ago. We registered Good Boost as a company two and a half years ago and launched in ten pools in January 2019.

How has the app developed and what has the uptake been like?

It’s been a challenging 12 months because swimming pools have been closed due to COVID-19. Yet, we’ve been in a good position as we’ve been funded by government contracts, and they’ve been very supportive and flexible.

We’ve moved our time scale so we can continue with our developments, which has been great because we’ve been able to take everything offline to go through the research, data and details and further improve our technology.

We also launched a land version for our participants, as they were getting in touch saying that they missed their pool sessions over lockdown. We built it for them and had some hugely positive feedback. We’re using our learnings to create a publicly downloadable AI aqua rehab app this summer that has a dry side option too.

How do patients use the app?

We’ve had a downloadable version since September last year. Before then, you had to be at a swimming pool to access Good Boost, where participants are provided with waterproof tablets with our technology preinstalled.

When the aqua app launches in the summer, anyone will be able to access our rehab technology. New users will need to fill in their details, information about their condition, and their level of physical and swimming ability.

Once users submit the information, our AI will generate the most appropriate session for users to start with. They will complete that session in the swimming pool and provide more feedback, such as if one of the exercises caused pain in their hip or during a certain movement.

Our system then looks at patterns – that pattern recognition means that every session keeps adapting and evolving based on a feedback loop that’s informed by user data, research evidence and clinical guidelines.

The holy grail of rehab is to move your joints, muscles and ligaments to the point just beyond the zone of comfort. If you don’t get to the level where you’re pushing your tissues to the point of change, no change will take place – there’s no strengthening, benefit or recovery. That’s what Good Boost’s technology works to balance; making sure exercises are safe and optimal.

What is the group element of Good Boost?

Just because someone’s got a health app on their phone – even if it’s a personalised AI one – there’s still generally low adherence. People don’t stick to it. The real challenge of the 21st century in health is the non-communicable diseases like arthritis, coronary heart disease and diabetes. These challenges require sustained lifestyle changes that can only be achieved through consistent motivation and habits.

There are over 300,000 medical apps on the planet and there hasn’t been a massive improvement in health. In fact, rates of many diseases continue to climb.

Where motivation does exist, is within people and social connections. The most powerful thing is patients supporting patients – peer-supported rehabilitation. What our technology enables is peer-rehab groups in person at a leisure centre where you don’t need to have a physio on site.

If you can create the reassurance that people will get the right exercises for them, as a peer support group, they provide each other with that motivation and reason to come back to talk about the football at the weekend or The Great British Bake Off on the TV. They’re coming back for each other, not themselves – they feel accountable to themselves and more importantly, accountable to the group. That’s how we solve the challenge of 2.4 billion people needing rehabilitation on the planet.

With hip and knee replacements, the challenge is huge. 73% of orthopaedic surgeries did not take place between April and October last year. The number of people who have been on a waiting list for 18 or more weeks has shot up from around 100,000 at the start of 2020 to almost 240,000 now. The backlog is huge. We need more ways for patients to support each other.

What would you say has been the biggest challenge so far?

It’s a very new area of technology and health, so regulation is rushing to keep up with how fast medical technology is developing. We’ve gone through all of our systems and kitemarks, but they keep evolving. Having to be ahead of the curve to know how and what we need to report, evidence and audit has been a challenge to overcome.

Despite this, we’re getting there, and as a team who previously hadn’t worked in digital health, it’s given us opportunities to develop new technology. We’re working on a computer vision system to monitor people’s movements on land and in water so we can automatically track their physical function. This is important, because we found that when we asked people: “How many times can you go from sitting to standing on a chair in 30 seconds?”, most gave responses that were unlikely to be accurate or true.

The self-reported data we were receiving via the app indicated massive positive improvement in individual participants, which we know wasn’t the real likely improvement in peoples’ function and besides, this would make us a miracle cure beyond existing medical science.

Our computer-vision system means we can objectively measure people – remotely, without needing an in-person physio.

With our plans for a publicly downloadable aqua rehab app this summer, it’s a great opportunity to gather the granularity of detail about someone’s physical function that is necessary to inform optimal exercise programmes and track progress over time.

Do you have external investment at the moment?

No, but we’re looking to find investors at the moment. We’re working to land our first investment this summer so we can build beyond what we do now.

There are around 26 million swimming pools on the planet. In nations like France and Spain, around 5% of households have their own swimming pool. There are almost 11 million swimming pools in the US alone. There is this massive opportunity here and that's why we're building the public aqua rehab app.

As a team, we have got more publications around aqua rehab than probably any other team on the planet. We're hyper specialists in aquatic technology, and what we do works. Now, we need that funding so we can go and take our mission global – to any swimming pool on the planet.

How do you see Good Boost evolving in the coming years?

We were working in 16 pools before lockdown and we were due to launch in an extra 40 pools by the end of last summer. Now, we'll be launching in 45 pools when the current COVID restrictions allow. We are working with some of the largest leisure providers across the UK.

We have pool participants that run their own Christmas parties because they have formed such a tight knit group in order to support each other. Our future is answering the question: "How do we create that group morale when you're a thousand miles away from someone else? How do you create that group mentality – that collective accountability to each other and yourself – that you want to manage your rehabilitation and your joint health?"

The most important thing we've learned in the past two years is that a better AI output is not the ultimate motivator for users – we do that anyway, that's our bread and butter. But just because it's the best output or best treatment in the world, this doesn't mean people want to do it.

The grand solution is about having the right options for people so that people want to do something, not just because they've been told to do it by their doctor. It's about applying more gamification, more collective group accountability to replicate the motivation we see in leisure centres in people's own home.

Ben Wilkins is the CEO and cofounder of Good Boost.

Article by KIRSTIE PICKERING