

PERsonalised ICT Supported Services for Independent Living and Active Ageing

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Introduction

Frail elderly are older adults that are at an increased risk of future poor clinical outcomes, such as development of disability, dementia, falls, hospitalization, or mortality. PERSSILAA aims to develop and validate a new service model to screen and prevent frailty focusing on the nutrition, physical and cognitive function of the elderly population, supported by an interoperable ICT infrastructure.



Figure 1. A subset of addressed topics in PERSSILAA

Monitoring

Daily activities, pleasure and physical activity will be gathered automatically (using on-body sensors) – or logged by the user in the mobile or desktop version.

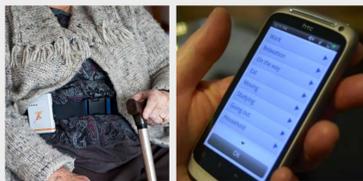


Figure 2. Monitoring of physical activity and daily activity.

Coaching

DAILY ACTIVITIES & WELL-BEING

Literature suggests a strong relationship between participation in leisure activities and subjective well-being¹. Participation in leisure activities is seen as a good predictor of physical activity.

The aim is to design a tailored recommendation system for promotion of leisure activities to engage the elderly population in a healthier and happier lifestyle.

PHYSICAL FUNCTION

To provide the most clinically relevant exercise while respecting the elderly's goals and preferences, the following steps are taken in the physical exercise recommender system to be integrated in the PERSSILAA platform.

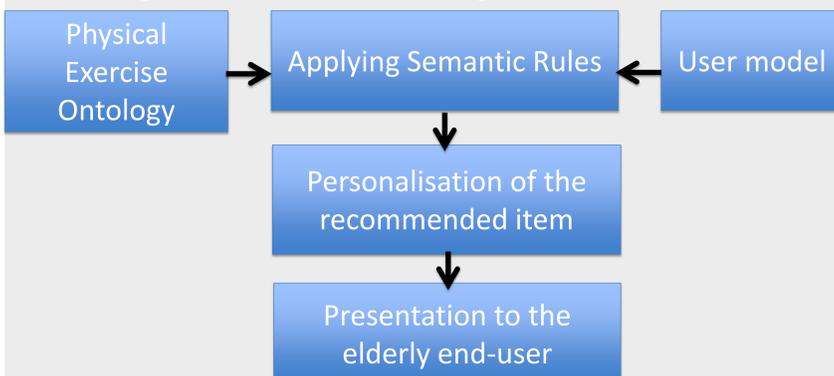


Figure 3. Physical exercise coaching in PERSSILAA

Gamification

Telemedicine applications are often not sufficiently effective as adherence is low and decreases over time [e.g. ²].

Gamification - the use of game design elements in non-game context - offers great potential regarding the engagement and motivation of (frail) elderly³.

Current research works towards the realisation of a framework for creating motivating and engaging telemedicine applications using gamification, for the elderly population.

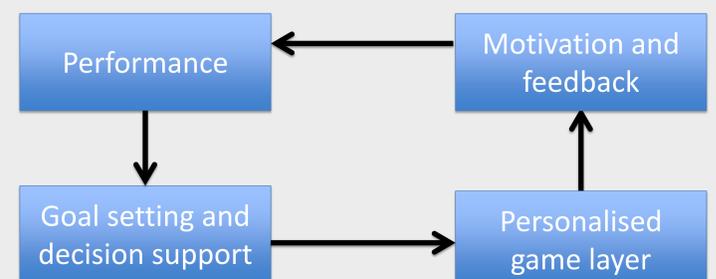


Figure 4. Gamification is applied to reinforce motivation and increase performance on the services offered by PERSSILAA.

Ongoing and Future Work

At this stage, a study is taking place to analyze the relation between health status, specificities of daily activities (e.g. location, type of activity) and pleasure in the elderly population. Results are expected in the beginning of 2015.

The clinical knowledge for physical exercises is being formalized into an ontology through a set of workshops.

An online pilot study is running to investigate the relation between personality and preference for game elements, as a precursor to a user test with elderly adults.

As the future work, the developed systems will be evaluated with older adults population residing in Enschede (NL) and Campania region (IT).

References

- [1] Simone, P. M., & Haas, A. L. (2013). Frailty, Leisure Activity and Functional Status in Older Adults: Relationship With Subjective Well Being. *Clinical Gerontologist*, 36(4), 275–293. doi:10.1080/07317115.2013.788114
- [2] Evering RMH. PhD thesis: "Ambulatory feedback at daily physical activity patterns" Vol 30: Roessingh Research and Development (2013).
- [3] Gerling, K.M., "Exploring the potential of gamification among frail elderly persons", CHI 2011

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