DOCTOR MANUAL

A comprehensive guided explanation of all doctor functionalities and system processes necessary to make proper use of this unit and make a proper evaluation of patients based on available information.

CREDITS

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1. Introduction

The Doctor application provides medical professionals with a interface to manage their assigned patients, review pending patient requests, access medical information, and interact with the measurement sessions stored in a database.

1.1. Role

The role of the Doctor application is to enable healthcare professionals to:

- Review their assigned patients
- Inspect patient information (demographics, sessions, measurements)
- Approve or reject patient–doctor association requests
- Access physiological measurements and symptoms retrieved from the database.

All this information will allow the doctor to assess the evolution of Spinal Muscular Atrophy (SMA) patients at a distance through this telemedicine application.

2. Objectives

2.1. Primary

The main goal of this unit is to provide doctors with an interface so they can access measurement sessions sent by patients to maintain a periodic control over the patient's evolution during treatment stages.

Doctors may access their patients and sent measurement sessions. These include and electrocardiogram (ECG), electromyogram (EMG) and symptoms.

2.2. Secondary

It was considered important to provide an intuitive and easy-to-use interface which allows them to travel throughout the unit.

Additional actions (see *Section 4*) were added to ensure organization in doctor-patient assignation and to facilitate evolution following for the doctors.

3. Getting started

You can start the platform in two different ways. The first option is to use Docker, which provides a straightforward setup with all services pre-configured and ready to run. This approach is recommended if you want quick and consistent deployment across different environments without the need to have pre-requisites installed.

Alternatively, you can download the individual repositories and run each component separately. This method offers more flexibility for development and debugging, as it allows you to modify or replace specific modules without affecting the entire platform.

3.1. How to initialize the application

3.1.1. Through Doker Deployment

Docker Deployment provides a fully containerized environment for running the SMA (Spinal Muscular Atrophy) telemedicine system. In this section how to use and install it is explained below. Nevertheless, for more information refer to the README section in the GitHub repository.

1. Make sure Docker has been installed in your computer through the official website: https://www.docker.com
2. Download the GitHub repository on your computer terminal: https://github.com/pilarbourg/telemedicine-deploy:

```
git clone https://github.com/pilarbourg/telemedicine-deploy
```

From this point on, please make sure you have all necessary requirements specified in the README and the certificate in place (Refer to the Certificate Manual)

3. Decompress the zip file and open a terminal or console on your device and navigate to the project directory.
4. Start all services by running the following in your terminal:

```
docker-compose up -d
```

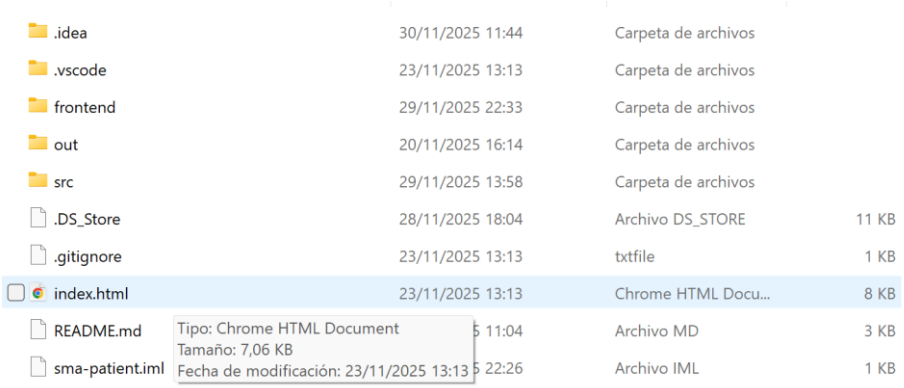
5. The web app should now be accessible locally at https://127.0.0.1

Finally, to shut down all containers run the following in the same terminal: `docker-compose down`

3.1.2. Manual setup

In order to access the webpage:

1. Download the GitHub repository: https://github.com/alejandraoshea/sma-server
2. Download the GitHub repository: https://github.com/alejandraoshea/sma-client
3. Please ensure you have certificate (*refer to the Certificate Manual*)
4. Locate the index.html (*/sma-client/index.html*) and double click on it to open the browser



