

WEARABLE TECHNOLOGY AND WELL-BEING





YOUR FEEDBACK IS
IMPORTANT TO US

Well-being and Wearable Technology



9:30	STC Introduction – Pim van Baarsen
9:35	Silverstone Park Introduction
9:40	INCUS – Christopher Ruddock
10:00	Prof Oliver Pearce and Prof Blaine Price
10:20	DDM Health – Arjun Panesar
10:40 – 11:00	Break
11:00	Spacebands – Harry Kimberley- Bowen
11:20	Panel Discussion
12:00	Lunch

WEARABLE TECHNOLOGY AND WELL-BEING



INCUS

Race or train with anyone.
Anywhere. In real life.
....at exactly the same time.

While livestreamed to the world.



INCUSPERFORMANCE.COM

WE DEVELOP & VALIDATE NEW
TECHNOLOGIES

TO HELP YOU PUSH BOUNDARIES
THROUGH SPORT & EXERCISE

INCUS

INCUS HAS ACHIEVED THE FIRST EVER MULTI-SPORT LIVESTREAM



SEAMLESS ACROSS SWIM/BIKE/RUN

Unlocks livestream for connected sensors

Unobtrusive & simple to deploy

INCUS

MIXED REALITY
RACING



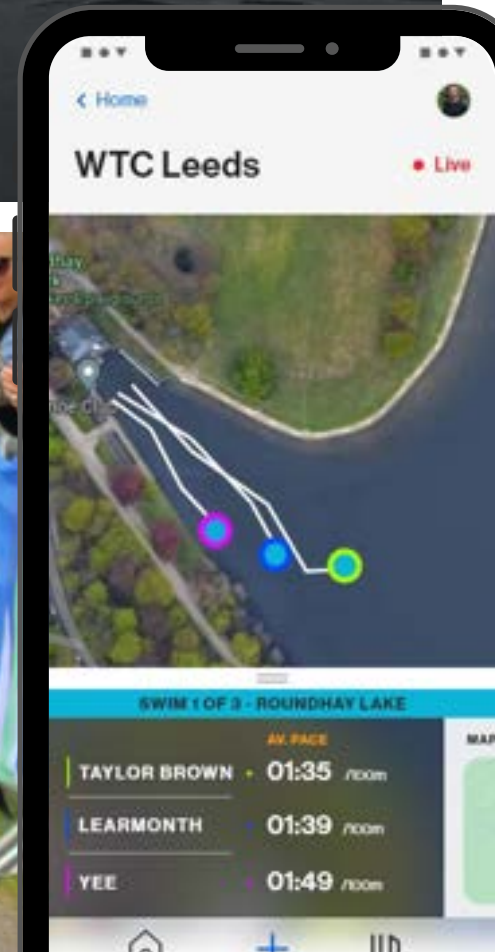
FOR EVENTS:

WE TURN THIS...



FOR EVENTS:

...INTO THIS



+ AN EXISTING CONSUMER EXPERIENCE

CURRENTLY AVAILABLE IN UK, EU, USA

1. PUT THE DEVICE ON & START

Completely automated from one press



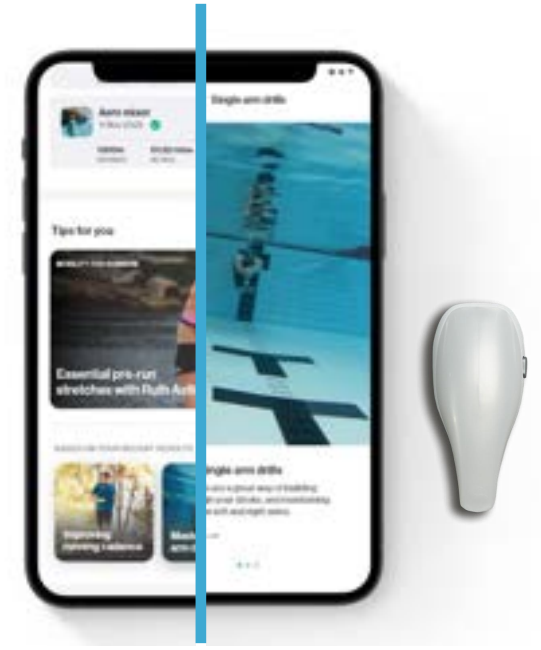
2. FORGET & TRAIN AS NORMAL

Feels invisible across swim/run/bike



3. CLEAR, ACTIONABLE FEEDBACK

+ Results based content & tips



WE TURN THIS...



FOR CONSUMERS:

...INTO THIS

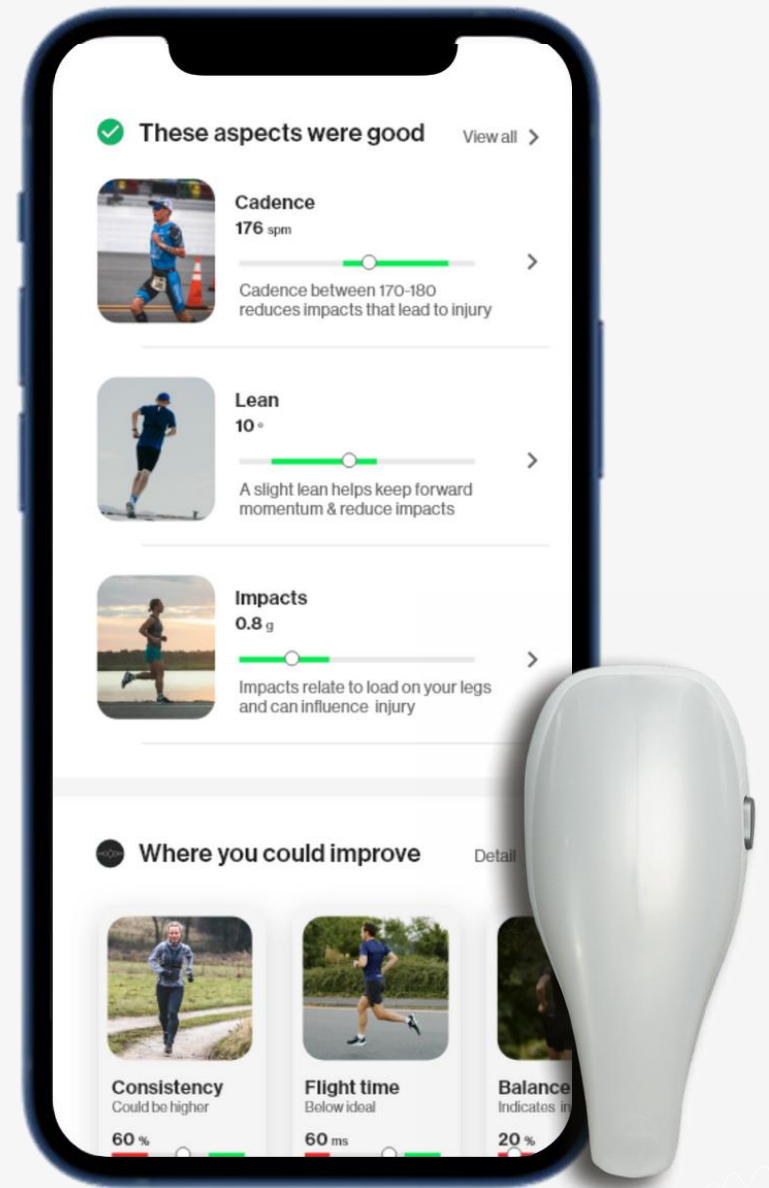
Existing integrations with:



