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SPORT AND WELLNESS TECHNOLOGY ENHANCING PHYSICAL ACTIVITY AND WELLBEING OF ELDERLY POPULATION

TREO Paper

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Abstract

The purpose of this TREO-paper is to introduce and discuss about our upcoming research project DigitalWells, which will start in summer 2024. More importantly, the aim of this paper is to get ideas and opinion of other researchers about the topic so that we can develop and focus our research ideas even better. DigitalWells is a research project that will form, support, and maintain sustainable HEPA programs for large groups of young elderly and seniors. Elderly people are often a minority group when it comes to using sport and wellness technology and their demands or requests are not usually taken into account when developing the technology. The purpose of the DigitalWells program is to find ways how to encourage and motivate elderly people towards physical activity with the help of sport and wellness technology.

Keywords: Digital Wellness, elderly, physical activity, motivation, elf-efficacy.

1 Background of the program

The first version of the DigitalWells program for young elderly and senior participants took place in 2019-22; The program developed and implemented digital service support for physical activity programs, collected over 294 000 physical activity (PA) entries in its database from more than 1000 participants in 24+ months. This was combined with cross-sectional and longitudinal studies with samples of 100-250 participants collected every 4–6-months to show, (i) the acceptance and adoption of the DW 3.0 PA Logger application, (ii) the support of HEPA (health-enhancing physical activities) programs, and (iii) the sustainability of accepted HEPA programs.

The new DigitalWells for Tietoevry Veturi (short version: DigitalWells) program starts from and builds upon the results of the previous program, (i) the database of 294 000 PA entries that offers a basis for analytics and development of applications software; (ii) the knowledge base of results from follow-up studies that offers insight on how to design digital services for young elderly and seniors, and (iii) the fully functional (in Finnish, Swedish, English) DW 3.0 PA Logger application for mobile phones with support in cloud data-bases. DigitalWells builds a digital ecosystem for young elderly peer groups that offers follow up and reporting of HEPA activities, knowledge-based support, professional services, digital coaching, and that will manage and maintain sustainable HEPA programs. The DigitalWells digital ecosystem will form, support, and maintain sustainable HEPA programs for large groups of young elderly and seniors, first in 100 groups in 100 municipalities by the end of 2024, then in growing networks of more and larger groups with an aim to reach 10 000 users by the end of the program.

2 Research objectives

Researchers from University of Jyväskylä were active in the earlier version of DigitalWells and will continue cooperation in the new version of the program. The group specialises in studying the topic mostly from an exercise psychological and usage experience point of views and will focus on the following research objectives (cf. Table 1.).

Table 1: Main research objectives

	Main objective
Research objective 1: ELM	Study and test ELM for drivers on perceptions of HEPA programs.
Research objective 2: Self-efficacy	Study and test self-efficacy drivers for HEPA programs
Research objective 3: Digital coach communication	Study and test the communication between a digital coach and a young elderly user

The research objectives are related to studying the adoption, sustained use and the effectiveness of HEPA technology and sport and wellness related digital coaching solutions among young elderly users. The research objectives are related to exercise psychology, communication, and technology usage. The three main research objectives (ELM, Self-efficacy, Digital coaching communication) and their research topics are somewhat overlapping and therefore they provide a possibility to study a topic from different perspectives.

2.1 Research objective 1

The Elaboration Likelihood Model (ELM) aims to explain different ways of processing stimuli, why they are used, and their outcomes on attitude change. The ELM proposes two major routes to persuasion: the central route and the peripheral route. In information technology ELM has been used in studying, for example, technology acceptance, usage continuance and communication between a technological solution and its user.

Table 2 Activities and Expected results of Research objective 1: ELM.

Research objective 1	Activities	Expected results
Task 1.1	Study which influences processes shape user acceptance and further usage related to HEPA technology	Find out ways to improve the acceptance and further usage of HEPA technology
Task 1.2	Study young elderly people's HEPA technology usage from a technostress point of view	Find out how HEPA technology can create technostress for young elderly users and solutions how to decrease it.

2.2 Research objective 2

Self-efficacy refers to persons' beliefs about their abilities to perform a certain task. Persons with high self-efficacy often perceive difficult tasks as challenges and opportunities, but persons with low self-efficacy may perceive challenges as negative and try to avoid them. Self-efficacy has a high influence on adaptation of physical activity habits and the maintenance of long-term physical activity.

Table 3. Activities and Expected results of Research objective 2: Self-efficacy.

Research objective 2	Activities	Expected results
Task 2.1	Study the effects of digital HEPA technology usage for exercise self-efficacy	Finding out different ways how the use of HEPA technology can influence exercise self-efficacy of young elderly people
Task 2.2	Study the relation between exercise self-efficacy and physical activity	Discovering connections between changes in exercise self-efficacy and changes in physical activity

2.3 Research objective 3

The quality and level of communication between a user and a technology solution has proven to have influence on the acceptance of technology as well as on the overall usage experience. Therefore, it is important to study what possible obstacles in and potential solutions there are in communication between young elderly and HEPA technology; for instance, digital coaching is a relevant case technology.

Table 4. Activities and Expected results of Research objective 3: Digital coach communication.

Research objective 3	Activities	Expected results
Task 3.1	Study possibilities for enhancing the communication between a digital coach and a young elderly user	Finding new communication solutions and new technical solutions (using, for instance, generative AI)
Task 3.2	Compare the usability and communication of different digital coaching systems	By comparing different digital coaching solutions, it is possible to find solutions that work best for young elderly users.

3 Discussion and future research

The purpose of this TREO-paper was to present our upcoming program. More importantly get ideas and opinions on how to develop forward research ideas related to the main three research objectives. It would be valuable to get insights from other researchers on the topic of sport and wellness technology and elderly population especially from the perspective of exercise psychology and motivation.