

Intelligent control system for back pain therapy

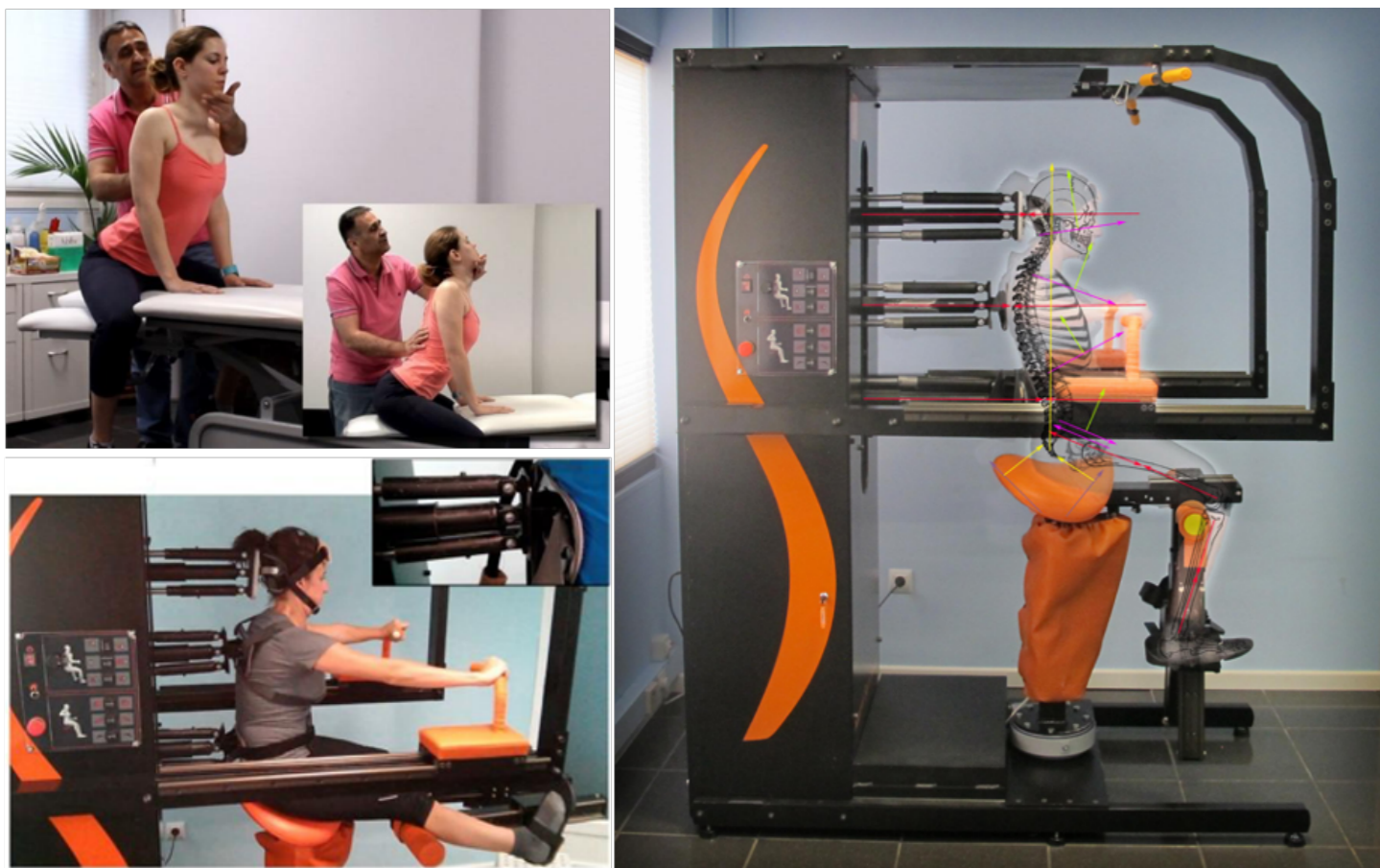


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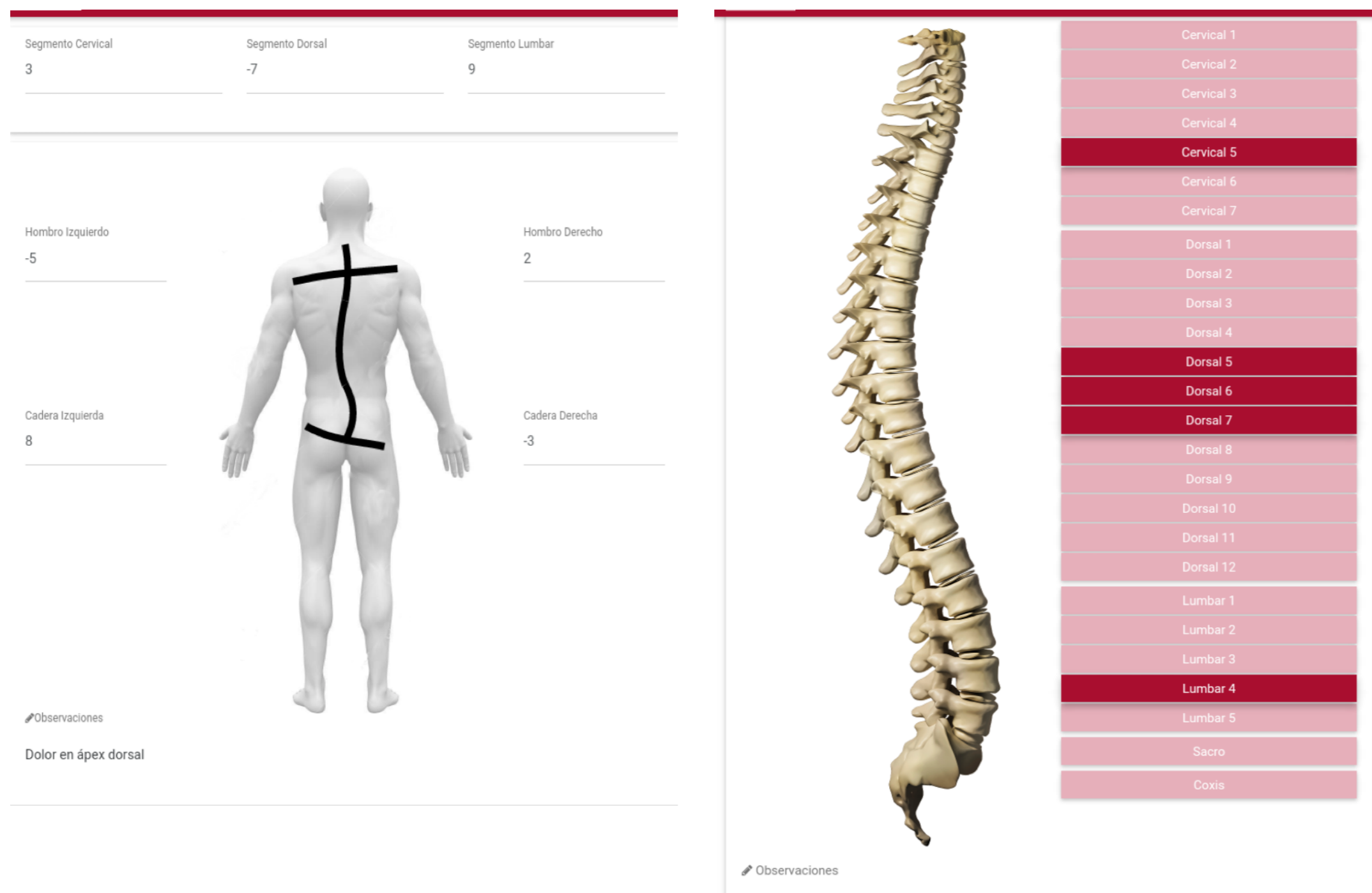


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- The Kazemi Back System (KBS) is a therapy machine that allows the patient to correctly perform manipulation exercises to heal or relieve pain.
- A CBR system suggests a stream of configuration values (pressures) for the KBS machine.
- Its challenge is to capture the expertise knowledge of physiotherapists and reuse it for future therapies.

