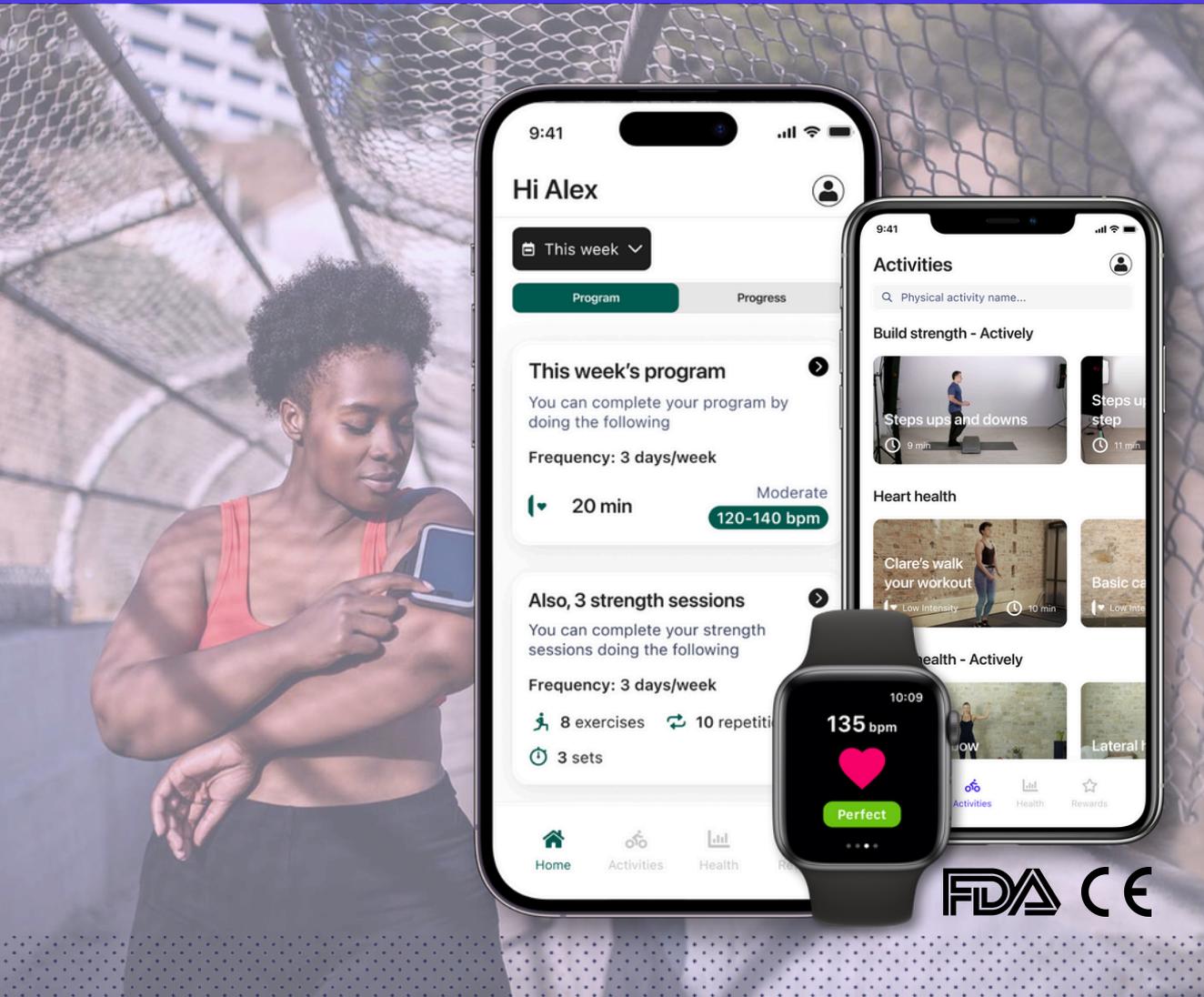


EXI<sup>®</sup>

Anything is  
**everything**  
exercise intelligence



EXI Enhances Cardiac Rehab Outcomes  
at NHS Trust: Increased Adherence Rates  
and Activity Levels

# Overview

**At this NHS Trust, Exercise Intelligence (EXI) empowers cardiac rehab patients to safely and confidently engage in physical activity immediately. EXI boosts adherence rates and activity levels beyond those typically achieved in the standard 12-week cardiac rehab program [1].**

## Introduction

Since 2020, the Portsmouth Hospitals University NHS Trust has incorporated Exercise Intelligence (EXI) into its cardiac rehabilitation service.

Initially implemented during lockdown when face-to-face sessions were unavailable, EXI's Class I medical software allowed for remote prescription, delivery, and monitoring of cardiac rehab in real-time.

