# Back on Track

Preliminary draft

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Introduction

Our project focuses on a system for tracking the user's posture and gait. It can be used both by patients undergoing rehabilitation and by individuals who want to improve their posture. The system integrates an interface that allows users, doctors, and specialists to monitor any postural changes—whether positive or negative.
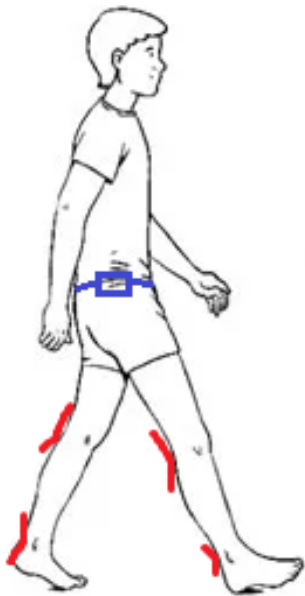
Project Scope

We aim to design and build a complete measurement and tracking system for the user's posture and gait. This will include measurements of the hips, knees, ankles, back, shoulders, neck, and feet.

This system could be applied not only in the medical field but also in sports and fitness.

Functional Description

The device will record the flexion angle of the knees, as well as the acceleration and orientation of the hips.

- **Device Setup:**
  The patient will wear sensors embedded in knee pads and clip a hip sensor compartment—including the sensors, battery, and other systems—onto their pants using a hook mechanism (similar to those used for walkie-talkies or pens).

- **User Interface:**
  The system will include an app or web platform where doctors can log in with their accounts. Once logged in, they will have access to all their patients' data.
- **Data Access and Management:**
  - Doctors can select each patient and view data through tables and graphs.
  - They can filter the data to view only the most recent week or examine longer periods.
  - Older data can be deleted if no longer needed.
- **Patient Access:**
  - Patients must register and link their accounts to their doctor's profile during the initial setup.
  - This link can be undone if the patient changes specialists or completes their rehabilitation process.
  - Patients will also have access to their own data to monitor connectivity and data transmission status.

Key data and statistics that should be available in the application include:

- Flexion angles of knees and hips
- Hip orientation and acceleration
- Tracking trends over time

Flexión/Extensión Cadera — CADERA

Flexión/Extensión Rodilla — RODILLA
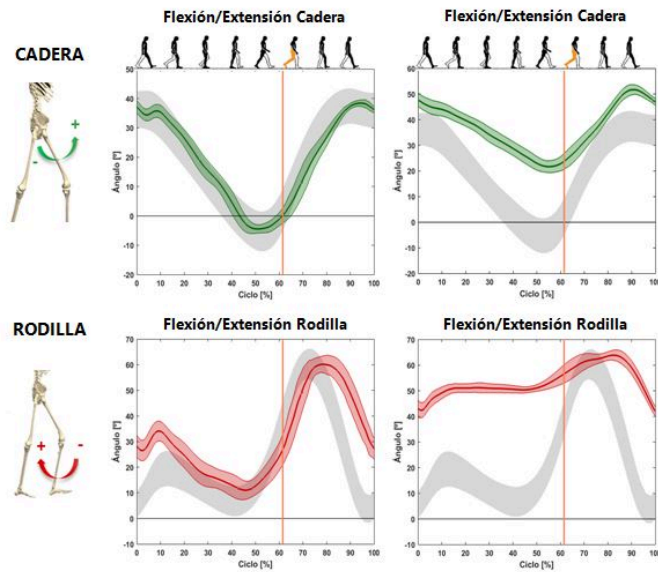
MVP (Minimum Viable Product)

The MVP will consist of:

1. **Physical Prototype:**
   - Design and construction of a functional prototype.
   - The prototype will include knee sensors embedded in knee pads and a hip sensor compartment that clips onto the pants using a hook mechanism.
2. **Data Transmission, Processing, and Analysis:**
   - Data collected by the sensors will be transmitted, processed, and analyzed through an app or web platform.
3. **User Interface Design:**
   - Development of a user-friendly interface where doctors and patients can access the collected data.
   - Doctors will log in to view and manage their patients' data.
   - **Doctor's Access:**
     i. Register and log in via the application or web platform.
     ii. View and manage data for each patient.