STRAVA

APPLE WATCH

GARMIN



Multiple features & awards for innovation



The Guardian
20 Best Gadgets
of 2021

★★★★ 88%
220 Triathlon



sky

techradar

WT
WEARABLE TECHNOLOGIES

T3

BBC

METRO

WAREABLE



OUR PROCESS

'FULL STACK' APPROACH

End-to-end delivery for the best user experience

IN-FIELD TESTING, USER LABS + ENGAGEMENT

Working directly with users to build new technologies

ROBUST SCIENTIFIC VALIDATION

Published novel research to improve the industry as a whole





IT TOOK OVER 114
ITERATIONS TO CREATE
THE MOST POWERFUL MULTI-
SPORT WEARABLE IN THE WORLD

JNCUS

RUNS
ARING







DO SOMETHING A LITTLE BIT DIFFERENT
AND A LITTLE BETTER, EACH DAY

INCUS

THE FUTURE OF WELLBEING

The role of wearable technology in active wellbeing

ACCESSIBILITY

ACTION

STORYTELLING



EXPERIENCES THAT ENHANCE
HUMAN CONNECTION





INCUS

THANK YOU FOR LISTENING

Questions welcomed



[INCUSPERFORMANCE.COM](https://incusperformance.com)

WEARABLE TECHNOLOGY AND WELL-BEING



Silverstone Technology Centre Talk on Health Tech innovations in MKUH and The Open University

Professor Oliver Pearce (MKUH)

and

Professor Blaine Price (OU)



Milton Keynes
University Hospital

NHS Foundation Trust



Oli Brief Bio

- ▶ Consultant Hip and Knee specialist surgeon at MKUH.
- ▶ Visiting Professor Computing Science (Open University).
- ▶ Visiting Professor Materials Manufacturing + Aerospace (Cranfield University)
- ▶ Visiting Professor Health Sciences (University of Bedfordshire)
- ▶ Senior Clinical Lecturer in Musculoskeletal Sciences (UBMS).
- ▶ UK lead for Rapid Recovery Programmes for hip and knee arthroplasty.
- ▶ Chair of the BLMK Academic innovations group.

Blaine Brief Bio

- ▶ Professor of Computing at The Open University
- ▶ Visiting Researcher at MKUH
- ▶ Primary Discipline: Human-Computer Interaction
- ▶ Wearable and Ubiquitous computing for health and wellbeing (Quantified Self)
- ▶ Applications of Machine Learning to Healthcare
- ▶ Factors affecting engagement with wearable technology and data

Painpad

- ▶ A tangible device for monitoring pain on a NRG (0-10).
 - ▶ Ergonomic.
 - ▶ Large buttons.
 - ▶ LEDS and audible alerts to prompt pain score entry.
 - ▶ Date and time stamped pain scores linked to a patient's identifier.
-
- ▶ Auto-collates pain scores to a secure database.
 - ▶ Improved compliance wrt paper pain diaries.
 - ▶ No manual data entry.



Painpad device. Looking for patterns of pain post hip or knee replacement

- ▶ Using data from our painpad dating back to 2017, we are now in a position to look at the patterns of pain in patients who have had hip or knee replacement in MKUH in the last 4 years.
- ▶ Monitoring the pain levels daily after joint replacement, and collating as a large database can help
- ▶ This will permit fine tuning of patient analgesia for daycase hip and knee replacement based on digital data.
- ▶ Daycase is now a reality. But pain levels after discharge are an unknown, and this data will aid patient care and experience.



Painpad device. Looking for change in pain since changing to using tourniquet in TKR.

- ▶ Previous studies in orthopaedics have postulated that use of a tourniquet during surgery results in greater post operative pain.
- ▶ The Painpad data can be used to see if this postulate remains true in the context of a modern multi-modal pain pathway?
- ▶ 2 years ago an individual surgeon at MKUH started using a tourniquet, having previously performed surgery without tourniquet.
- ▶ The pain data from the painpad can be used for the 2 years-worth of patients prior to this change and post this change to prove or disprove this assertion.
- ▶ No other changes to patient management in this cohort took place in this time period, making them comparable groups.
- ▶ Our data disproves the old postulate...



Pillpad

- ▶ A tangible device for delivering medication from a cartridge.
 - ▶ Portable. Fits in pocket or handbag.
 - ▶ Enables reminder (to take meds). Improving compliance.
 - ▶ Also logs a digital record of medicine compliance.
-
- ▶ It's competition is the blister pack of tablets.

Pillpad

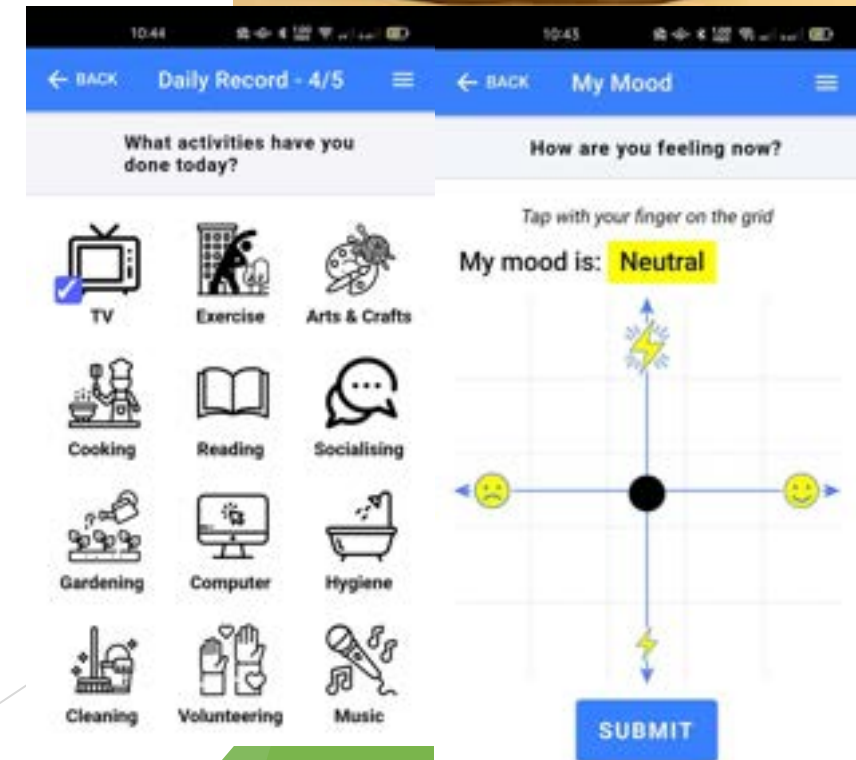
- ▶ Medical conditions requiring regular, long term, medicines compliance have improved outcomes.
- ▶ E.g.
 - ▶ - High Blood Pressure.
 - ▶ - Cardiac Medication.
 - ▶ - Diabetic Medication.
 - ▶ - Parkinson's Medication.
 - ▶ - Large Pharma trials.

