

A survey on gamification for health rehabilitation care: applications, opportunities, and open challenges

ABSTRACT

Research trends in gamification have shown a significant diversity in various areas of e-health, particularly in addressing the issues of rehabilitation and physical activity. Rehabilitation requires better engaging tools that help to increase the patient's motivation and engagement in particular forms of rehabilitation training. Adopting gamification in rehabilitation offers different treatment and care environments when implementing rehabilitation training. As gamification is increasingly being explored in rehabilitation, one might not realize that using various techniques in gamified applications yields a different effect on gameplay. To date, varied gamification techniques have been utilized to provide useful experiences from the perspective of health applications. However, a limited number of surveys have investigated the gamification of rehabilitation and the use of suitable game techniques for rehabilitation in the literature. The objective of this paper is to examine and analyze the existing gamification techniques for rehabilitation applications. A classification of rehabilitation gamification is developed based on the rehabilitation gamifying requirements and the gamification characteristics that are commonly applied in rehabilitation applications. This classification is the main contribution of this paper. It provides insight for researchers and practitioners into suitable techniques to design and apply gamification with increased motivation and sustainable engagement for rehabilitation treatment and care. In addition, different game elements, selection blocks, and gamification techniques are identified for application in rehabilitation. In conclusion, several challenges and research opportunities are discussed to improve gamification deployment in rehabilitation in the future.