









Co-producing digital tools for health, well-being and social connection in later life



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Abbreviations used

Co-I Co-Investigator

GOALD Generating Older Active Lives Digitally

PI Principal Investigator

RA Research Assistant

RF Research Fellow

SBDRP Social Behavioural and Design Research Programme

UKRI United Kingdom Research and Innovation

VR Virtual Reality

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GOALD background and objectives

What was GOALD?

GOALD (Generating Older Active Lives Digitally) was a three-year research project that ran from March 2021 to February 2024. The project was funded through the Social, Behavioural and Design Research Programme, part of the UKRI Healthy Ageing Challenge a research and development initiative to promote longer healthy lives.

The Healthy Ageing Challenge aims 'to help people remain active, productive, independent and socially connected across generations for as long as possible' by 'enabling businesses, including social enterprises, to develop and deliver beneficial products, services and business models'.

The GOALD research was developed and launched during the COVID-19 pandemic. The pandemic highlighted the potential for digital products and services to help people who might otherwise be increasingly isolated to stay connected with their families and wider communities. It demonstrated the importance of universal access to suitable, affordable broadband and digital devices. This rapidly changing context brought into sharper focus the need for a deeper understanding of users' needs and preferences in relation to digital resources. That is particularly true for the widespread adoption of digital technology to successfully support healthy ageing. The GOALD project sought to meet the Healthy Ageing Challenge by examining how to better design and deliver digital resources which could provide and engage older people in activities to improve their health, well-being and social connectedness.

The pandemic also challenged researchers on GOALD and other projects to be innovative, flexible and adaptable in their approach to conducting research. It influenced who could be involved and how they could be enabled to participate safely during periods when the COVID-19 virus posed particular risks and society faced periodic restrictions to interacting with others. This publication outlines and celebrates the GOALD research and the contributions to knowledge that it has been able to make despite these challenges.

Who was involved?

The GOALD project adopted a 'co-production' approach in which academic researchers based at the University of Stirling (led by Professors Catherine Hennessy, Richard Haynes and Anna Whittaker) and the University of Plymouth (led by Professor Ray Jones) worked alongside a range of national and community-level organisational partners and groups of participants based in Scotland and the South West of England. (See our partners and funders page on the GOALD website for more information and links to our organisational project partners).

GOALD participants included both older adults living in the community and in residential care, younger people, as well as community and care staff working with older people. As 'co-producers' they were actively engaged in multiple aspects of the project, from shaping the data collection methods to understanding the project findings, generating new knowledge, and developing GOALD's evidence-based legacy resources.



What GOALD set out to achieve

GOALD focused on working in co-production groups to develop digital tools for two types of activities in which the research team had experience and expertise: physical activity initiatives and sports-based reminiscence.

Through this process the GOALD project aimed to:

- understand what might encourage or discourage people from using digital tools;
- look at the benefits for different groups of a co-production approach to developing digital well-being-promoting resources;
- understand what aspects of digitally-delivered activities appealed most to participants and assess their feasibility of adoption;
- provide insights into the challenges of, and opportunities for,
 businesses wanting to engage with older users in these markets;
- contribute to knowledge on co-development and co-production;
- offer policy and practice recommendations about how to engage older people in co-production;
- increase commercial awareness of the benefits of user-engaged co-design of products and services to promote health and well-being.

Understanding what encourages or discourages digital resource use

With the assistance of our partner organisations, the GOALD project recruited an advisory group who met between October 2021 and March 2022 to explore what encourages or discourages older people's digital resource use. The group, whose members ranged in age from 32 to 79 years, included 28 individuals with experience of working with older people across a range of health, well-being and social contexts. Due to restrictions imposed during the pandemic, they met online via videoconferencing, with smaller groups of participants discussing topics with researchers across a series of meetings.



The advisory group noted a range of factors, some providing motivation to use digital resources, others discouraging their use, including:

Connectivity: not having access to the internet at all, or not having access to internet services capable of supporting the use of digital resources which require greater speed and/or bandwidth, deters the use of digital resources. The availability of suitable, affordable internet services promotes their use.