Pillpad

- ▶ Interfaces with smart device for reminders and logging when pills taken.
- ▶ Generates feedback loop of compliance graphs for patient as well as their physician.

Other OU Digital Health Lab Projects

- ▶ Haptic feedback device to entrain stroke survivors to regain gait symmetry
- ▶ Machine Learning to predict risk of CAD to prioritize diagnostic tests
- ▶ Designing a new pain logging devices for pediatrics (pain location/intensity)
- ▶ Devices to give feedback to female recreational athletes to reduce injury
- ▶ Logging other Patient Reported Outcome Measures/Activities
- ▶ Wearable sensors to measure limb movement and joint angles...



MOJO. Motion of Joint Orthosis.

- ▶ Developing an array of 3D motion sensors (Inertial Measurement Units) to wear about the knee, post TKR, to record continuous joint position data.
- ▶ Previous work done (Open University and Cardiff University) proving accuracy of IMUs and algorithm to current gold standard of an optical gait lab.
- ▶ Now a post doctoral research thesis for Open University researcher, with a view to a wearable inexpensive (<£20) accurate elasticated device about the knee.
- ▶ Long term goal to provide objective data to feed back to robotically performed TKR surgery, to refine surgical techniques.
- ▶ (Collaboration with Open University and Cardiff University)



BLMK Academic Innovations Group

- ▶ A unique multi-disciplinary group of research active clinicians, university academics, Clinical Trials Unit, Primary Care and Secondary Care research groups. Universities represented: Open University, Cranfield, Bedford, Buckingham.
- ▶ Present goal is to provide a networking forum for academics to interface with Hospital clinicians for research collaborations.
- ▶ The vision is to provide a structure with seed funding as well as expertise for academics or clinicians to bring health care or healthtech innovations to get them off the ground.

Thank you

WEARABLE TECHNOLOGY AND WELL-BEING



THE PROBLEM

Healthcare systems are struggling



Non-communicable diseases cause **89%** of deaths



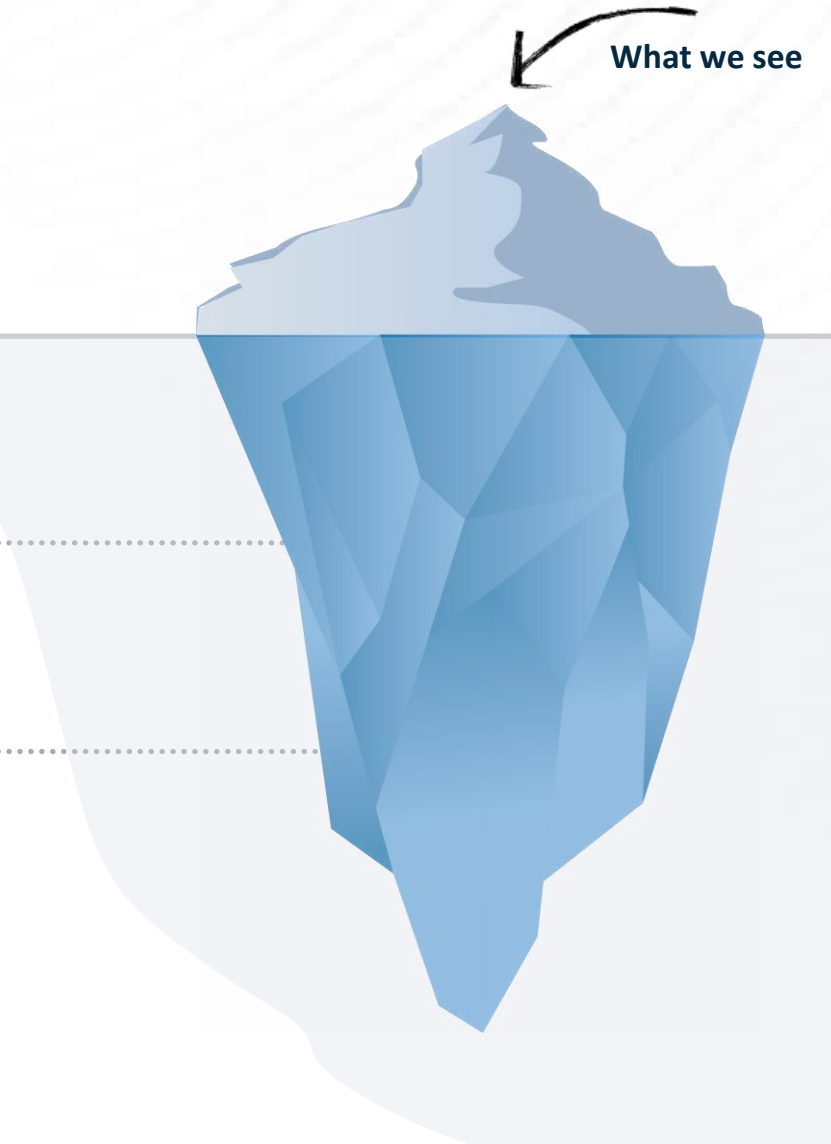
Obesity affects **40%** of people worldwide and contributes to significant ill health



Socioeconomically deprived achieve the worst outcomes



Healthcare systems **need** to provide digital support but **do not want to resource** multiple apps