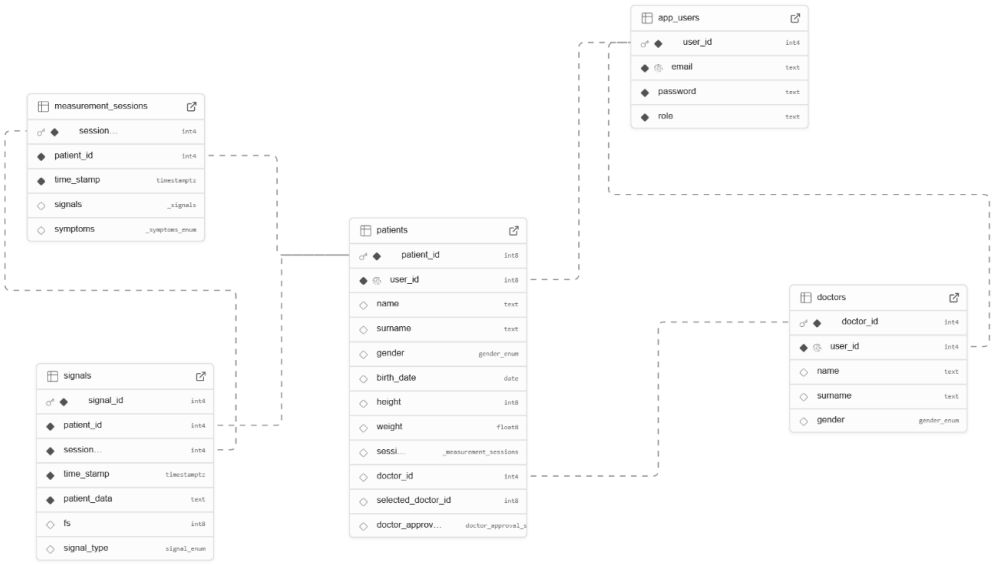
Now, you should see the initial register and log-in dashboard:

3.2. The database

The architecture of the database is designed around three main roles and their interactions: Patient, Doctor and Users and the measurement data generated by the patients:

- All authentication (Log-in/Sign-in) information is stored in the app_users table, which defines login credentials and role (ADMIN, DOCTOR, PATIENT) for each account.
- The patients and doctors extend the user records by storing their corresponding user information in and linking back to app_users through a shared user_id. Patients can be assigned to doctors and doctors may supervise multiple patients (for more information refer to the DOCTOR MANUAL and/or USER MANUAL).
- To support the data recollection by the patients, a measurement_session table which represents individual measurement events performed by a patient at a specific timestamp, and signals, which store the processed physiological data recorded during those sessions (EMG or ECG).

- Each signal entry references both the patient and the session it belongs to, allowing full traceability of all collected data.



3.2.1. Connecting the database

To connect the database stored in your computer to the server you will need to have the DUMP file that was given with the documentation, it must follow exact template on *section 5.1*.

Now that the database is created and stored in your computer you will have to go into *src/main/resources/application-local.yml* and change the following parameters:

```
spring:
  config:
    activate:
      on-profile: local

  datasource:
    url: jdbc:postgresql://localhost:5432/database_name
    driver-class-name: org.postgresql.Driver
    hikari:
      schema: public

server:
  port: 8443
  ssl:
    enabled: true
    key-store: /path/to/your/keystore.p12
    key-store-password: YOUR_KEYSTORE_PASSWORD
    key-store-type: PKCS12
    key-alias: YOUR_KEY_ALIAS

admin:
```

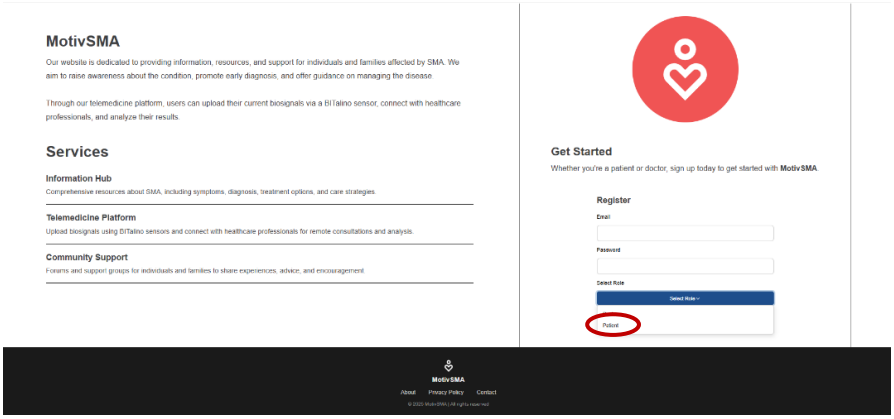
```
  username: ADMIN_USERNAME
  password: ADMIN_PASSWORD

operator:
  username: OPERATOR_USERNAME
  password: OPERATOR_PASSWORD

jwt:
  secret: JWT_SECRET
  expiration: 3600000
```

