dHealth 2024
D. Hayn et al. (Eds.)

doi:10.3233/SHTI240008

Supporting Well-Being: Exploring the Value of a Digital Coach for Older Adults in the Transition from Work to Retirement

Katja NEUREITER[a], Leen BROECKX[b], Markus GARSCHALL[a,1], Kim HELSEN[b] and Johannes KROPF[c]

[a] *AIT Austrian Institute of Technology GmbH, Center for Technology Experience, Vienna, Austria*
[b] *Thomas More University of Applied Sciences, Centre of Expertise Care and Well-being, Geel, Belgium*
[c] *Salumentis OG, Vienna, Austria*

Abstract. Supporting older adults' health and well-being in the transition from work to retirement requires a holistic perspective and needs to address physical, mental, and social aspects of life. In a field study, applying a mixed-methods approach, we investigated to what extent the prototype of a digital coach can support older adults in this sensitive phase. We aim at answering the central research question: How can a digital coach support older adults in the transition from work to retirement to establish and maintain a healthy lifestyle? Overall, 32 participants from Austria and Belgium took part in an eight-week trial. App-based interventions in different domains (physical, mental, social) were provided and aimed at motivating the target group to become and/or stay active. The study shows that the digital coach has potential to support health and well-being on various levels. In particular, the mental activities proofed valuable and supported older adults' well-being.

Keywords. Well-being, digital coach, older adults, retirement

1. Introduction

For several years Europe has been confronted with the effects of demographic ageing, i.e., the number of older people is increasing relative to the number of people of working age. By 2050, the proportion of older adults (aged 65 years and older) is expected to increase from 90,5 million (2019) to 129,8 million, having implications on an individual and societal level, e.g., rising costs for health and long-term care [1].

A particularly sensitive and critical phase in older age is the transition from work to retirement, when older adults do not only gain freedom but face losses, for example, on a social level, losing a variety of social contacts [2]. Time and relationships need to be redefined [3] and negative impacts might be decreasing income, a loss of social capital, and decrease of physical activity [4]. Older adults who retire need time to restructure

[1] Corresponding Author: Markus Garschall, AIT Austrian Institute of Technology, Center for Technology Experience, Vienna, Austria, E-Mail: markus.garschall@ait.ac.at

their daily activities and routines and establish new social contacts to stay healthy and maintain their own well-being.

According to the WHO constitution, health and well-being does not only encompass physical aspects (absence of illness) but needs to be understood as a holistic concept including measures to promote health (e.g., physical activities to stay active and remain independent) but also measures that address mental and social aspects of life (e.g., meaningful activities, social activities).

There are various approaches to support older adults' health and well-being, ranging from smart watches to context aware lifestyle interventions, [5], or robotic systems [6, 7]. Whereas smart watches, such as Fitbit, basically allow to monitor physical activities, health records, or sleeping habits [8], other systems address different dimensions of health and well-being e.g., social, physical, mental, emotional, and environmental factors [5]. Moreover, there is an increasing awareness of the potential of robotic systems to support older adults to stay independent and increase well-being in older age [9]. Although there is a general interest in improving health and well-being for older adults, only a few digital health interventions exist that target the specific phase of retirement [10] and studies on this topic are still scarce [11].

2. Study design

In this study the prototype of the digital coach ProSelf was tested in a field trial over a period of eight-weeks. We aim at answering the following research question: How can a digital coach support older adults in the transition from work to retirement to establish and maintain a healthy lifestyle? The prototype provides for various activities in the areas physical well-being, mental well-being, social well-being, and retirement. These activities are tailored to personal objectives that can be set within the app (see Figure 1). The target group consisted of healthy individuals aged 55 years or older, either recently retired or in the final three years before retirement to whom a healthy lifestyle is important and who would like to change some habits in their lives. They were invited to participate in the study through e-mail, newsletters, and social media posts. The initial sample consisted of 21 Austrian and 19 Flemish participants of whom 32 completed all research activities[2] Data was collected between October 2022 and February 2023. All participants provided informed consent.

2.1. Coaching Approach

The ProSelf app aims to support users to practice a healthy lifestyle with personalized activities tailored to their individual objectives. The app is available on iOS, Android and as a web application (https://proself.org). The program starts with a query of the user's current level of well-being addressing three different areas: physical, social, and mental well-being. Based on the results of the query and personal goals, individualized activities addressing all three areas and the additional topic retirement, are suggested (for an

[2] Drop-outs were due to not meeting expectations (1), dissatisfaction with the overall idea of the app and programming (2), loss of interest in the study (4), health problems (2), and too high effort (1).