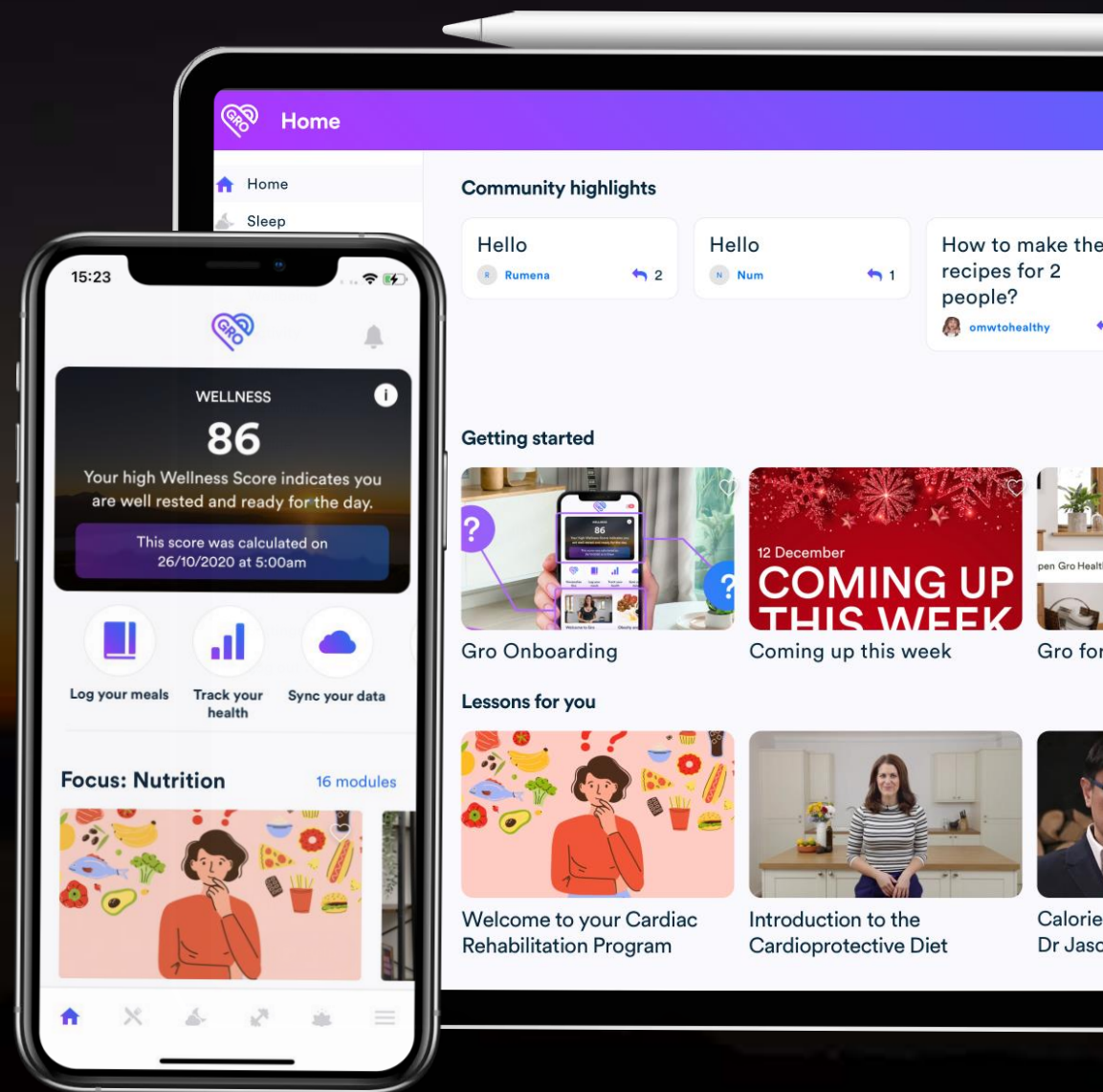


THE SOLUTION

Gro Health

Smart health app delivering personalised, clinically-validated health and wellbeing behavioural change programmes

NHS-certified support for 15 conditions



WHAT IS IT

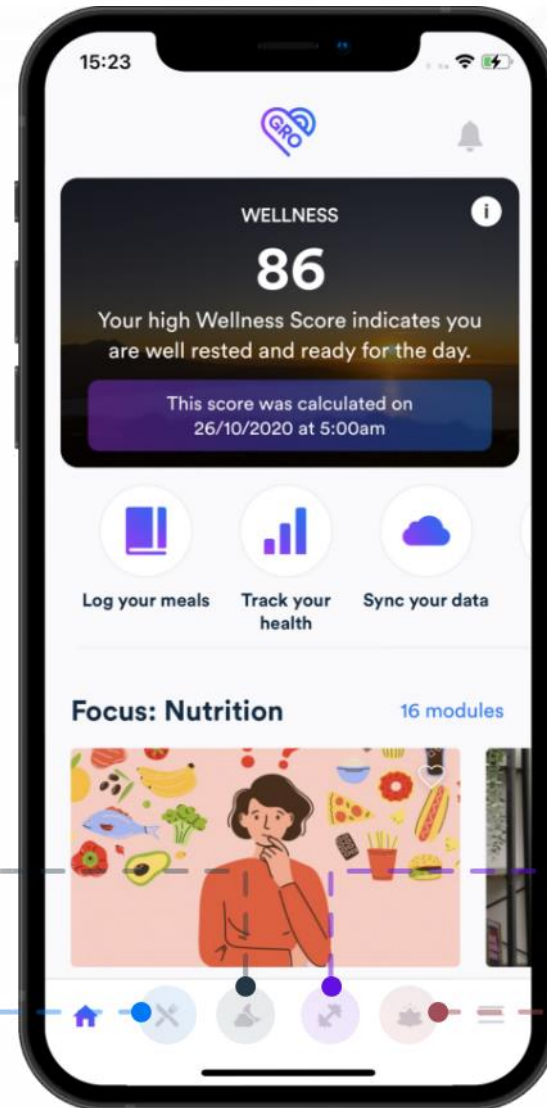
An end-to-end virtual health ecosystem



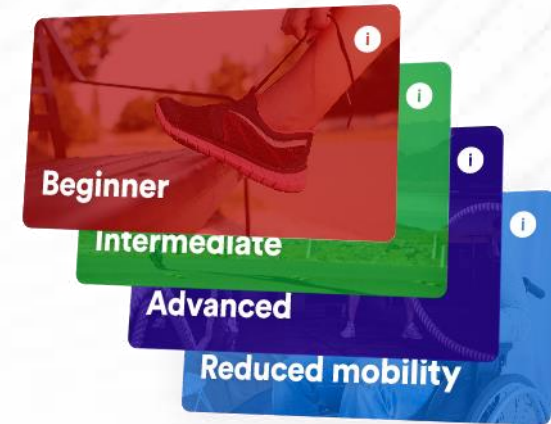
Sleep



Nutrition



Activity



Wellbeing



Enable and disable app features and evidence-based programs as desired





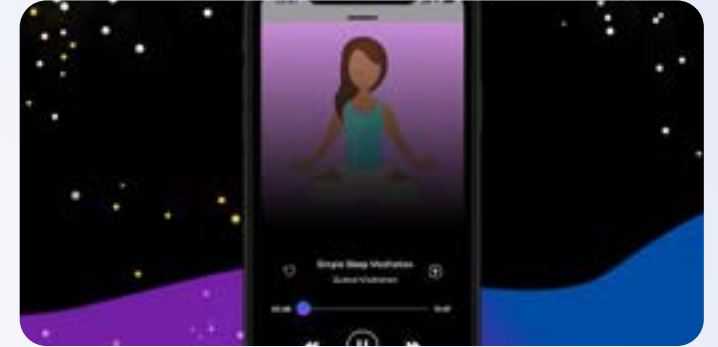
Features



Goal-focused structured health education programs



Therapy and coaching (ACT, CBT)