Highlights must correspond to your admin parameters; these will be used to log into the system

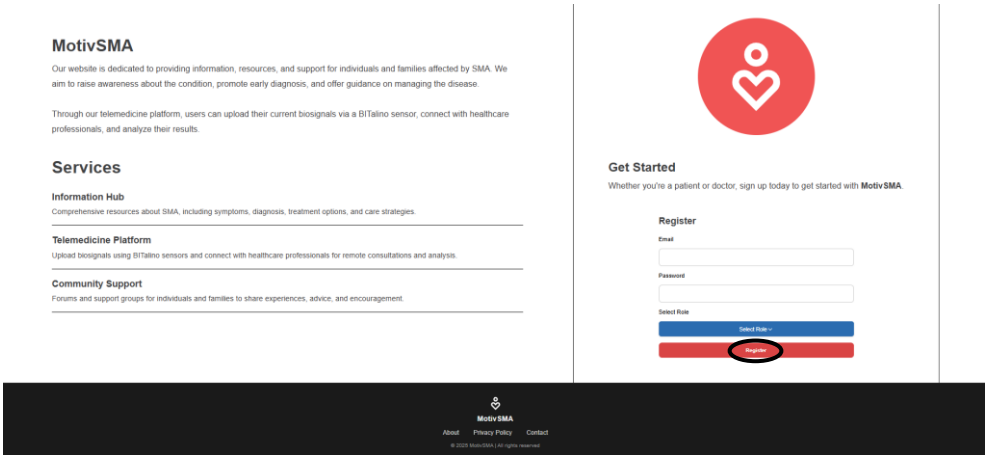
3.3. Register

If you don't have an account, please complete the registration form with the following required information:

1. Email: Enter your email address (this will be used as your identifier).
2. Password: Enter a password (please remember the password for future use).
3. Role: Select Doctor from the dropdown menu. You must select one option.



Finally, click the registration button.