RETRIEVE

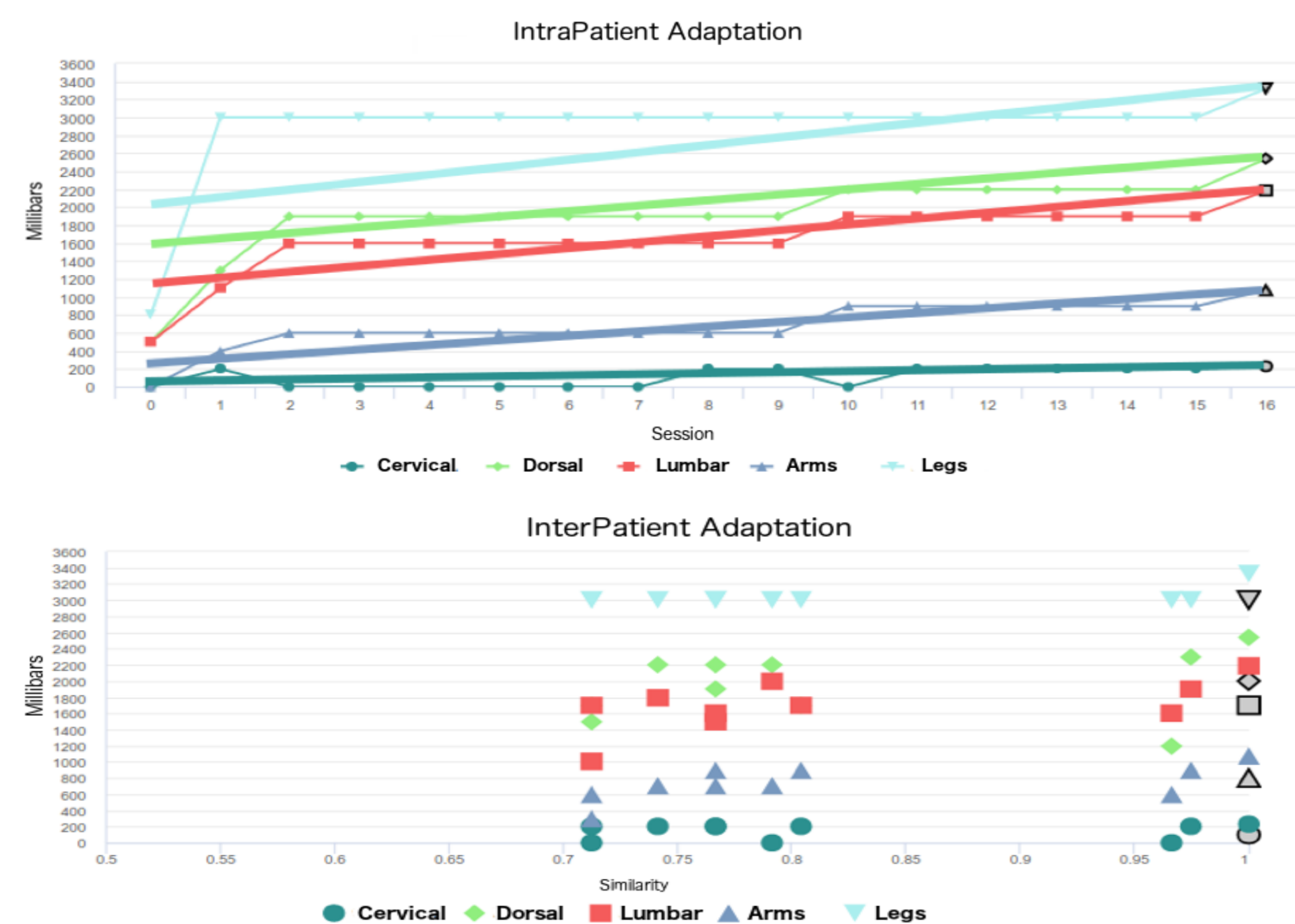


It uses a complementary process where both the personal record of the patient and cases from other patients are reused to provide a solution.

- Personal record → **Inpatient** process
- Similar patients → **Interpatient** process

This process has been designed to solve two major problems related to the **cold-start**.