Behavioural change resources and activities



Health, symptom, food and document tracking



Wellness Score and data-driven insights

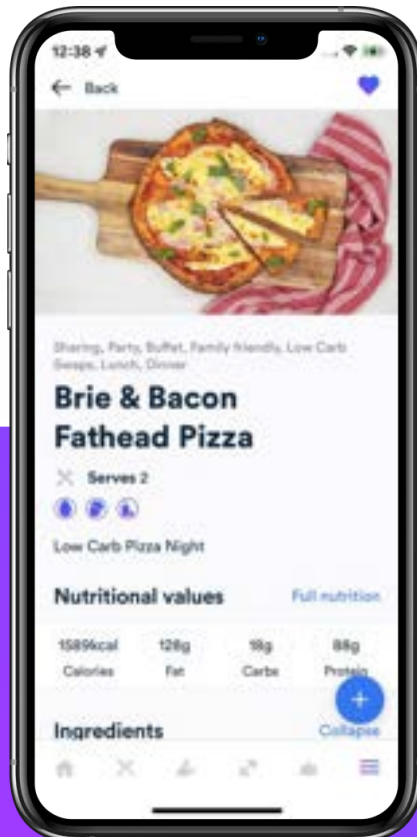


Live events, classes and webinars

Targeted, on-demand **behaviour change**

Nutrition

Recipes, Live cook-a-longs,
Meal plans, Shopping lists



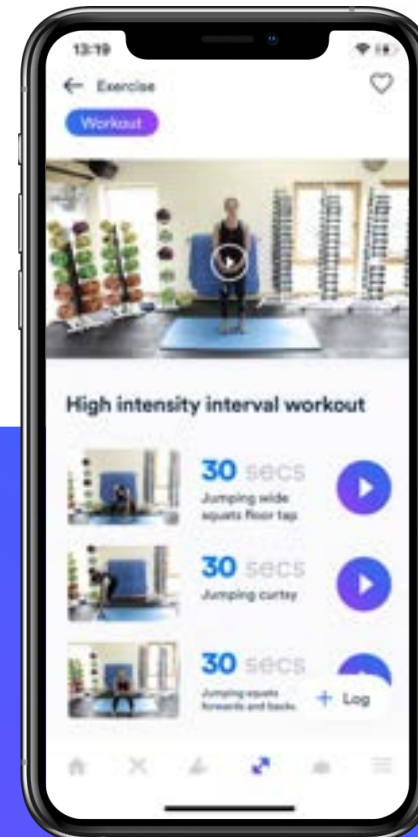
Mental Wellbeing

Immersive 360° mindfulness,
Yoga, Guided meditations



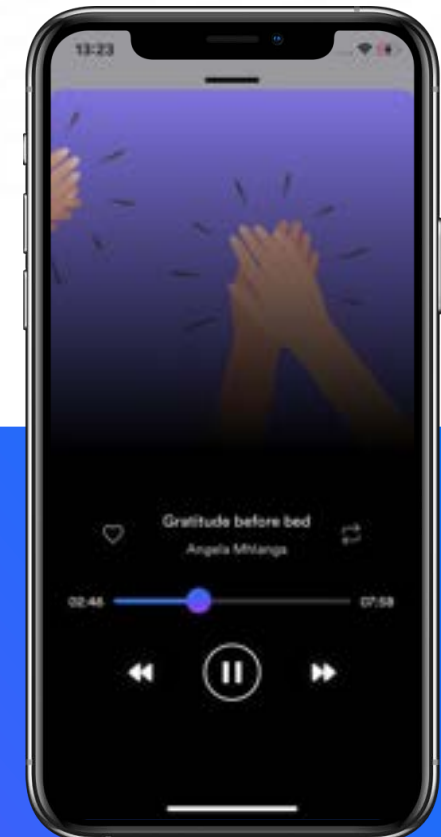
Activity and Exercise

Tailored to ability – Cardio, HIIT, Tai
Chi, Qi Gong and more



Sleep

Sleep stories, Meditations,
Relaxation sounds



Coaching and Community Support

Behaviour change is more effective when you communicate with peers.



