Moving towards a sustainable management of Parkinson's disease: The i-PROGNOSIS Personalized Game Suite approach

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Introduction. The use of apps and/or games in healthcare interventions have gained popularity, however, there is still a gap in the understanding on how these types of interventions are used for a sustainable management of Parkinson disease (PD).

Materials and Methods. Targeting intelligent early detection and intervention in PD area, the Personalized Game Suite (PGS) approach is presented here (mainly based on different goal-oriented activities through a virtual environment), as part of the H2020 i-Prognosis project (www.i-prognosis.eu), that introduces the integration of different serious games in a unified platform, namely: 1) ExerGames, 2) DietaryGames, 3) EmoGames, and 4) Hand writing/Voice (H/V) Games. The PGS tackles the PD symptoms as it incorporates the practicing of walk movement, improvement of gait mechanisms, balance and coordination aspects, encouragement and/or re-education of healthy and balanced diet, retraining of eating behaviour, improvement of facial expressiveness, improvement/maintaining of writing skills, practicing of narration/vowels/letters and speech dynamics.

Results. Via the PGS, the management of the PD patient's condition is placed within a serious games context, in order to improve, sustain or slowing down its progressive deterioration, taking into account safety, feasibility, personalization, socialization, and behavioural change aspects.

Discussion and Conclusion. The PGS: i) provides opportunities for the progressive use of self-assessment tools/games into more specific and integrated monitoring tools; ii) uses the app/games to set up simple routine to better manage patient's healthy life; iii) helps family/friends/caregivers to understand the evolution of PD through games and activities; and iv) plans different kind of game-scenarios according to the needs of the patients. The realization of PGS sets the basis for establishing a holistic framework that could aim at improving not only motor and non-motor symptoms, but also behavioural and cognitive impairments in PD, informing health care providers and policy makers for its inclusion in routine management for PD.

Keywords. Healthy Ageing; Parkinson disease; Personalized Game Suite; i-Prognosis.