REUSE



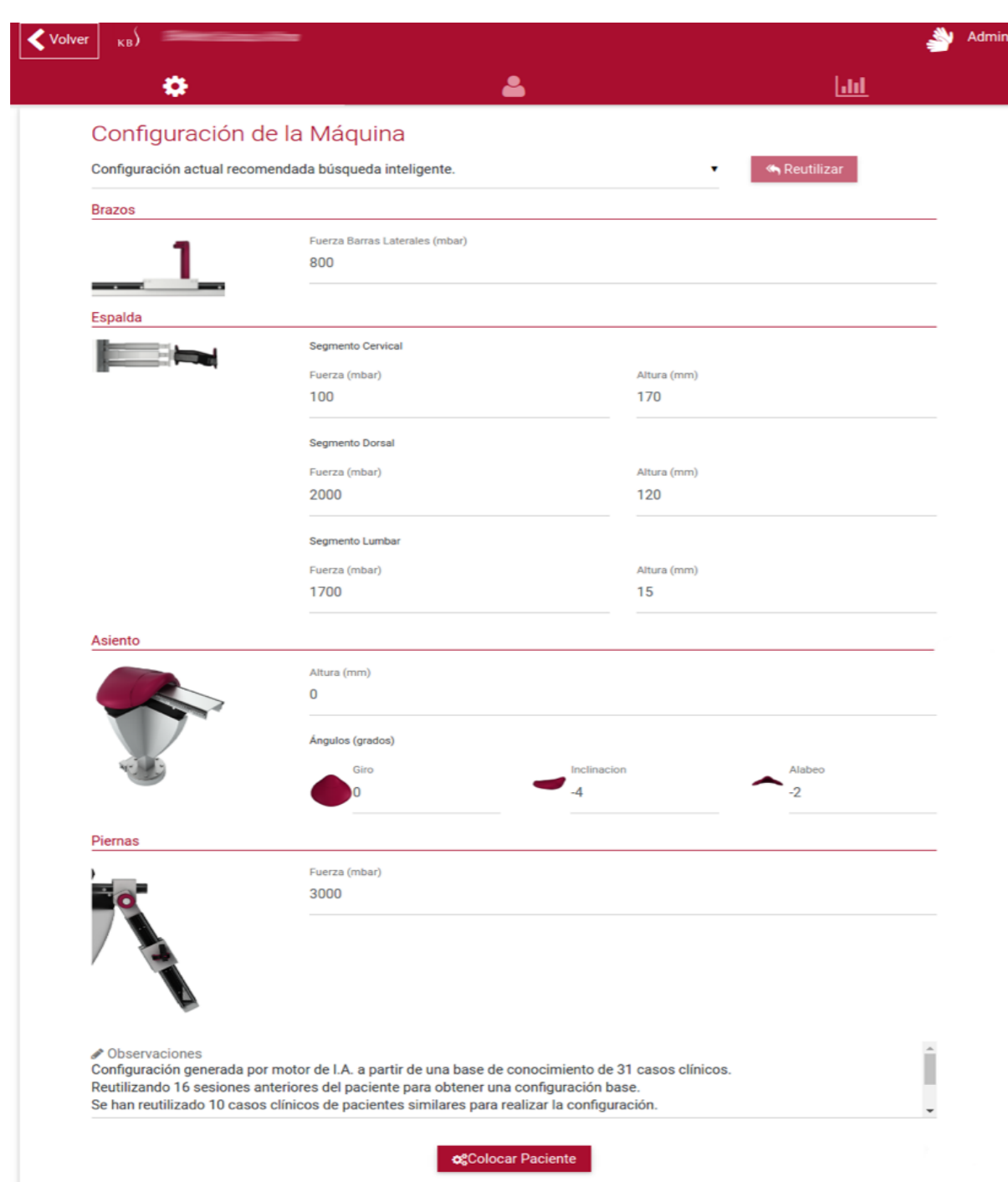
Inpatient adaptation

Obtains a base configuration of the machine. It is a preliminary solution that is computed using a linear regression model over the pressure series found in the patient's record.

