Virtual Coaching Activities for Rehabilitation in Elderly

Call: H2020-SC1-2016-2017

Grant Agreement Number: 769807

D6.1 Design Specification of Clinical Pathway Service

Extended summary

The *vCare* project starts from the assumption that **rehabilitation provides an ideal setting for the adoption of a Virtual Coach**. Rehabilitation at home, supported by virtual coaches, can improve a patient's transition from clinic to home.

The document provides an overview of the **graphical representation of the clinical rehabilitation pathways**, which are integrated as templates in the vCare system. They are then **adapted at runtime** in order to take into consideration the preferences and choices of the user. With the support of the model-based graphical representation, medical knowledge is represented and made accessible to the technical layers of the vCare project to create the basis for the activities of the virtual coach. The deliverable describes thus the underlying modelling language, the derivation of the modelling concepts as well as the modelled pathway templates for the four vCare pathologies: Stroke, Parkinson's Disease, Heart Failure and Ischemic

BACKGROUND

D6.1 explains how the medical information provided within the WP1 deliverables can be analysed and graphically conceptualised. This is a compulsory preliminary step in order to make accessible the medical information content related to the virtual coaching activities.to the technical layers of the vCare project. It provides the foundation for the set-up of the pathway editor and allows the modelling of the pathway templates, which will then be stored in a pathway repository in a structured way that makes the information accessible to the other vCare system components.

METHODOLOGY AND DEVELOPMENT APPROACH

The representation of the clinical pathways is based on the method of conceptual modelling of clinical workflows. Therefore, the role of workflow models for clinical knowledge modelling is explained as well as the concept of clinical pathways as a central instrument for the structured description of the clinically relevant procedures a patient should follow.

The document first describes the significance of clinical pathways for the project. It then explains the process of identification of pathway-relevant concepts for the modelling process and provides a summary of the defined concepts through a detailed conceptual model.

The project had to determine the most suitable modelling language to be used. Different modelling approaches and languages have been examined and analysed for their suitability to represent the required concepts. We concluded that the Business Process Model and Notation (BPMN) was the most appropriate to support the modelling within the vCare project, although this modelling language could not fully meet the identified requirements. Therefore, we had to proceed to some adaptations: The BPMN has been enriched with the missing concepts and the attributes of some standard elements have also been adapted. Once implemented, the adapted modelling language proved suitable for displaying all necessary information about the patient's rehabilitation programme for the virtual coaching system. Figure 1 illustrates the representation of an exemplary pathway template modelled with the extended BPMN.
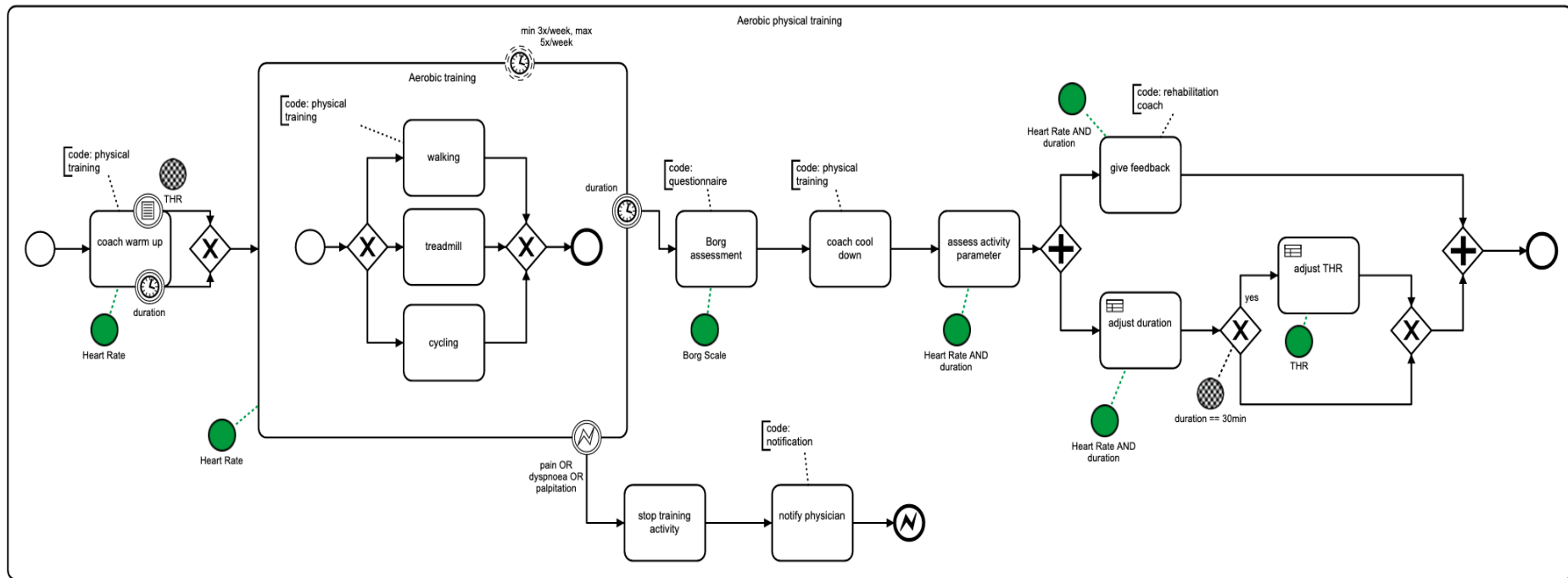
Figure 1: Example of a detailed representation of the pathway solution "Aerobic physical training" in the context of the rehabilitation programme for Heart Failure Disease