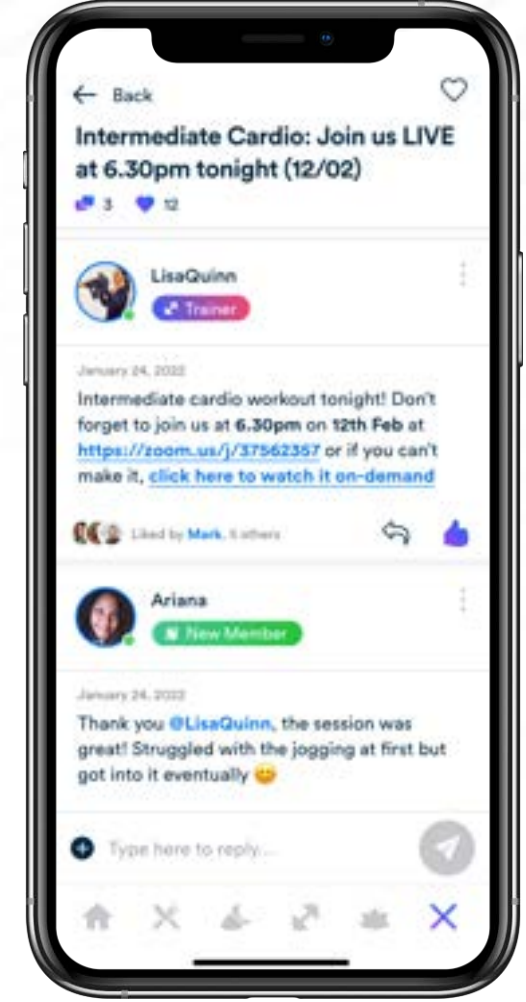
Private one-to-one health coaching



Group coaching and weekly virtual meetups



Moderated peer-to-peer community forum



Providing **instant** analytics and decision support

Customisable patient
programme pathway



Real-time analytics for
cohorts and individuals



Tailored user journey and
notifications



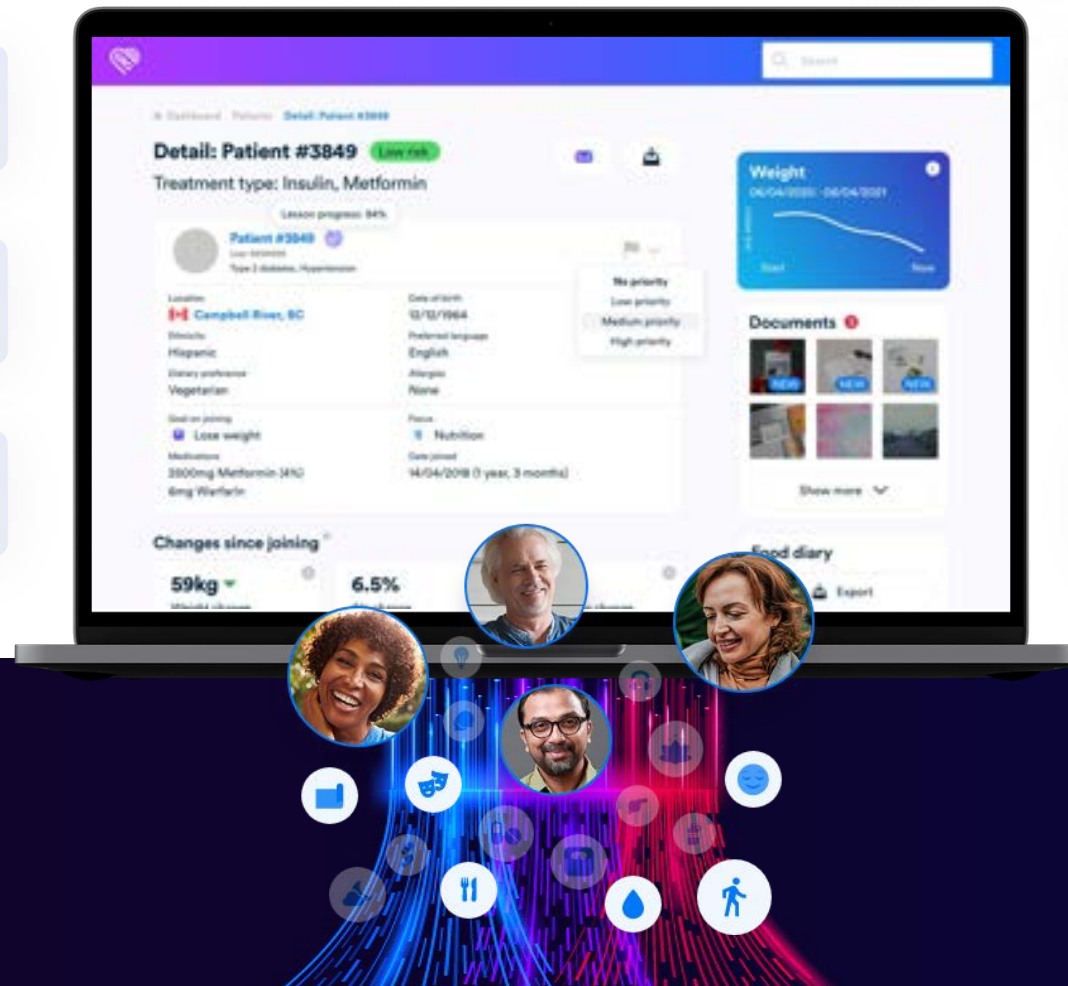
Remote home monitoring



Bi-directional
communication


















Clinical decision support



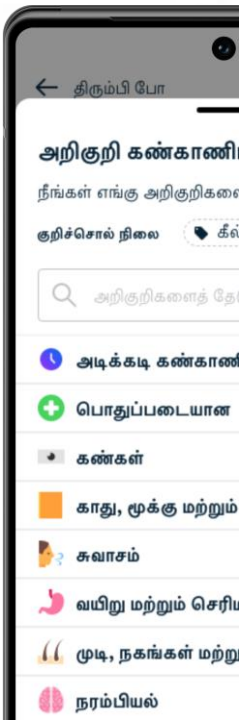
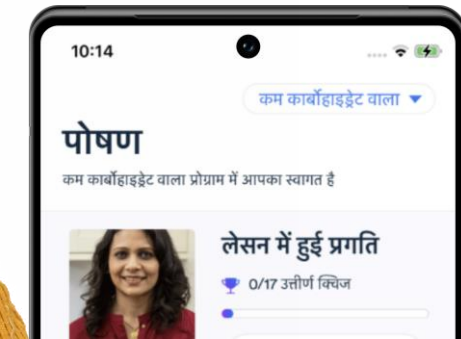
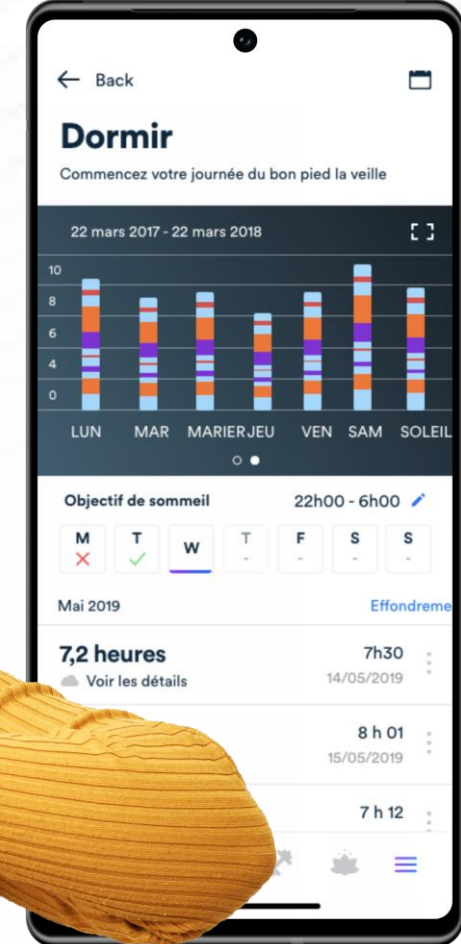
ACCESSIBLE AND INCLUSIVE CARE

We speak **your** language

The entire platform is available in:

 English	 French
 Albanian	 German
 Arabic	 Lithuanian
 Bengali	 Polish
Gujarati	 Portuguese
Hindi	 Romanian
Punjabi	 Spanish
 Urdu	 Turkish
 Tamil	 Welsh

Enhanced accessibility: subtitles and closed captions, stream to TV, WCAG 2.1 AA, screen reader support, customisable themes and digital exclusion support





PRECISION HEALTHCARE

NHScertified care for 15 conditions



Gro Health supports:


Type 2 Diabetes 

Prediabetes 

Weight Management (Tier 2, 3, 4)  

Non-alcoholic Fatty Liver Disease 

Polycystic Ovary Syndrome 

Cardiac Rehabilitation 

Heart Disease 

Hypertension 

Menopause

Musculoskeletal Health

Smoking Cessation

Anxiety

Stress

Children's Weight Management

Children's Mental Health & Wellbeing

 Balanced

 Low carbohydrate

 Mediterranean

Trusted by **30+** primary and secondary care services



Depended on by **enterprise**



PROVEN IN 14 RESEARCH STUDIES

People sustainably **lose weight** and reverse [type 2] diabetes

7%



Average body
weight reduction

60%

Eliminate or reduce
blood pressure,
cholesterol or
diabetes
medication

27%

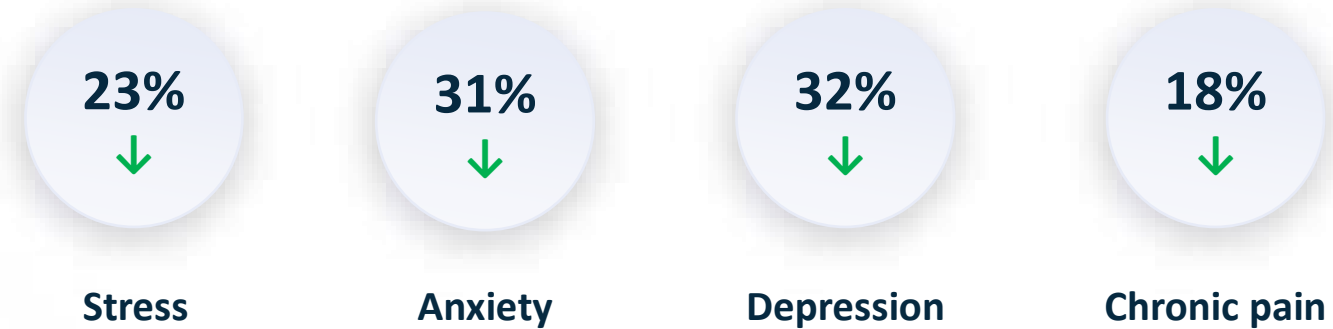
Achieve type 2
diabetes remission

Saslow LR, Summers C, Aikens JE, Unwin DJ- Outcomes of a Digitally Delivered Low-Carbohydrate Type 2 Diabetes Self-Management Program: 1-Year Results of a Single-Arm Longitudinal Study - JMIR Diabetes 2018;3(3):e12