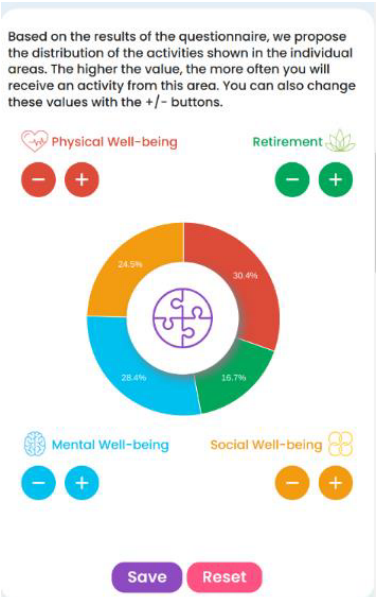

Figure 1: Screenshot of the app allowing users to set their goals in the four different areas.

example activity see Figure 2). The exercises intend to motivate participants to acquire positive habits, e.g., by doing more physical or social activities, or deal with the topic of retirement. Currently, the prototype offers 55 distinct activities. Participants have the possibility to adjust the distribution of activities within the different areas (see Figure 1). Additionally, the app allows you to connect with other users who are members of the community and to exchange personal messages. It is possible to see users who live in the immediate vicinity in order to promote physical contact with these users. Moreover, users can set up and post events that other users can join, e.g., a visit to the theatre or a joint walk. They can also connect with others based on similar interests.

Figure 2: Example activity in the area mental well-being

To support the target group to adopt a healthy lifestyle frequently employed persuasive strategies used in mobile health applications were applied, such as reminders (e.g., to finish activities that have not been accomplished yet), or self-monitoring (e.g., to allow users to keep track of their progress).

2.2. Data collection and analysis

Participants were actively involved in several research activities using a mixed methods approach. To assess participants' well-being standardized questionnaires were applied, i.e., the SF-36v2 (personal well-being), the Lubben Scale [13] (social life) and the GSE-6 [14], (adaptation to stress and chronic illness). The UEQ [15] and the SUS [16] were used to assess user experience and usability. The questionnaires were created online using LimeSurvey and Qualtics. Qualitative methods encompassed co-creation sessions and interviews in the beginning of the study (T0), telephone interviews after four weeks (T1) and qualitative interviews and co-creation at the end of the study (T2). These methods allowed us to gain background information into how and through which activities participants' well-being changed (or not) and why.

The co-creation session in Flanders and interviews in Austria were conducted to obtain insights into the challenges and experiences of the new life phase of retirement. Participants received their dummy profile for using the digital coach and filled out the standardized questionnaires. They were asked to use the app for eight weeks. After four weeks, participants were contacted for an intermediate evaluation (T1), after the test period (T2), they completed the online questionnaires for a third time to assess potential changes in wellbeing, social life, and adaptation to stress and chronic illness. Finally, interviews were conducted to discuss the extent to which the digital coach supported participants in leading a healthy lifestyle, e.g. what kind of activities they found valuable (or not), whether they were able to adopt new healthy habits or socialize. Barriers, motivators and improvements to the design were discussed in co-creation sessions.

For the qualitative data analysis all interviews, notes from the telephone interviews and content of the co-creation sessions were transcribed and a thematic analysis was conducted. As two organizations from two countries were involved in conducting the study and data analysis, a joint Miro Board was set up to work together in an iterative analysis process. Firstly, key themes were identified and discussed. The transcripts and notes were then reviewed again by both organizations and categories were reorganized and refined in sub-themes. For the quantitative analysis the online questionnaires were analyzed using SPSS. Descriptive statistical analyses were applied. In this article, we focus on presenting the qualitative findings and discussing the most important results.

3. Findings

The data analysis revealed four key themes, that already reflect the potential of the mobile coaching app and its main pitfall: reflection, action, confirmation, and transition.

3.1. Reflection.

Besides physical activities, the app provides a couple of mental activities and aims at encouraging participants to become aware of different aspects in life, e.g., being thankful,

seeing things positive, or reflecting upon memories. Positive feedback could be identified towards mental activities, raising awareness for the good things in life. During the interviews, users were enthusiastic about the activities that were suggested. It made them, for example, stop and become *"more conscious to live a healthy lifestyle"* (A12). Some participants became aware that they have *"never reflected upon themselves"* (B5) and that the app supported them to *"stop and reflect and see what I have accomplished so far"* (A2). A lot of the participants appreciated and valued those mental activities. One participant, for example pointed out *"The emotional aspect is a big plus."* (B14), illustrating his/her appreciation for these activities. Only one participant indicated that the exercise *"reflection upon memories"* (A15) made him/her sad because s/he realized that s/he was not that fit anymore.

