ARMEOSPRING PRO USER SCRIPT

1. Background Information

The ArmeoSpring Pro is a medical device intended for the rehabilitation of patients with mild to moderate impairments in upper limb function. The ArmeoSpring Pro provides functional training to improve upper limb function and it is based on the ArmeoSpring therapy with more than 15 years of clinical experience.

The **advantages** of the ArmeoSpring Pro therapy are:

- **Functional training**
- Customizable **exoskeleton** from pediatric to adults
- Support various **therapy goals**
- **Arm weight support** with patented **TrueG** technology
- **Motivating** exercises
- **Increased** therapy **efficiency**
- **Objective Assessments** (session, exercises, and assessments results)

2. What is the ArmeoSpring Pro

The ArmeoSpring Pro is intended for **adult and paediatric patients with mild to moderate impairments in upper limb function** undergoing upper limb therapy in hospitals with rehabilitation departments, outpatient rehabilitation clinics, physiotherapy, and occupational therapy practices, and for whom functional training to improve upper limb function is indicated according to the judgment of the treating clinician.

The mild to moderate impairments in the upper limb function can be caused by different diseases, including, but not limited to, neurological diseases, such as acquired brain injury (through stroke or trauma), and cerebral palsy.

The patient must not meet any of the product-specific contraindications and the risk factors need to be considered.

Please, check the **indications, contraindications,** and **risk factors** on the **User Manual** of **ArmeoSpring Pro**.

3. What does the ArmeoSpring Pro consist of?

The ArmeoSpring Pro consists of a **passive instrumented arm orthosis** with an adjustable spring mechanism, which supports the weight of a patient's arm and measures patient's movements during functional upper limb exercises. Weight bearing provided by the orthosis facilitates movement exercises presented on a computer screen via **motivating game-like exercises** with the aim to increase **range of motion**, **strength**, and movement **coordination** of the impaired arm.

The ArmeoSpring Pro allows the **therapist** to adapt the **therapy parameters** via a user interface to **individualize** therapy and address **patient-specific needs**. The ArmeoSpring Pro can **objectively assess joint range of motion**, movement **workspace** and movement **quality**, and produce **therapy reports** (Figure 1).

Figure 1: ArmeoSpring Pro main features.

4. How are we going to use the ArmeoSpring Pro in a training session?

First, we will need to **Prepare the Patient** and the **ArmeoSpring Pro**, making the movement axis of the device match that of the patient and thus, ensure good arm movement. **Personal data** like user name and impaired arm will be put into the software.

The anatomical joints should match the mechanical joints. Therefore, the **adjustment of the exoskeleton** should be done in following order: Proximal to distal (shoulder, Elbow, wrist). The lower arm length and upper arm length will be put into the software.

Additionally, **arm weight support** will be selected and put into the software. The arm weight support should be sufficient enough for the patient to be able to preform specific tasks without compensatory movements while allowing many repetitions and yet kept to a minimum to ensure a challenging training session.

2 Session Setup

- 2.1 Define 3D Workspace (A-ROM, A-MOVE)
- 2.2 Patient Zone
- 2.3 Create Therapy Plan

Then we will prepare the session (**Session setup**). This session setup procedure will be done a systematic way, step by step, to make it time efficient and to avoid missing a step. **To define the 3D workspace**, you have to conduct the initial assessments A-ROM (1D workspace) and A-MOVE (2D, 3D workspace).

Set the **Patient Zone** in order to tell the software not to place any items where the patient could not reach them without moving their legs or torso.

If you **create the therapy plan**, select appropriate **exercises** aligned with training goals or the patient's ability (1D/2D/3D, included joints, movements) as well as appropriate exercise parameters (difficulty level, duration, visual detail).

3 Training

- 3.1 Exercises
- 3.2 Assessments (optional)

Once all is ready, we will start **Training** according to the selected therapy plan, which can also include assessments along with the exercises.

4 End the Session

Once the training session is finished, we **end the session** of the ArmeoSpring Pro.