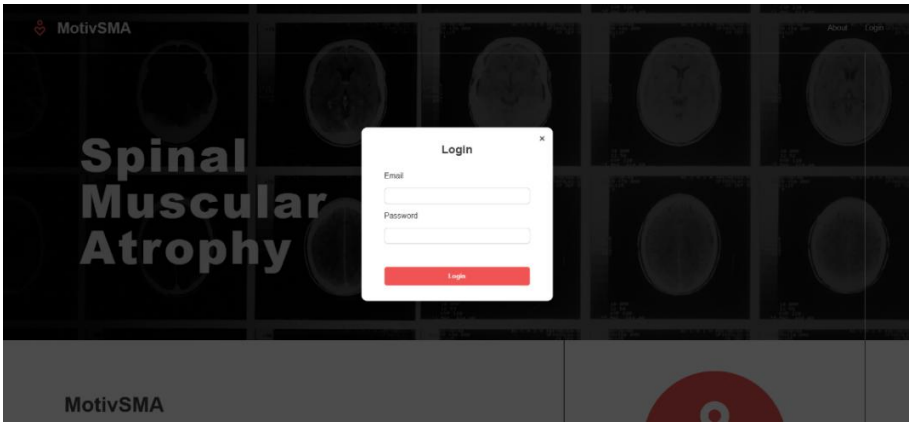


3.4. Log in

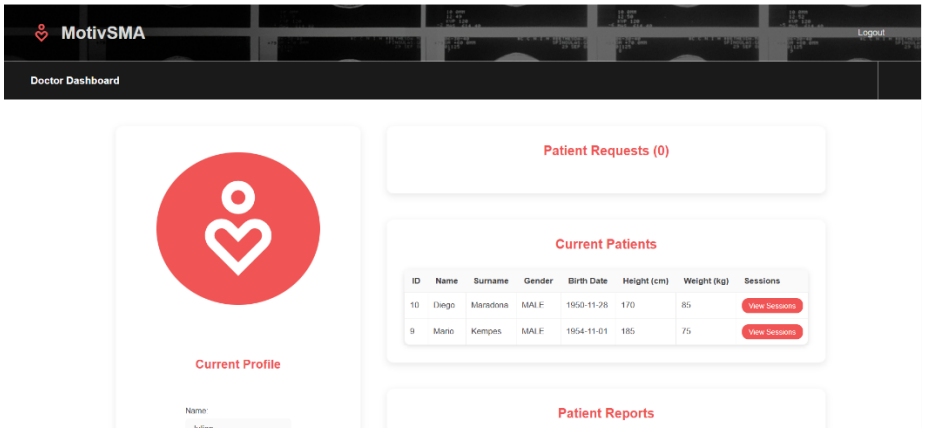
Please insert your personal information after the first Log-in.

You must log-in into the doctor unit using the *email* and the *password* specified during the “Sign-in” following these steps:

a) Email: Enter the email address you used during registration.
b) Password: Enter your password.
c) Action: Click the "*Login*" button.



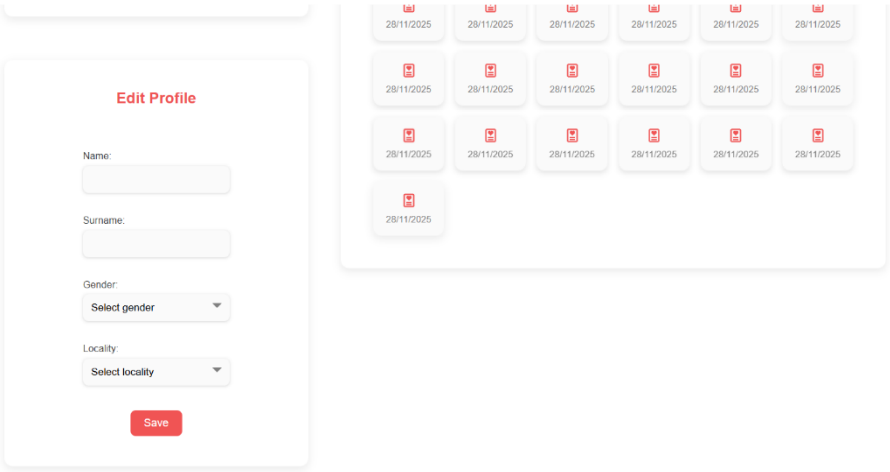
Whenever these parameters are correct, you will have access to the doctor dashboard.



4. Profile Configuration

Once logged in, you can edit your profile information.

- Access the main screen (*Doctor Dashboard*).
- Locate the "*Edit profile*" section in the top left corner.



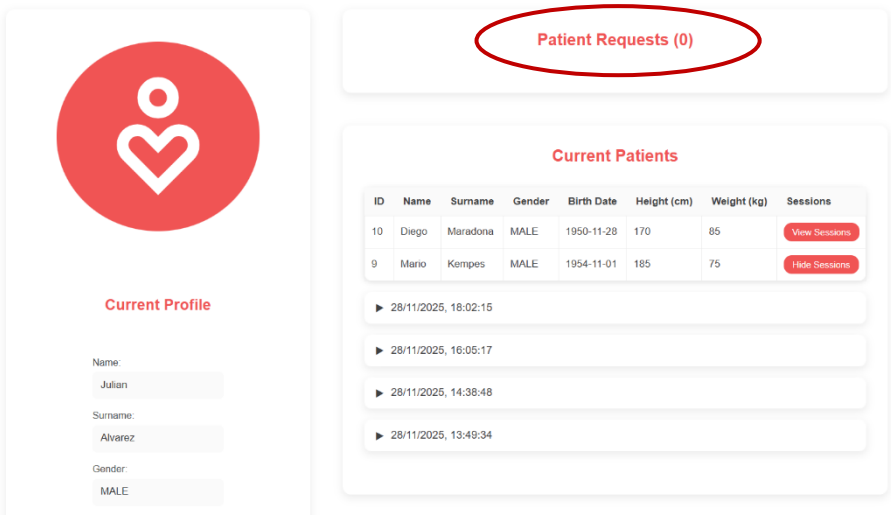
- The following personal details can be changed:
  a) **Name**
  b) **Surname**
  c) **Gender**
  d) **Location**

Click on “Save” to update the profile in the system.

