# Chapter 13
# Gamification as Upper Limb Rehabilitation Process

**Vitor Simões-Silva**

 https://orcid.org/0000-0003-2831-9729

*School of Health, Polytechnic of Porto, Portugal*

**Ana Filipa Duarte Mesquita**

*School of Health, Polytechnic of Porto, Portugal*

**Karla Lígia Santos Da Silva**

*School of Health, Polytechnic of Porto, Portugal*

**Vanessa Solange Arouca Quental**

*School of Health, Polytechnic of Porto, Portugal*

**António Marques**

 https://orcid.org/0000-0002-8656-5023

*School of Health, Polytechnic of Porto, Portugal*

## ABSTRACT

*In our modern life world, health and well-being strongly depend on the individual's health behaviours. Motivation is a major factor of health behaviour change, and intrinsically motivated behaviour change is desirable as it is both sustained and directly contributes to well-being. This raises the immediate question what kind of interventions are best positioned to intrinsically motivate health behaviour change. The current state of evidence supports that gamification can have a positive impact in health and wellbeing. In recent years, games and game technology have been used quite widely to investigate if they can help make rehabilitation more engaging for users. The underlying hypothesis is that the motivating qualities of games may be harnessed and embedded into a game-based rehabilitation system to improve the quality of user participation.*

## HOW CAN GAMIFICATION BE A PROCESS OF REHABILITATION OF UPPER LIMBS?

### Synthesis of Investigations in the Area

In the last decades the gamification concept comes up as different and original way of society to relate with several performances into different subjects and it has been increasingly defended that gaming does not only have to be relating as something pleasurable or as amusements. According to Huizinga (2012) cited in Assunção (2018), gaming is something that belongs to the individual and reveals an important role into cognitive, behavioural and social development.

Consequently, according to Deterding (2011) cited in Assunção (2018), gaming can be defined as the use of game components on occasions not associated with any situation of gaming, but its function is increasing people's involvement in to promote certain behaviours.

Considering game as a belong to a human being and from its culture, it is understood that the mechanisms of games are present in the way of living and relating since the beginning of civilization. Its survival could be considered as a way to play with life and, therefore, could not be understood gaming as something new (Navarro, 2013).

Motivation as a motor of movement:

In our modern world, health and well-being strongly depend on individual health behaviours. Motivation is a major factor of health behaviour change, and intrinsically motivated behaviour changes are desirable as it is both sustained and directly contributes to well-being. This raises immediately the question of what kind of interventions are in a better position to intrinsically motivates health behaviour changes. The current state of evidence supports that gamification can have a positive impact in health and wellbeing (Johnson et al., 2016).

Motivation is understood as a strength that emerges, measures and supports attitudes of each human, it is a joint process that reaches the beginning of an activity and its maintenance with firmness and vigour over time.

Besides, motivation should not be considered as a feature relatively stable of human behaviour because it can change due to others features that the individual may be exposed to (Pansera et al., 2016).

People are motivated to perform by different kinds of factors that might be as activity by its own or other external force. When the individual is only motivated by the activity and not by external factors is designated as intrinsic motivation. This kind of motivation is related with better learning, high performance and well-being as well and, therefore, it is essential to study the conditions that enhance it.

Autonomy is important for intrinsic motivation, and some studies prove this need by revealing that actions such as rewards, threats, assessments and deadlines reduce intrinsic motivation and decreasing autonomy.

The results of an experiment prepared by Zuckerman and collaborators (1978) has shown that people's motivation it is high when they have higher control upon on its involvement because having the freedom of choice, about what they will do or either how they will going to do, the individuals tend to have intrinsic motivation raised than people that performs same actions but not have elected it by themselves (Marins, 2013).

When we mention motivation, we are also referring to Martins (2018) who define this as being psychologic energy, directed to a specific object, however, many behaviour's theories about behaviour's orientation do not explain where came from the same kind of energy that encourages to act as well. Tak-

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