

## **Generating Older Active Lives Digitally (GOALD) – Written evidence (NPS0164)**

**Generating Older Active Lives Digitally (GOALD) is a multi-disciplinary project led by Professor Catherine Hennessy, University of Stirling, in partnership with the University of Plymouth's Centre for Health Technology exploring how digital resources such as virtual reality can help maintain health for older people. The three-year project is a collaboration between University of Plymouth's Centre for Health Technology and the University of Stirling. Creating immersive digital experiences of sport and heritage sites and activities, the project is partnered with seven charity and community groups in the South West working with older people and younger participants living in the community, as well as residents from eight care homes. Over the course of the three-year project, the research team will record the different groups' experiences of digital resources and assistive technologies such as virtual reality and then develop new digital technologies, product ideas and test design concepts with commercial partners.**

Encouraging participation in physical activity is particularly important for older adults, with inactivity increasing with age. Encouraging physical activity can provide protection against cardiovascular disease, stroke, diabetes and some cancers, further to psychological improvements for and mental health (Langhammer et al., 2018). Further to the usual challenges, older adults and care home residents in particular have experienced considerable deconditioning because of the covid-19 pandemic and reductions in outdoors activity. Methods to avoid a 'deconditioning pandemic' are key areas of interest for physical activity research (RCNI, 2021; Gray and Bird, 2020). Therefore, there is a need for older people to have opportunity to remain more active. This includes older people in care homes and people with various sensory disabilities such as visual or hearing impairment or other physical conditions such as Chronic Obstructive Airways Disease. Helping older people stay active, particularly in times of pandemic, may make use of 'digital' in various ways.

Intergenerational work has known benefits for both older and younger people. The social aspect of GOALD could also clearly have implications for combatting social isolation and loneliness for older adults. Enhanced social connectedness could have important potential health impacts, as loneliness can increase risk of death, heart disease, stroke and high blood pressure (Campaign to End Loneliness). In 2022 we will be running a number of online inter-generational co-production groups that will consider how online groups, digital devices and more can be used to support older active lives. These groups will recruit from a diverse range of collaborating partners such as Hearing Loss Cornwall, ISight Cornwall, Devon and Cornwall South Asian Society, Nudge (an enterprise in inner city Plymouth) and more.

We are already exploring the potential for Virtual Reality walking using a multi-directional treadmill and Virtual Reality (VR) headsets for use in care homes. These approaches offer the opportunity for care home residents, who otherwise may have difficulties in getting to interesting sites, being able to 'walk' through

national historical sites or places of interest (such as the Eden Project) from their care home. Another technology we will explore within GOALD is the GlasTwin audio reminiscence tool. The tool is currently being co-designed through the University of Plymouth EPIC (eHealth Productivity and Innovation in Cornwall) project. The proposed tool will be embodied to aesthetically trigger the schema of audio (e.g.

vintage telephone, gramophone, record player, retro radio), and will respond to voice commands. Older adults will be able to verbally request bespoke 'memories' which will then be triggered with sounds overlaid by built-in artificial intelligence. For example, an individual may request "VE day" and be met with sounds of celebratory cheering, jubilation and songs from the era, or "Brighton beach, 1930" and hear waves crashing on pebbles, children laughing and seagulls. Due to interest in sports reminiscence via GOALD, further examples would be triggered sporting memories, such as the audio of a football stadium, cricket match or famous ballet score. Some of our previous work involving the implementation of smart speakers in 150 care homes in Cornwall demonstrated that residents enjoyed asking the devices about sports matches or listening to information on cricket players.

The project also explores historic sites. Access to sites of historical and cultural interest is important for older adults. Such sites often have limited accessibility due to site characteristics and conservation issues, creating challenges for older adults to visit in person, despite older adults being particularly interested and invested in heritage (Marasco et al., 2019). The use of VR can thus aid in accessibility for those with physical and sensory barriers (Paladini et al., 2019). This is also true for sporting facilities, and through collaboration with the University of Plymouth's Faculty of Arts, we are 3D scanning and build VR heritage and sporting environments. For example, the experience of 'walking' into Wembley stadium, perhaps themed as per the 1966 World Cup Final, could be a powerful sports reminiscence activity. In partnership with heritage sites such as Powderham Castle, home of the Earl of Devon, and Dartmoor National Park we are also recreating historic spaces such as the Stair Hall at Powderham or the interior of Higher Uppacott longhouse on Dartmoor. These digital environments will be embedded with oral history audio recordings.