Support for use of digital resources: lack of support deters use. In residential care settings, this might be due to significant existing demands on staff time, staff turnover and shortages, and additional (pandemic) workloads. In community settings, this might be due to lack of availability, or to a failure to fully understand the support needs of older people and provide support that is appropriately formatted or tailored to older people's learning needs.

Scheduling activities: when using digital resources as part of activities with older adults scheduled, regular activity can encourage engagement and participation. The unpredictable nature of COVID-19 outbreaks and consequent changes in rules relating to in-person activities made scheduling regular activities more challenging and could deter participation. This particularly impacted GOALD activities designed to include vulnerable older people and added to the challenges of scheduling activities to fit in with potential users' pre-existing commitments.

Levels of digital literacy: lower levels of digital literacy contributed to lack of confidence in some potential users. They also led to potentially greater need for initial support and resulted in inflated perceptions of risks associated with engaging in digital activities.

Exploring co-production

A central focus of the GOALD project was how to better design and deliver digital resources which could provide and engage older people in activities to improve their health and well-being. The GOALD team strongly believes that this can happen through user-engaged co-production in the process of designing digital resources. One of our core objectives was to generate further knowledge of how best to conduct co-production activities in this context.

Diversity of perspectives acts as a catalyst for discussion, potentially allows stereotypes and assumptions to be challenged by those with lived experience, and as a result can enhance the value of co-production findings. Accordingly, GOALD sought to ensure diversity in terms of participants' roles, ages, geographical locations, personal characteristics and circumstances.

Older adults, particularly those living with impairments, can be under-represented in research. GOALD engaged seven care homes and eleven community groups in our research, as well as people in diverse professional roles. GOALD sought to extend opportunities to participate to groups whose voices may not be frequently heard. The research team worked with partners to support co-production participants with cognitive, physical and sensory impairments.



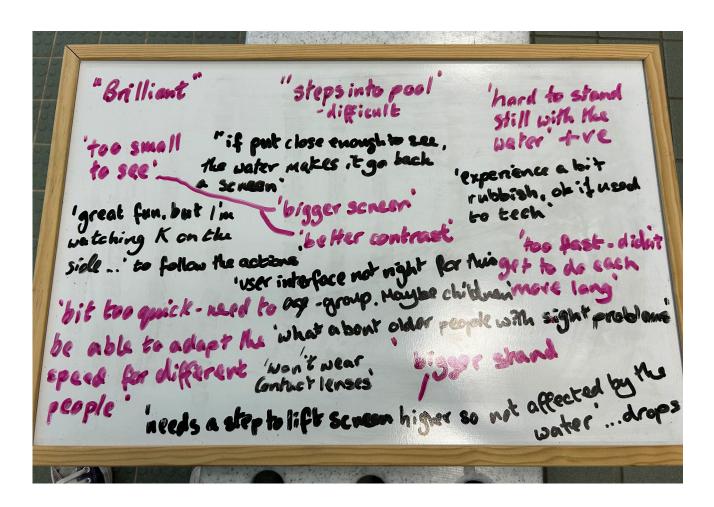
GOALD recruited more than 200 participants to take part in co-production groups. The original aim of achieving broad intergenerational participation by including younger school students in the project was not realised due to the impact of COVID restrictions at the time of recruitment. However, across the project GOALD recruited 165 older adults (aged 60+), 15 young people (aged 16-25), and 33 health and social care professionals in a range of roles which support or work with care home or community-based older people. Of those recruited, 194 individuals took part in the co-production work.

GOALD has produced audio-visual resources describing its co-production approaches and activities. Details of our methods can be found in the GOALD publications. Links to these and other GOALD outputs can be found on the GOALD website.

Assessing the appeal and feasibility of digitally delivered activities

A key part of the GOALD project's work was to help both businesses and end-users of digital resources to meet the Healthy Ageing Challenge. Adoption and sustained use of products or services depend on a range of factors. GOALD examined their appeal to potential purchasers and users (who might represent different groups with different perspectives), and the feasibility of adoption of these digital resources.