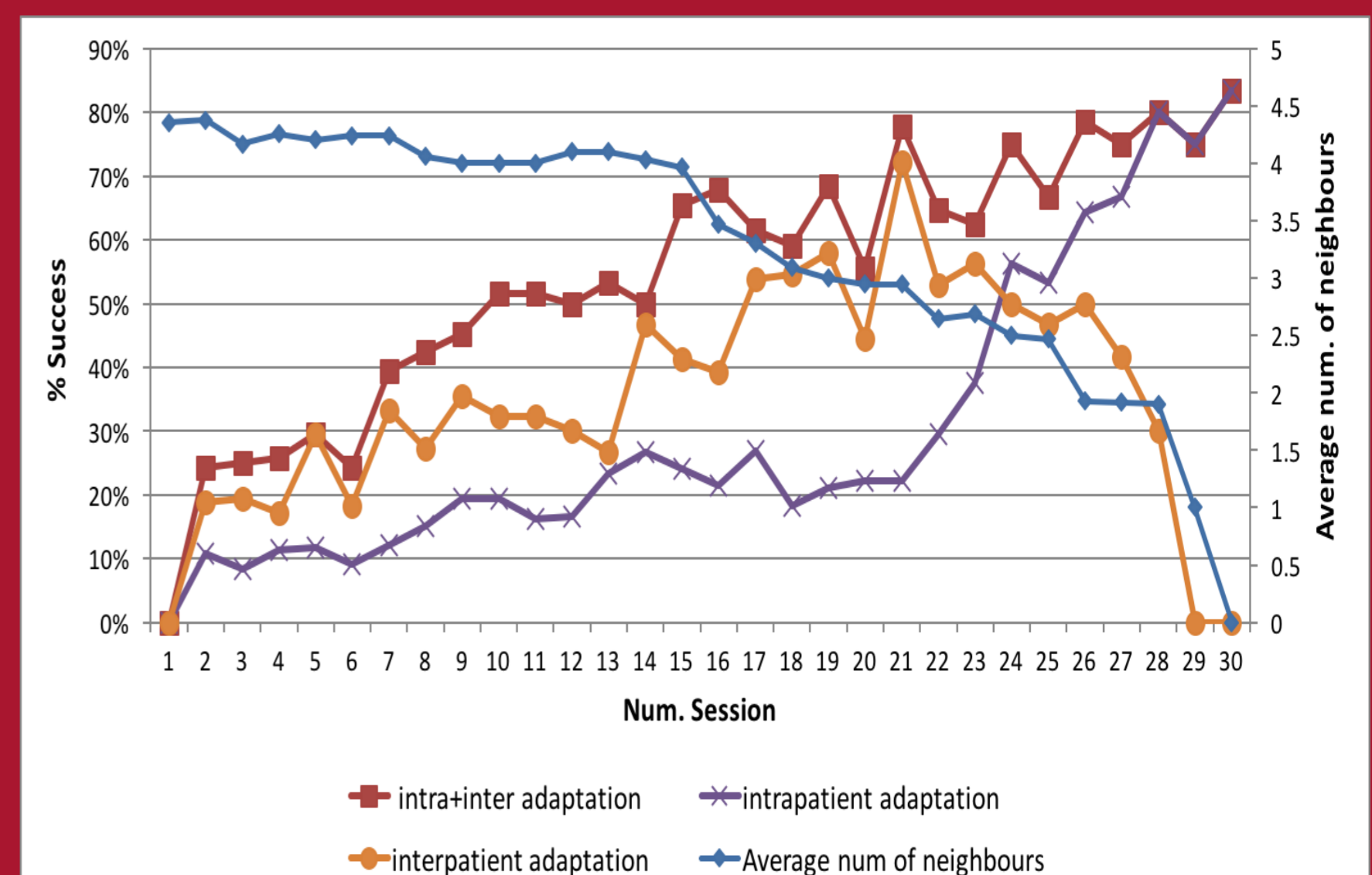
Interpatient adaptation

Improves the base solution by using the nearest neighbours (similar patients). It applies a weighted average for every pneumatic actuator.

REVISE



RESULTS



40 patients (14 female and 26 male) during 4 months
 75% success rate of the CBR system