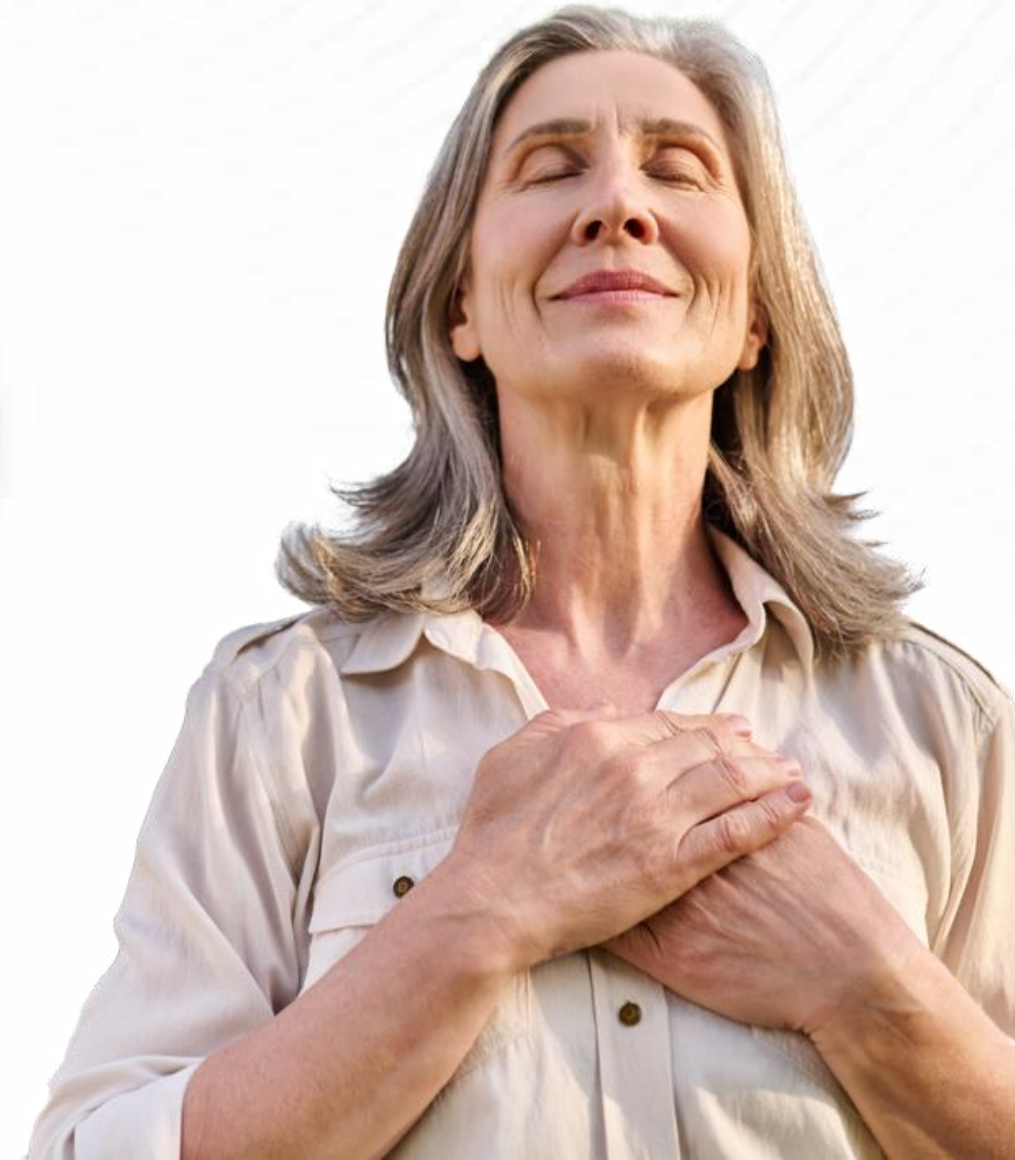


AFTER 12 WEEKS USE

People improve their **mental health** using Gro



Summers C, Wu P, Taylor AJG - Supporting Mental Health During the COVID-19 Pandemic Using a Digital Behavior Change Intervention: An Open-Label, Single-Arm, Pre-Post Intervention Study - JMIR Form Res 2021;5(10):e31273