For these reasons and more, EXI remains a key component of the cardiac rehab service, facilitating patient uptake, aiding adherence, and increasing activity levels.

Offered to patients immediately, EXI safely kickstarts the recovery and rehabilitation process, even if there's a wait for in-person sessions.

Its personalized physical activity and behavior change support is available as part of a hybrid 12-week cardiac rehab program, empowering and motivating patients to stay active between face-to-face sessions.

**The result: A sustained increase in activity over the 12 weeks, at a level more than double that achieved by typical cardiac rehab programs.**

## Key Outcomes

✓ **32%** increase in the six-minute walk test by week eight, sustained to week 12.

✓ **103%** increase in weekly step count at week 12.

✓ **71%** adherence (activity program completion) over 12 weeks.

✓ **37%** of patients completed 100% of their 12-week intensity-, duration- and frequency-based activity program.

[1] <https://heart.bmj.com/content/heartjnl/104/17/1394.full.pdf>

## The Challenges of Cardiac Rehab

Cardiac rehabilitation is vital for recovery and prevention of future cardiac events, but uptake remains low. According to the British Heart Foundation (BHF), only about 50% of patients utilize available support.

So, why is this?

With cardiac rehab programs traditionally delivered on-site in hospitals, the locations are often inconvenient and may be unappealing due to recent traumatic experiences.

Another issue is the limited hospital capacity, which often causes patients to wait weeks to start in-person cardiac rehab. By the time they gain access, patients' motivation may be lower than it would have been immediately following the cardiac event.

A systematic review [2] of factors associated with non-participation in, and dropout from, cardiac rehabilitation programs also identified co-morbidities such as type 2 diabetes and depressive symptoms as being associated with non-participation.

## Cardiac Rehab of the Future

Professor Sir Nilesh Samani – Medical Director of the British Heart Foundation – says in his foreword to the 2022 report *Cardiac Rehabilitation: A Participant's Perspective*: “Cardiac rehabilitation programs, like most medical services, have had to significantly modify their approach and delivery model in response to the COVID-19 pandemic.

“Many staff providing cardiac rehabilitation were redeployed during the pandemic and the services responded by moving from traditional group-based to home-based cardiac rehabilitation with embracing of new approaches and technology.”

He advises that we must now “learn from the direct experience of patients about the changes that have happened” to ensure the “new components which were most effective in offering patients a personalized rehabilitation program” are amplified and embedded.

He concludes: “Together, we can create a future state-of-the-art cardiac rehabilitation program which is menu-based, delivered across a variety of modes and truly personalized to the patients' needs and preferences.”

[2] <https://academic.oup.com/eurjcn/article/18/1/38/5980105>

[3] <https://www.bhf.org.uk/-/media/files/for-professionals/healthcare-professionals/data-and-statistics/bhf-cardiac-rehabilitation-report-2022.pdf?rev=62a3ce92a2714cda8ff371c2e8c1a03e&hash=CE71B78AE54B34F07B5446F0EA2B60ED#:~:text=The%20uptake%20of%20cardiac%20rehabilitation,do%20not%20realise%20its%20benefits.>

## EXI: Personalizing the Experience

In 2020, when face-to-face sessions were unavailable due to lockdown, Portsmouth's Queen Alexandra Hospital, part of the Portsmouth Hospitals University NHS Trust, first implemented EXI.

From a practitioner's perspective, it addressed a critical gap by allowing for remote prescription, delivery, and monitoring of cardiac rehab in real time. Proving effective, the Trust continues offering EXI today.

Patients are offered access to EXI immediately to start their recovery.

When the time comes to join the in-person program, some patients choose to do face-to-face sessions only while others prefer to do their own thing – going for walks and so on – with no support or with occasional check-ins with the team.

Approximately 40% of patients favor a hybrid approach, combining EXI with 6 weeks of face-to-face sessions and an in-person follow-up at week 12.

For these patients, EXI enables safe, regular exercise between face-to-face cardiac rehab sessions.



Delivered through EXI's easy-to-use app, each patient receives a personalized physical activity program based on their unique needs. Incorporating NICE, ACSM, and WHO medical guidelines for multiple chronic conditions, medications, and activity levels, patients can be assured of their safety while exercising independently.

Each activity program is based on the three variables of frequency, intensity and time, starting as low as 3 x 10 minutes of low-intensity activity a week if needed. The program adapts weekly to the individual's changing health status.



EXI also offers cardiac rehab education that can be digested at patients' own pace, the warm-ups and cool-downs critical for this group, and appropriate activity videos that provide confidence and guidance.

Along the way, multiple embedded behavior change methodologies tap into personal motivations and empower sustainable lifestyle changes.

And, with a secure practitioner portal allowing the cardiac rehab team to monitor people's progress and adherence to their EXI program in real time, additional support can be provided as needed – including during in-person sessions.

