

# Chapter 7

## Petrha+:

### A Serious Game to Enhance Physiotherapy Students' Clinical Reasoning

**Rui Macedo**

*Polytechnic of Porto, Portugal*

**Claudia Silva**

*Polytechnic of Porto, Portugal*

**Bruno Albouy**

*IRFSS Nouvelle-Aquitaine, France*

**Alejandro F. San Juan**

*Universidad Politécnica de Madrid, Spain*

**Tiina Pystynen**

*Tampere University of Applied Sciences, Finland*

#### ABSTRACT

*Role play and simulated patients are tools frequently used in undergraduate physiotherapy courses to help students gain familiarity with what they will find in future real-life encounters. However, these approaches have limitations when it comes to delivering diversity and repetition to a large number of students and are mostly bounded to the school's premises. Web-based virtual patient software can help to overcome these shortcomings as they equally require students to go through most of the steps of the physiotherapy process, and simultaneously offer unlimited diversity of cases and repetition opportunities and can be delocalized from physical schools. PETRHA + is an Erasmus+ strategic partnership of European high education institutions aiming at the improvement of a web-based serious game prototype designed to enhance physiotherapy students' clinical reasoning using virtual patients. The objective of this chapter is the presentation of the background context that led to the development of the serious game, its design features, functions, and ongoing and future developments.*

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## INTRODUCTION

PETRHA+ is an ongoing ERASMUS+ project<sup>1</sup> that follows the PETRHA<sup>2</sup> strategic partnership. Drawing from one of the intellectual outputs of the previous partnership, a serious game, PETRHA+ partners are improving it as a clinical process training tool for undergraduate physiotherapy students. Like its predecessor, the PETRHA's+ serious game aims to structure student's clinical reasoning and enhance the assertiveness of their physiotherapy diagnosis by repeatedly playing multiple competitive and collaborative virtual clinical cases of different health-related conditions within the scope of physiotherapy practice. Clinical cases in English, Spanish, Portuguese, and French will be delivered through a free online platform with versions in each of the four European languages. The objective of this chapter is to present PETRHA's+ serious game structure and functionalities.

## BACKGROUND AND CONTEXT

Developments in physiotherapy professional competencies (WCPT-ER, 2013) in undergraduate physiotherapy education include a focus on the interactions with patients and clients and the process that spans from the first contact to measure an intervention's results. For teaching purposes, this process can be broken down into several tasks that involve collecting data from patient history, patient files, and physical examination (including assessments of the main functions of the body, activity limitations, participation restrictions). Then, the collected information is processed to establish a physiotherapy diagnosis, rehabilitation goals, choosing rehabilitation means and techniques, implementing therapeutic actions, and re-assessment. Most parts of this process can be emulated using simulation approaches that span from the low-tech, low-budget paper case, through virtual cases or mannequins, right to standardized patients both in mixed and real lab contexts (Jull et al., 2011; Pritchard et al., 2016).

Simulations using actors as patients in undergraduate physiotherapy training courses helps students gain familiarity with clinical encounters or care environments like those they will find in real life, without risk for the patient, for the healthcare professional or for the student (Murphy et al., 2015; Phillips et al., 2017). However, these simulated clinical situations present some limitations. In addition, the scenario of students role-playing with peers might present some limitations, regardless of its usefulness. For example, when roles lack realism, students do not behave as they might in a real situation; they may have poor acting skills, inadequate preparation, uncertainty about the quality of peer feedback, or lack of clarity in instructions that make the experience less believable (Nestel & Tierney, 2007).

Actors as patients can be very realistic and be good for evaluation purposes because of their ability to standardize the assessment environment but are expensive (Paparella-Pitzel et al., 2009). Moreover, because a large number is needed to cover all health conditions, they take a long time to train and get tiered, all of which makes them inadequate for large-scale training. Finally, patients in a class context have the advantage and richness of its reality but must be accompanied by staff, and like with actors, they get tiered, which limits repetition. The approaches described above, although limited as stand-alone solutions, can complement each other if delivered for a specific purpose alongside the curriculum. Despite their value as learning tools, they have similar limitations when it comes to delivering diversity and repetition to a large number of students. Their use is also limited because they are mostly bound to the school's premises.

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