To do this, co-production participants were provided with 'menus' containing brief information on a selection of different digital tools and products available to be tried out. As well as text descriptions, the menu choices were colour-coded according to their focus, e.g. on physical activity, general reminiscence and connectivity, or sports-based reminiscence. Each also included broad indicators of suitability for people living with different physical or sensory impairments. The co-production groups tested up to 13 different types of digital resources. Feedback from this exercise both shaped the subsequent GOALD research and enabled our business collaborators to further refine their offerings.



Qualitative and quantitative data from the co-production group discussions and workshops, ranking exercises, interviews and group observations were collected and analysed by the GOALD team. This provided specific guidance for our collaborating businesses, and was used to develop GOALD's 'toolkits', which distil what was learned for use by other designers and developers.

Some examples of findings from participant feedback relating to digital resources for physical activity included:

- factors associated with user enjoyment (e.g. provides a distraction from doing exercise; creates an immersive experience);
- barriers to engaging with and implementing digital physical activity products (e.g. ease of use; cost to individual user or care home);
- physical activity and exercise content (e.g. need for modification for those with reduced physical function; relatable instructors).



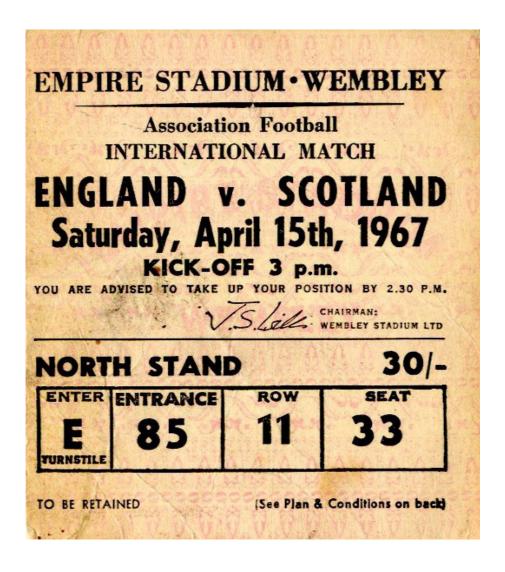
"It was an incredible experience. I was sitting in a chair, using my arms to get the paddles to work. The realism was extraordinary. I'd love to do it again"

Fred Horley, 92, Kayaking through the Antarctic using VR

Examples of feedback on the reminiscence products included:

- potential benefits (e.g. sharing stories and intergenerational reminiscence);
- suggestions for content (e.g. major historical events, childhood memories, well-known sporting events and figures from the past);
- considerations for navigation (e.g. screen to accommodate those with visual impairment to see sports-based heritage content).

GOALD's activities shed light on what different people might want and expect from new digital resources. More detail on the methods used, findings and implications for practice and policy are available in GOALD publications and audiovisual resources. For the full list of available GOALD resources, please visit the GOALD project website.



Documenting the challenges and opportunities for businesses

The GOALD project has partnered and worked with a range of UK-based small and medium-sized producers of digital products and services open to user engagement in their design and development processes. By doing so, GOALD has been able to examine some of the challenges and opportunities that a growing older population with desires to remain physically active, engaged in their interests, and connected with others, might present.

Through its co-production approaches to testing and refining, GOALD has highlighted some of the challenges to businesses of designing for an older market segment. Users may have potentially greater needs around accessibility due to ageing-related health conditions or sensory impairments. Older people may have different requirements in relation to the layouts and operation of devices or controls to facilitate their use. In addition, they may require tailored informational support due to lower levels of digital experience and literacy.

Further challenges may relate to overcoming stereotypical views, including those held by designers, those supporting older people, and older people themselves about what older users can do or would like to do with digital technologies, and to recognising and catering for diversity within the target population through tailored offerings.



"You were working in this environment and already had that knowledge and understood the challenges involved. We didn't have to learn it ourselves or teach you; all we had to do was provide the equipment and gain feedback"

Technology Developer Motus on benefits of working with GOALD

GOALD has also drawn attention to the need to consider challenges that relate to the wider environment for the use of new digital resources, such as the need for sufficient internet services, suitable locations for use, and the funds and personnel to support use in both community and residential settings.