3.2. Action.

The theme action encompasses a variety of aspects that supported users to become active on different levels (e.g., physically, socially). Sub-topics identified in this context were, e.g., stimulation, engagement, motivation, curiosity, easiness, appreciation, or consciousness of benefits. The daily activities suggested by the app were perceived as appealing, stimulating, engaging, and motivating. At the beginning of the study, participants indicated that they were curious and that they liked the activities and tips. One participant commented as follows: *"My first activity was rope jumping. I have been doing that every day since then and it is energizing."* (B14) Unfortunately, this curiosity and motivation waned over time, mainly due to the limited number of activities currently available in both languages. Participants appreciated the easiness of the activities. Most of the suggestions were "*doable for everyone"* (A15) (e.g., wall sit ups) and were "*easy to integrate in daily life"* (A12). This ease proved to be a pitfall during the course of the study for those participants who were already quite active and did a lot of sport and physical exercise. One of them, for example, was disappointed that s/he could not adapt the activities to his/her personal fitness level.

Users had a rather ambivalent impression of the social activities. On the one hand, the opportunity to socialize with others was perceived positive, e.g., *"It is a great opportunity to be in contact … when I was ill and at home, I hardly had any contacts."* (A2). On the other hand, the interviews also revealed that not all participants experienced a need to connect with others via the app: *"For other social contacts I do not have any time."* (A15) *"The threshold is too high to connect."* (B16), "*I was not interested in connecting with others - that was too effortful for me."* (A11). Moreover, some participants pointed out that they did not like to connect with strangers and prefer face-to-face contacts: *"I do not like to write with others I do not know."* (A14), *"I do not like the contact via technology."* (B14).

3.3. Confirmation.

Another interesting finding was that the app did not only encourage participants to take action (becoming active) but also confirmed that they were already making a good contribution to their personal health and well-being. Some participants were motivated because they became aware of all the positive things, they were already doing which was expressed in the following quotes: *"The app confirmed that I am on track to a healthy*

lifestyle." (A20), *"It is somehow a confirmation that I am on a good way because of good nutrition and daily exercises."* (A15).

3.4. Transition.

Even though the app encouraged participants to take action (e.g., to perform physical activities) and has potential to raise curiosity among participants and increase awareness on mental well-being (e.g., being more conscious to live a healthy lifestyle or reflecting upon important milestones that have already been reached), one important finding is that they lost interest throughout the course of the study. This can be traced back to the fact that the prototype only provided a limited number of activities, a lack of personalization and visible evolution mainly regarding physical activities. For example, a lot of participants raised the need to further personalize the physical activities to specific needs. As one user argues that "The a*ctivities do not fit my personal situation as I am not yet retired.*" (A6). One user who regularly did physical training raised the need for more advanced activities to raise his/her fitness level and points out that *"Physical activity did not increase in terms of level of difficulty.*" (A15). Others reported specific requirements due to health issues (e.g., age-related or accident-caused limitations) and experienced restrictions when performing certain physical activities. These results indicate a need to further elaborate on the persuasive strategies that are currently employed.

4. Discussion

In this study we investigated how a mobile application can support older adults' well-being in the transition from work to retirement. The results illustrate that the holistic approach can make a valuable contribution to the well-being of the target group, i.e., supporting them in various areas. In particular, the mental activities proofed to be valuable and supported older adults beyond training and physical activities, which was appreciated by all participants who completed the trial. Hence, this is an area that will be further developed and refined. The results also show that the digital coach has potential to encourage older adults to become and/or stay active. Participants felt engaged, motivated, and were curious, especially in the beginning of the study. In this context, personalization (e.g., adapting the level of difficulty of activities) plays a vital role and will be further developed in the future. While personalization plays a significant role in increasing one's fitness level and maintaining challenges, the results show that confirmation could play a significant role to motivate users, who are not so active now but have the goal of becoming active. Hence, activities which can be easily accomplished or that participants are already doing might be as important as challenging ones.

The present work needs to be considered in the light of variety of limitations. First, the number of activities (55) was quite small, considering the period of eight weeks. Due to limited resources for the translation of activities, it was not possible to provide additional tasks. Participants, who were quite active at the beginning gradually lost interest, indicating that they missed new and challenging activities. The prototype did allow for personalization in the different areas of well-being, i.e., participants could choose in which areas they would like to receive activities and could set personal goals (e.g., social, mental). However, the prototype did not allow to adjust intensity levels of the activities based on one's personal fitness level.

As a next step, it is planned to increase the number of activities, available for potential users and increase the personalization options to better address the personal needs of potential end users in the future and support sustainable behavioural change.

5. Acknowledgements

We would like to thank Salumentis OG (https://www.salumentis.at), who provided the app for the study and gave technical support during the course of the field trial. This research was done in the context of the VITALSE project (https://vitalise-project.eu). The financial support from European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 101007990 is gratefully acknowledged.

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