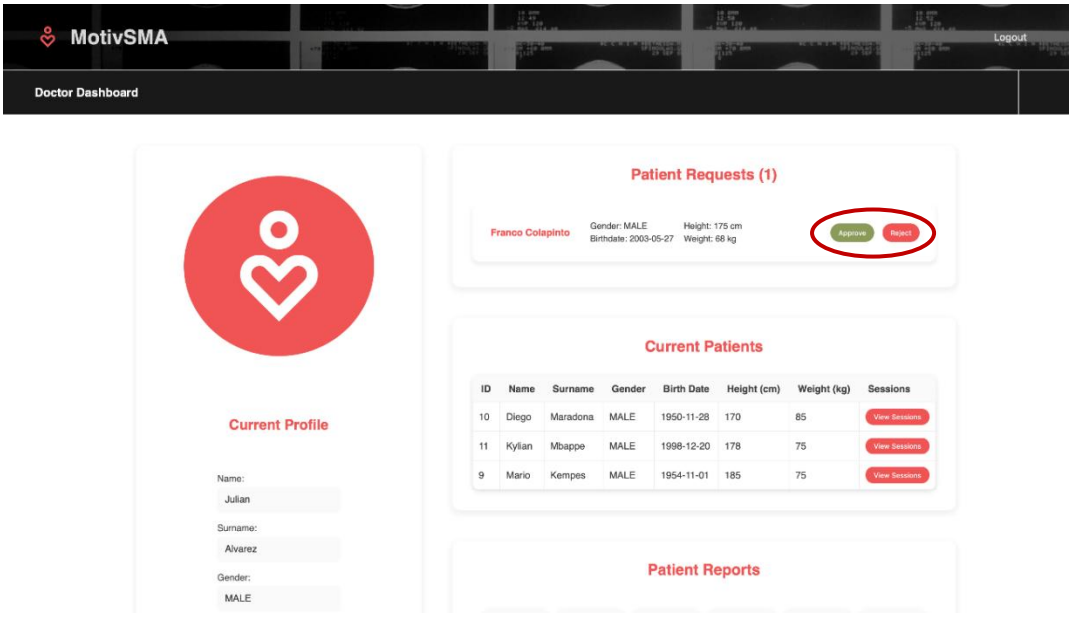
5. Patient handling and data visualization

5.1. Accept/reject patient requests

Once you are logged into the doctor unit, the first thing you will see is the section named "*Patient requests*". In this section, a list of pending requests from patients is available; if no patients have sent requests, this section will be empty and titled "*Patient requests (0)*".



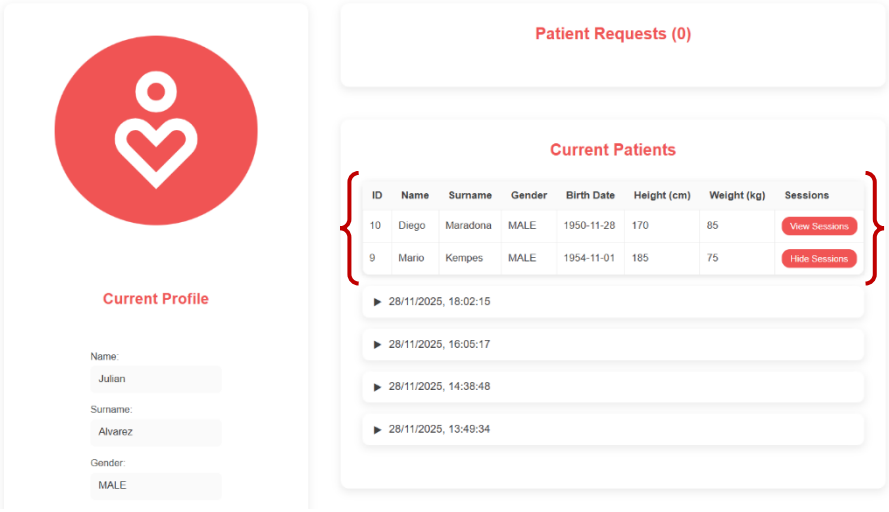
Now you will be able to accept or decline these requests. If a patient is declined it will disappear from this section, but do not worry, they will be able to send another request to you or another doctor. If the patient request is accepted, all patient information will be displayed in a list containing all your patients.