## Patients are Embracing Technology

EXI allows Portsmouth's cardiac rehab service to offer 24/7 support that flexes around patients' lifestyles and individual needs, harnessing the power of technology to safely adapt and personalize in a way that in-person delivery can struggle to achieve.

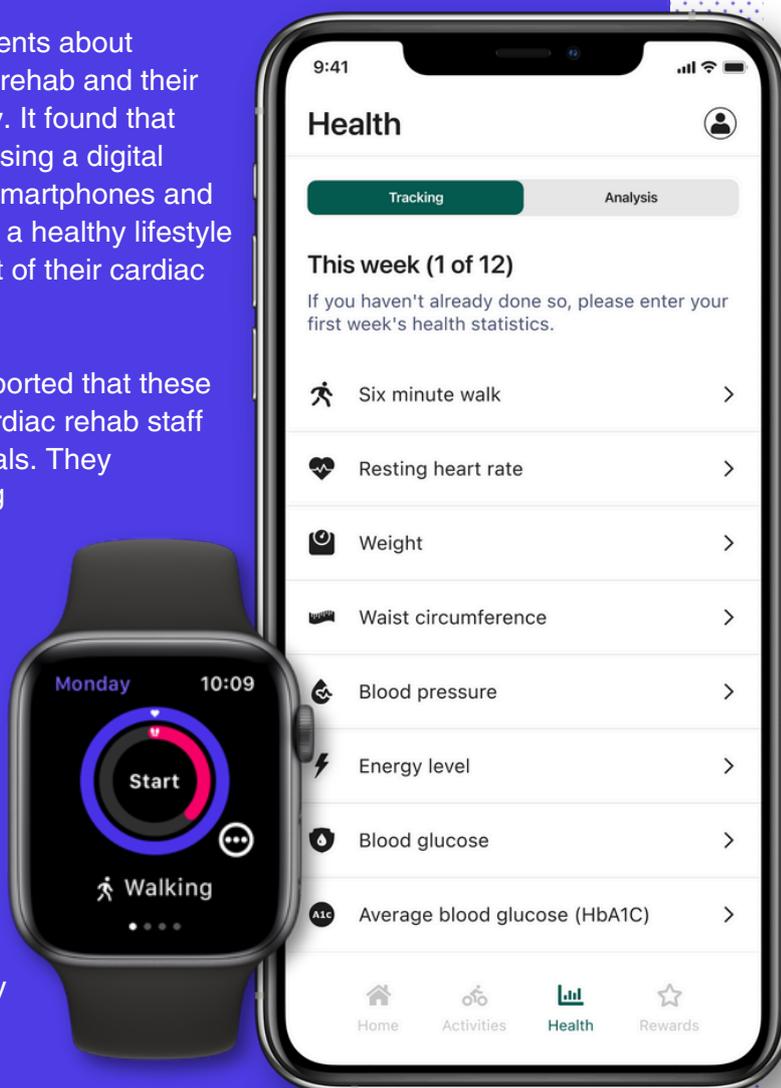
Further evidence of the increasingly valuable role of digital technology in cardiac rehab is provided by an independent study published in March 2024 [4].

The study interviewed patients about physical activity in cardiac rehab and their views on digital technology. It found that 60% of participants were using a digital device – most commonly smartphones and smartwatches – to support a healthy lifestyle and exercise in the context of their cardiac rehabilitation.

Users of digital devices reported that these were recommended by cardiac rehab staff and healthcare professionals. They identified health monitoring as the primary reason for using these devices, particularly for tracking heart rate during exercise. They also mentioned that the devices provided a sense of security.

The authors concluded: "Most users of digital technology perceived the monitoring functions of their digital devices as very beneficial for improving their physical activity and health.

"Additionally, receiving frequent or continuous feedback seemed to not only provide users of digital technology with a sense of security, but to also serve as a motivating factor, as reaching one's goals was perceived as increasing one's motivation, self-confidence (self-efficacy) and self-esteem."