CLINICAL BENEFITS

Clinicians **save money** and find Gro **easy-to-use**

86%

Accept
referral

87%

Retention at 12
weeks and
71% at 1 year

66%
↑

Higher acceptance
from ethnic
minority
communities



Quality of care is
equivalent to face-
to-face care

4.8x
ROI

Quality of care
is equivalent to
face-to-face
care

Download Gro today



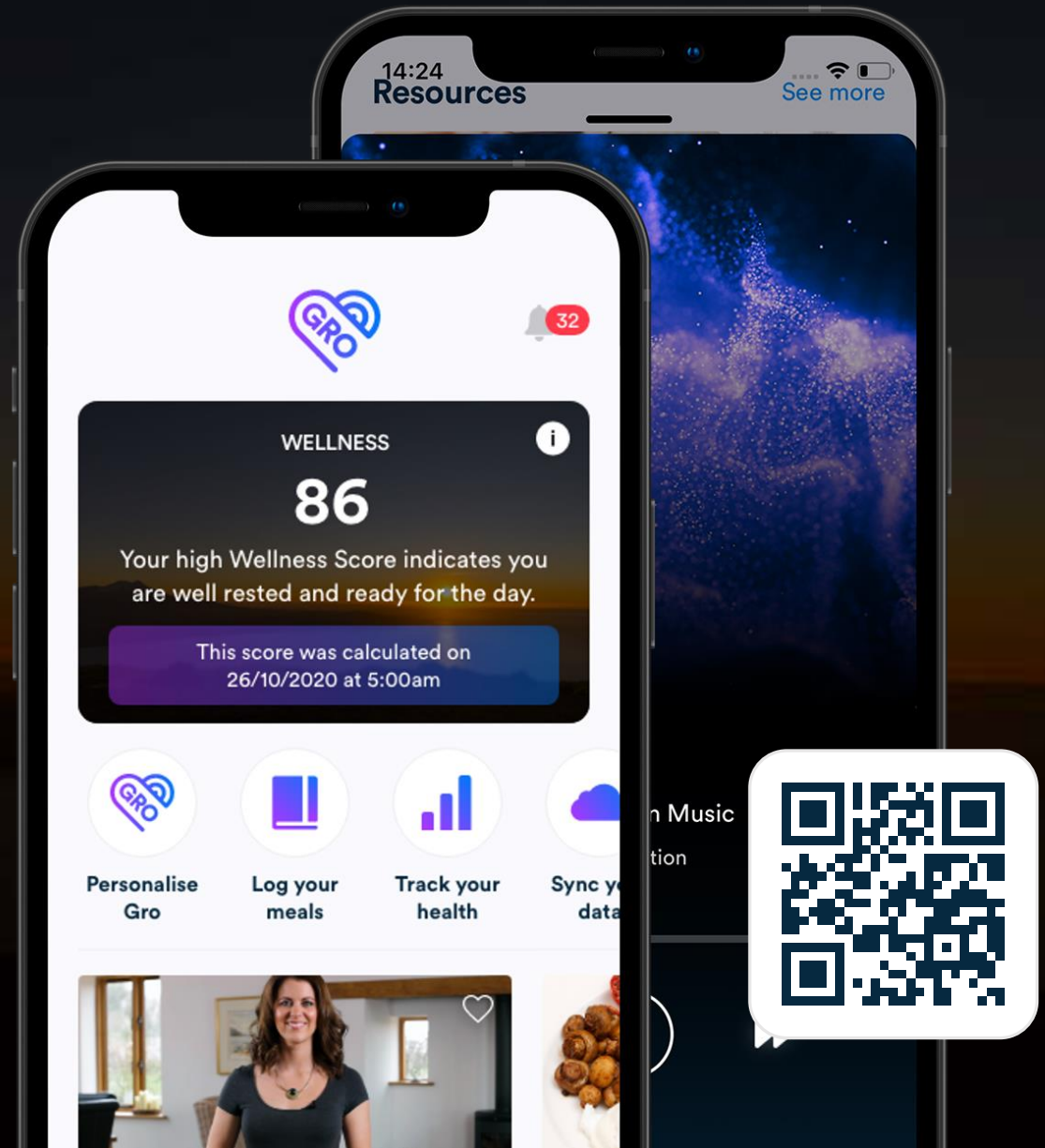
GET IT ON
Google Play



Download on the
App Store



"Since downloading and using the app daily I'm feeling healthier and even sleeping better. Highly highly recommend"



WEARABLE TECHNOLOGY AND WELL-BEING





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www.spacebands.com





Harry Kimberley-Bowen &
Ronan Finnegan









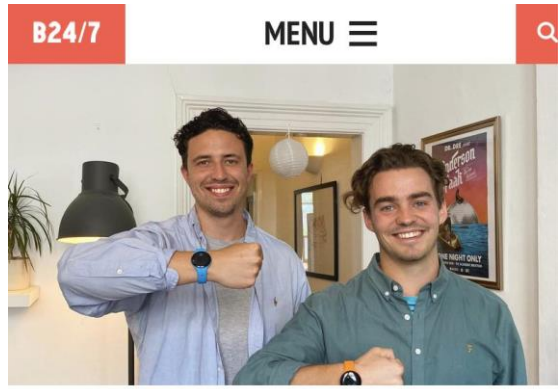
NEWS

Ex-Bath pupils invent wristband that they say is the 'solution' to social distancing problems at schools

The SPACEbands light up, vibrate, and beep when someone wearing the special equipment gets too close

SHARE       

BY RICHARD MILLS
10:38, 6 JUL 2020 | UPDATED 11:57, 6 JUL 2020



NEWS / ENTREPRENEURS

BRISTOL INVENTORS GO GLOBAL WITH SOCIAL DISTANCING GADGET

By ELLIE PIPE, Tuesday May 4, 2021



   
Liked by luke_brett and 2,859 others
martinlewisms If you see us wearing these on the show tonight, they're buzzers that ring if any of us or the crew get within two meters of each other.

Sold 25,000 units of Gen1 to

1000+

businesses including...

amazon



itv

BAT



Travis Perkins

Panasonic

Logoplaste

SONY

As seen on...

sky news



INDEPENDENT

BBC
NEWS

itv



What's next?



Workplace sickness & injuries cost the UK £77.5bn per year

- ▶ Workplace safety tracking and reporting is unnecessarily complicated and expensive
- ▶ Tracking safety creates extra admin burden and work for management
- ▶ Current solutions are limited and lack interconnectivity. Data is not collated
- ▶ 1.7 million workers suffered from work-related ill-health in 2020-21

Wearable
technology &
software platform
that reduces staff
sickness and injury





The New Product
Device & hub

Track employee &
workplace safety
with ease



spacebands wearable device & hub



Safety features

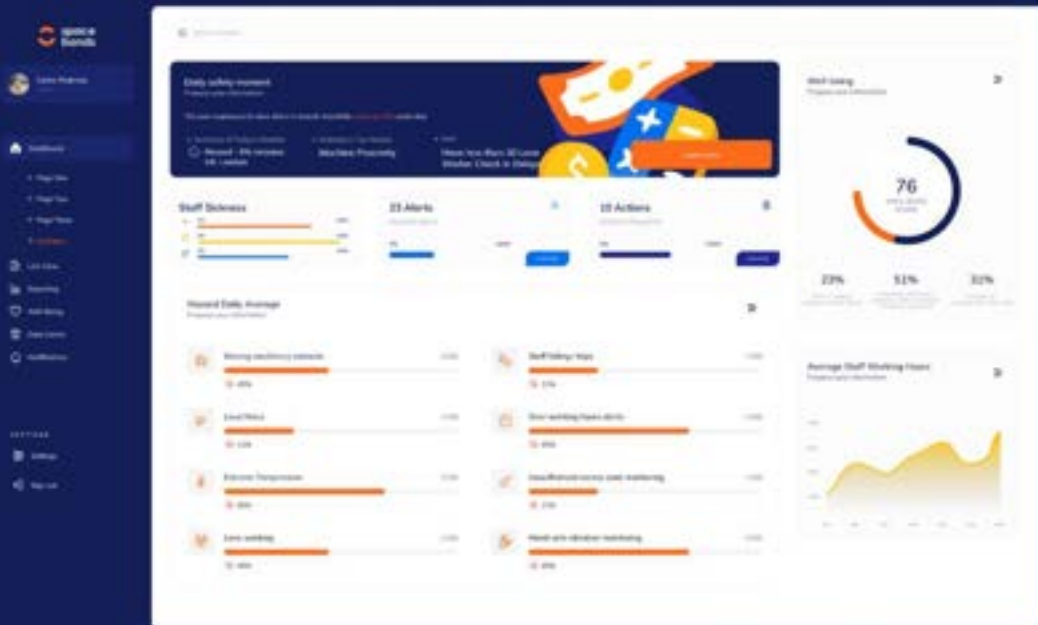
- ▶ Machine/person proximity detection
- ▶ Lone worker and man-down alarm
- ▶ PPE prompts using beacons in certain areas
- ▶ Decibel readings
- ▶ HAVS alarm (hand and arm vibration)
- ▶ Trip / Fall detection
- ▶ Social distancing alerts (with contact tracing)

Well-being features

- ▶ Attendance and sickness monitoring
- ▶ Quarantine calendars with access alerts
- ▶ Break reminders
- ▶ Heart rate monitor to track workplace stress and offer breathing reminders
- ▶ Stretching prompts for extended stationary or sedentary periods
- ▶ Pedometer (without location tracking)

Web & mobile applications

extend offering into full HSE management ecosystem (for sickness, safety & well-being)



Why

buy our product?



Save cash & time

Current safety systems are outdated, expensive and complicated

Convenient & private

Having all H&S data in one place for ease of use.
No personal data held & no employee tracking.

Safer workplace

Staff will feel happier being in the workplace and will reduce risk of claims for unsafe conditions

Being proactive, not reactive

The pandemic has forced businesses to be ready for other safety and health hazards



Exit?

There are many opportunities to exit with partnerships or acquisitions.

Right now we see the biggest exit opportunity within the insurance space

spacebands

will become the marketplace for all things health, safety and well-being at work.

Potential acquirers

- ▶ Insurance companies (blackbox model for workplaces)
- ▶ Payroll systems
- ▶ HR platforms
- ▶ Logistic providers

HRTech Multiples currently hot at 10-25X NTM



Thank you

www.spacebands.com

harry@spacebands.com

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