GOALD co-production activities have also provided rich evidence that older users are:

- excited by the possibilities offered by innovative digital resources, prepared to invest time and energy in using them to support their own health and well-being;
- willing to work together with researchers and businesses to suggest improvements to products and services;
- able to actively contribute to the processes of designing and refining digital resources.

Contributing to academic knowledge and understanding

GOALD has generated findings which extend and enhance knowledge of co-production methods, of what older users want and expect from digital resources designed to promote health and well-being, and of how different businesses can learn from and profit from such research. The GOALD team have shared these widely with colleagues across different academic disciplines through conferences, presentations, publications, and audio-visual resources. GOALD team members have also worked with others in the research community, making new intra- and extra-institutional links and engaging in collaborations which allow the knowledge generated from GOALD to inform broader research activities.

An example of these activities are the presentations on our work delivered by GOALD team members at a variety of national and international scientific and business conferences. These presentations have spanned disciplinary areas including: gerontology, gerontechnology, sporting heritage, public health/health promotion, and robotics/digital technology. Some of the events where we have disseminated GOALD project findings are the conferences of the British Society of Gerontology, the Gerontological Society of America, Health-enhancing Physical Activity- Europe, the Socio-Gerontechnology Network, and the International Conference on Public Health 2023.





Publications on GOALD's co-production approach and other aspects of the project have similarly contributed to knowledge across different fields. An example is the article by Bradwell et al. in *BMJ Open* (2023) which explores care home staff perceptions of one of the digital resources offered to GOALD participants: a virtual reality omnidirectional treadmill (MOTUS) aimed at increasing physical activity for older adult care home residents. It demonstrates the utility of the approach in bridging the understanding gap between designers and potential users, and the added value in such academia-industry collaborations.

Examples here represent only the 'tip of the iceberg': for further details of these and other contributions to academic knowledge and understanding, please visit the GOALD website.

Offering policy and practice recommendations

Learning has been distilled from across the entirety of the GOALD project activities, and this has informed a range of policy and practice recommendations.

GOALD has provided compelling evidence of the commercial and wider societal benefits to be gained from partnership working between businesses and academia. Businesses without the skills and resources to do so themselves have been able to leverage academic expertise and experience in accessing groups of older people, working with diverse populations, and analysing data from user-engaged co-production to improve their digital products. All these factors contribute to enhance the chances of sustained commercial success. Policymakers need to create and maintain the funding environment in which successful partnerships such as those established during GOALD can thrive.

GOALD has illuminated some of the wider challenges to successful development of digital resources to support older people's health and well-being, including lack of access and opportunities for digital education. Policymakers must continue to work towards reducing digital inequality and increasing digital literacy across all of society.

Examples drawn from sports-based reminiscence highlight the need for suitable community-based venues and support in using digital resources. Policymakers must recognise the importance of people and place in fully delivering digital benefits and invest in the community locations and organisations that facilitate the use of digital resources.

GOALD has used the findings from co-production activities based around specific digital resources to produce 'toolkits' that can guide the designers and developers of future generations of digital products and services targeting ageing populations. These toolkits highlight potential issues to be addressed, but also provide valuable insight into the diversity of these populations in terms of their ability and desire to engage with new digital resources. They help to bridge the potential generational gap between designers and end-users and to break down ageist stereotypes of later life. More detail on GOALD toolkits can be found on the GOALD website.

Samples of the toolkits during their development in September 2023:



Fostering awareness of the benefits of user-engaged co-design

The GOALD strategy for fostering awareness of the benefits of user-engaged codesign has multiple strands.

GOALD has sought to work with a wide range of UK-based small and medium-sized businesses, both in testing and providing feedback through its co-production processes. The project also launched the 'GOALD Challenge', a design competition which provided small grants for digital resource development. In addition to raising awareness of the benefits of co-design, it gave businesses the opportunity to test and provide feedback to improve GOALD's own 'toolkits' for developers. Product and service refinement 'success stories' from Challenge award winners are emerging. As these are reported in trade and mass media, they raise further awareness of the benefits of this approach within the business sector and form part of GOALD's own impact story.