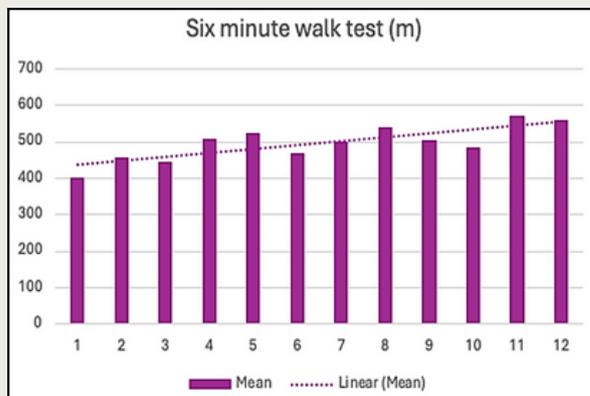
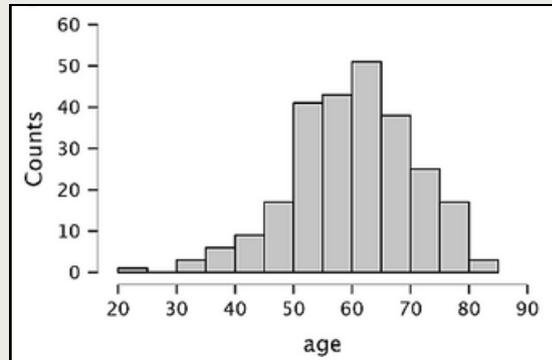
[4] <https://www.frontiersin.org/articles/10.3389/fspor.2024.1371652/full>

## Significant Results for the Hybrid Cohort

To date, 254 patients have opted to partake in the EXI pathway at Portsmouth—around 40% of those going through the cardiac rehab program.

Despite concerns that older people might not embrace digital platforms, good uptake has been seen across all age groups, with the mean age of those on the EXI pathway being 61 years.

It is also interesting to note that to date, 12% of those on the EXI pathway have had type 2 diabetes, while 13% have been suffering from depression, anxiety or stress – previously noted as obstacles to participation.



The results for the hybrid cohort include a 34% increase in the 6-minute walk test after 8 weeks, with this upward trend continued to the 12-week milestone.

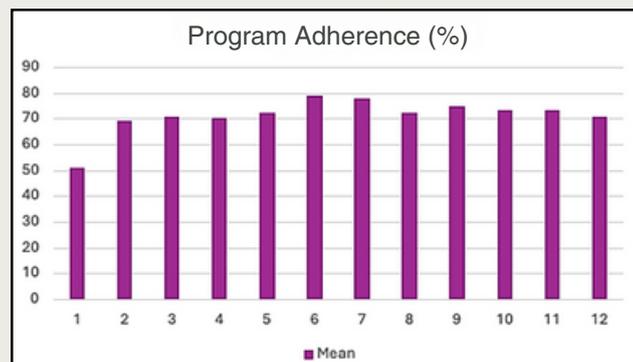
This demonstrates EXI users' significant and sustained improvements in physical fitness, crucial for reducing the risk of another cardiac event.

At the 12-week milestone, the final touchpoint with the hospital-based team, patients on the EXI pathway averaged 21,570 more steps each week than they achieved in week one – a 103% increase.

This is particularly notable when compared with the published outcomes of other cardiac rehab services, with one systematic review [5] showing cardiac rehab typically leads to patients doing an additional 1,423 steps a day. With EXI, patients add 3,081 steps a day.

Program adherence is also strong, with patients consistently achieving on average 70% or more of their program on most weeks; the average adherence over 12 weeks is 71%.

An impressive 37% of people achieve 100% of their program over this 12-week period.



[5] <https://www.frontiersin.org/articles/10.3389/fspor.2024.1371652/full>

## Final Thoughts

As the EXI program expands, the insights gained from this Trust will inform broader applications of technology-driven physical activity support in healthcare. The key to success is the perfect blend of human touch and digital innovation, ensuring patients feel supported, motivated, and empowered to make lasting health changes.

The encouraging outcomes from the initial 12-week program and the sustained engagement over the longer term suggest that EXI can be strategically scaled to other cardiac rehab programs globally. EXI's flexibility and seamless integration into existing clinical pathways make it an attractive solution for healthcare institutions seeking to improve physical activity among their patients.

The successful integration and positive results indicate that EXI has the potential to significantly benefit cardiac rehab services, promoting healthier lifestyles for patients who need it most. By strategically scaling EXI's unique program, healthcare providers can create a pathway for sustainable rehabilitation for patients who have experienced a cardiac event.

## About EXI Exercise Intelligence

EXI is Exercise Intelligence – a Software as a Medical Device (SaMD), part of the emerging field of digital therapeutics, that supports professionals to refer patients to exercise appropriately, and people with long-term health conditions to safely increase their physical activity. It's designed for up to 23 co-morbid physical and mental health conditions, including prevalent and serious non-communicable diseases (NCDs) such as obesity, cardiovascular disease, diabetes, hypertension, stroke, asthma, COPD, depression, anxiety and stress. Fully regulated and bringing together behavior change science with the latest clinical evidence and physical activity guidelines, it delivers safe, scalable, measurable health interventions that are medically proven, achievable for the end user, and quick and simple to utilize and monitor. It also harnesses behavior change support and rewards to engage patients in their program, drive adherence and support sustained physical activity. A smartphone app supports end users while a secure data portal allows the professional to monitor outcomes and adherence. For more information, visit [EXI.life](https://www.exi.life)

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