Although the ROVR Wizdish is one example of commercially available technology to encourage physical activity through VR, within GOALD we are exploring alternatives, particularly to ensure inclusivity for less mobile older adults who cannot walk. Not only does this ensure equal opportunity, but adapted navigational VR methods may provide required activity and mobility improvements to allow improvements in walking. We are currently exploring the research and development of sensors to be worn on care home residents' shoes, that detect 'steps.' Residents may use these to engage in seated 'chair-marching' to navigate the virtual environments, rather than standing and walking. Chair-marching and arm-swinging is an exercise recommended by the NHS with potential to improve hip and thigh strength, mobility, flexibility, circulation and thus walking ability (NHS, 2021; Hanna and Norman, 2011). The VR environment is expected to help motivate the physical activity, more than prescribing exercises without some form of engaging content. Residents are also likely to 'look around' the virtual environments, thus also engaging in neck turns, again supporting in mobility (NHS, 2021).

GOALD will be also making use of Sports Reminiscence as a way of engaging older people in both physical and mental activities. Reminiscence is powerful tool thought to help people recollect life experiences and create a sense of meaning (Buchanan & Middleton, 1994). Research has supported the effectiveness of reminiscence in managing Behavioural and Psychological Symptoms of Dementia, including through reductions in depression (Huang et al., 2015; Park et al., 2019; Woods et al., 2018). Reminiscence can often involve storytelling and physical prompts or objects to trigger memories of past events (Moon & Park, 2020). More recently, focus has shifted to digital methods of triggering memories, using forms of digital technologies such as photos, webcams or videos, thought to increase cost-effectiveness and beneficial impact, through facilitating multiple users simultaneously, and allowing for personalisation of the intervention to trigger personal memories (Lazar et al., 2014; Moon & Park, 2020).

Moon & Park (2020) recently conducted a pilot randomised controlled trial (RCT), where 49 people with dementia (in day-care centres), were randomised to receive either i) digital content (childhood, marriage, holiday, children, food and seasons memories) on an Android app for eight sessions over 4 weeks or ii) storytelling in the control group over the same time frame. Results suggested depression was significantly decreased and engagement was significantly increased for the participants receiving digital reminiscence, in comparison with the control group. With this in mind, digital sports reminiscence could be a powerful tool. The team at Stirling University have discussed digitising 'Top Trumps' cards, to allow reminiscence and discussion around famous football players from the past. Provision of these proposed activities, among others to be determined in co-production with the intergenerational groups, will provide meaningful activities. The importance of meaningful activities cannot be overstated, as lack of meaningful activity is associated with poorer quality of life and physical and mental health (Smith et al. 2018). Improving both physical and psychological health for older adults is essential. Steptoe et al. (2015), suggested the relationship between physical health and subjective wellbeing is bidirectional, suggesting while physical health has obvious benefits, psychological wellbeing may have a protective role, with eudemonic wellbeing associated with longer survival.

## **Two Responses to Committee Questions**

### **1. How can children and young people encouraged to participate in sport and recreation both at school and outside school, and lead an active lifestyle?**

We hope to see involvement of younger people (aged 16-25) engaging with older people in our discussion groups and both promoting use of digital but also becoming more active themselves.

### **2. How can adults of all ages and backgrounds, particularly those from under-represented groups, including women and girls, ethnic minorities, disabled people, older people, and those from less affluent backgrounds, be encouraged to lead more active lifestyles?**

Care home residents in particular are often left out of the opportunity to participate in activities. We aim to work with them to find how best they can be supported, through digital, to be more active.

For care home residents, interventions to increase physical activity can improve mobility, strength, flexibility (Forster et al., 2010), sleep, concentration, memory (Richards et al., 2011), reduce risk of falls (Clemson et al. 2012), maximise independence and reduce carer burden (Hurley et al. 2020). 'Traditional' exercise interventions in care homes have little impact on residents' physical activity (Kerse et al. 2008; Underwood et al. 2013). Therefore policy is required to explore innovative means of encouraging participation for older adults and care home residents, as informed by evidence and research such as those to be provided by the GOALD project.

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M.V. Hurley et al. / Physiotherapy 107 (2020) 50–57

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