To help raise awareness, the University of Plymouth hosted a series of 'GOALD project talks'. A range of invited international speakers offered their own perspectives on aspects of digital resource development and use, fostering awareness and setting the context for GOALD research activities. Details of these are available on the project website.

The GOALD project fostered wider awareness through different media, including:

- project and team members' social media feeds;
- regular project newsletters drawing attention to partners' products;
- service refinements informed by the findings of GOALD co-production processes;
- feature articles on GOALD activities published in *The Guardian* and *The New Statesman*.

Links to these and other relevant outputs are provided on the GOALD and SBDRP websites.

The GOALD project team

Principal Investigator (PI) Catherine Hennessy

Professor of Ageing, University of Stirling Overall project lead, liaised with SBDRP and UKRI.

Co-I Ray Jones

Professor of Health Informatics, University of Plymouth Led the Plymouth Team.

Co-I Richard Haynes

Professor of Media Sport, University of Stirling Led the Sports Reminiscence strand of GOALD.

Co-I Anna Whittaker

Professor of Behavioural Medicine, University of Stirling Led the Stirling Physical Activity strand of GOALD.

Based in Stirling:

Co-I Greg Mannion, Professor of Education

Co-I Karen Watchman, Professor of Health Sciences

Co-I Dr Alison Dawson, Senior Research Fellow

Co-I Pete Coffee, Professor of Psychology, Herriot-Watt University

Co-I Dr Gemma Ryde, Lecturer in Lifestyle and Metabolic Health, University of Glasgow

RF Sports Reminiscence Dr John Ritchie

RF Physical Activity (until June 2023)
Dr Simone Tomaz

RF Physical Activity (from June 2023) Dr Colin Shore

Project Coordinator Annabel Young
Affiliated PhD student Levi Tippett

Based in Plymouth:

Co-I Dr Alejandro Veliz Reyes, Associate Professor in Digital Design

Co-I Dr Alison Warren, Associate Professor in Occupational Therapy

Co-I Katharine Willis,
Professor of Smart Cities
and Communities

Co-I Sheena Asthana, Professor of Health Policy

Co-l Dr Tanja Križaj, Lecturer in Occupational Therapy

Co-I Dr Swen Gaudl, Senior Lecturer in Applied IT, University of Gothenburg

Co-I Arunangsu Chatterjee, Professor of Health and Digital Education, University of Leeds

RF Dr Hannah Bradwell

RF (to November 2022) Dr Rory Baxter

RA Leonie Cooper

RA Katie Edwards (until March 2022)

Media and Admin Officer (until Sept 2023) Rose Wilmot

Media and Admin Officer (from Sept 2023) Hannah Hobbs

Acknowledgements

The GOALD team thanks all those who have enthusiastically taken part in our work over the course of the project—our co-production group participants, partner organisations, business collaborators, student volunteers and many others who have helped make the project a success.

GOALD Partner organisations

Active Stirling www.activestirling.org.uk

Cornwall Rural Community Charity www.cornwallrcc.org.uk

Football Memories Scotland
www.footballmemoriesscotland.co.uk

Generations Working Together www.generationsworkingtogether.org

Hearing Loss Cornwall www.hearinglosscornwall.org

iSight Cornwall www.isightcornwall.org.uk

Nudge

www.nudge.community

South Asian Society Devon and Cornwall www.southasiansociety.org.uk

Sporting Heritage www.sportingheritage.org.uk

UK Active

www.ukactive.com

GOALD Challenge Awardees

Motus VR

Sentai

Triangular Pixels

Mature Movers

Age Scotland

Football Memories Scotland

Weekday Wow Factor

HiCarer

Good Boost

danceSing

The GOALD website:

Generating Older Active Lives Digitally (GOALD) - University of Plymouth (https://www.plymouth.ac.uk/research/centre-for-health-technology/goald)

The SBDRP website:

Research Projects Archive - SBDRP (https://www.ageing-sbdrp.co.uk)
The SBDRP website will be kept active until approximately 2029.

The UKRI Healthy Ageing website:

Healthy ageing – UKRI

(https://www.ukri.org/what-we-do/browse-our-areas-of-investment-and-support/healthy-ageing/)





