

Introduction

Currently, we witness the growth of ICT-mediated solutions for chronic diseases management, especially to assist and support patients in lifestyle changes in order to improve their health condition. Being physically active is one the recommended lifestyle changes for patients with chronic diseases. The challenge within those ICT-mediated solutions for physical activity support is to allow patients to manage themselves their physical activity level (PAL) and provide them with the needed social support. One of the solutions available is the use of Virtual Community (VC). Current VCs provide a part of social support needed by patients, mostly informational and emotional support, but not appraisal (feedback) and instrumental support. Our current work is focusing on providing the instrumental support to patients members of the VC.

Method

The physical activity support community includes patients but also formal and informal caregivers.

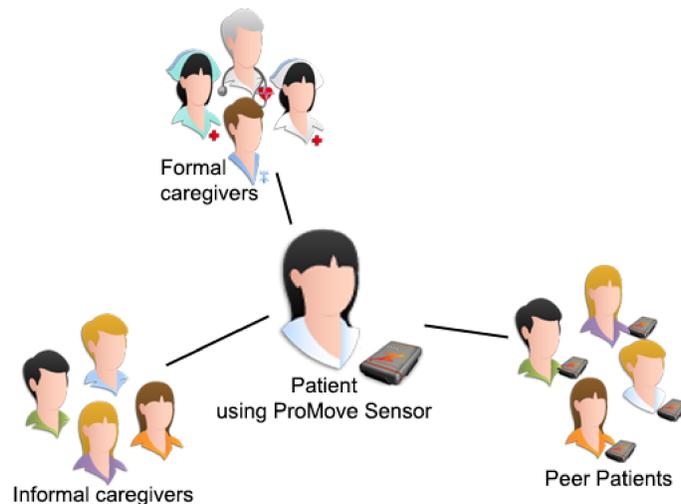


Fig1. Virtual Community

The physical activity of patients is monitored by a triaxial accelerometer: ProMove[1]. The ProMove sensor implements the IMA metric proposed by Bouten[2]:

$$IMA = \int_{t=t_0}^{t_0+T} |a_x(t)| dt + \int_{t=t_0}^{t_0+T} |a_y(t)| dt + \int_{t=t_0}^{t_0+T} |a_z(t)| dt$$

IMA value is object of the instrumental support. Metrics (for individuals and groups) based on IMA are developed [3] to allow patients to understand their physical activity level, and to share it within their community to receive support and feedback.

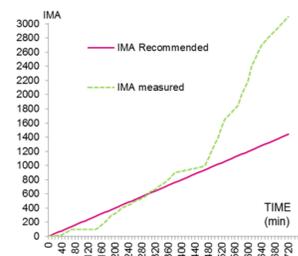


Fig2. Example IMA (Measured Vs. Recommended)

The physical activity support community is implemented using Elgg [4].

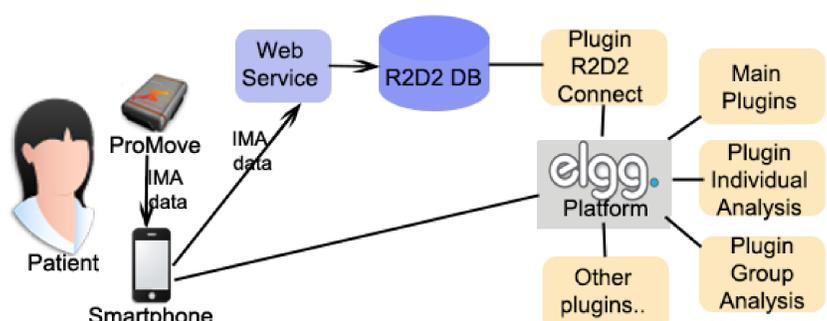


Fig3. Architecture

Results

A preliminary evaluation of the implemented VC was done with 2 groups of 5 healthy subjects each for two days. It was conducted to test the performance of the VC, and to test the PAL support modules, for both personal and group levels. No errors or anomalies that have impact on the stability or the functionality were detected. First results suggest that the group dynamics depend on a person who takes the role of leader spontaneously; if the "leader" is active and encouraging the other members, they also get active. Feedbacks and encouragements of the administrator had the same effect.



Fig4. Screen shots of the implemented VC

Discussion & Conclusion

Evaluation was conducted on few subjects and for limited time. To make the results conclusive: larger number of subjects and longer period evaluation are needed. Further development is needed in the personal and the group modules to provide extended services to members for instrumental support. Next steps will be the provision of the appraisal support (feedback) within the VC.

References

- [1] <http://inertia-technology.com/promove-3d>
- [2] Bouten et al, 1994
- [3] Elloumi et al, 2012
- [4] <http://elgg.org/>