5.2. See patients

As a doctor you will see a list of all your patients in a section titled "*Your Patients*". For the list to be revealed you will have to click the "*See all patients*" button in the doctor dashboard. The patient list includes the following information of each person:

- ID
- Name
- Surname
- Gender
- Birth date
- Height
- Weight
- A button to access measurement sessions sent by the patient

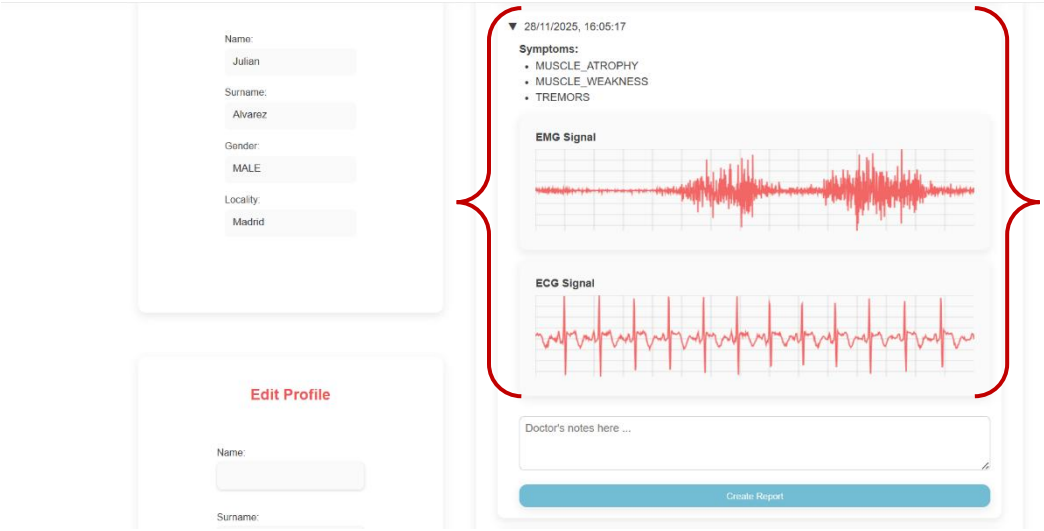


5.3. See measurement sessions

Once a patient has sent their recorded signals and symptoms, you will be able to access all this information by clicking the button "*View sessions*" at the right of the information row for each patient.

Once this button is clicked a list of dropdowns with all measurement sessions registered by that specific patient will be visible. Measurement session will be named after the time stamp they were taken at.

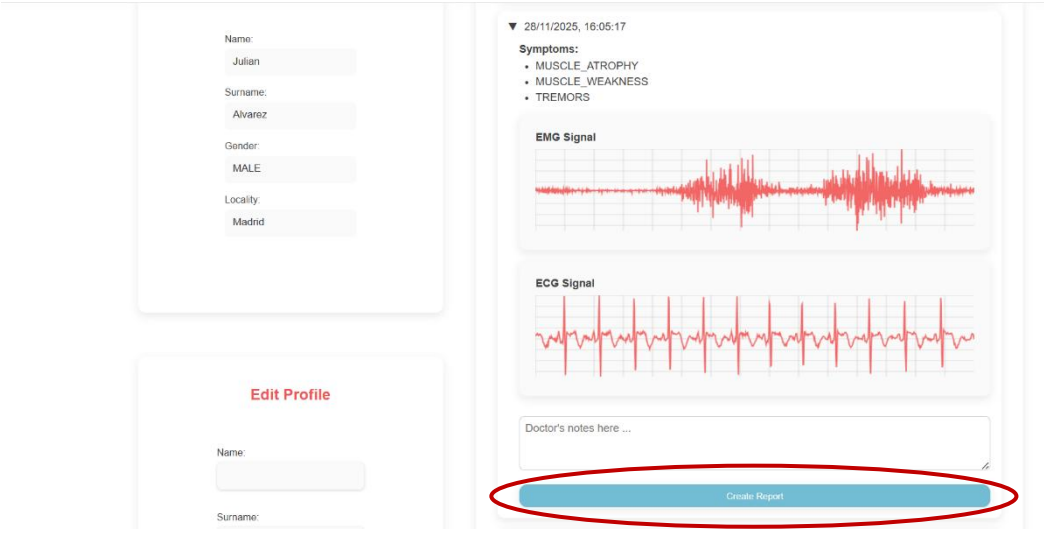
Once a measurement session dropdown in clicked, all registered symptoms and both signals (ECG and EMG) for that time stamp can be seen.



5.4. Generate Report (PDF)

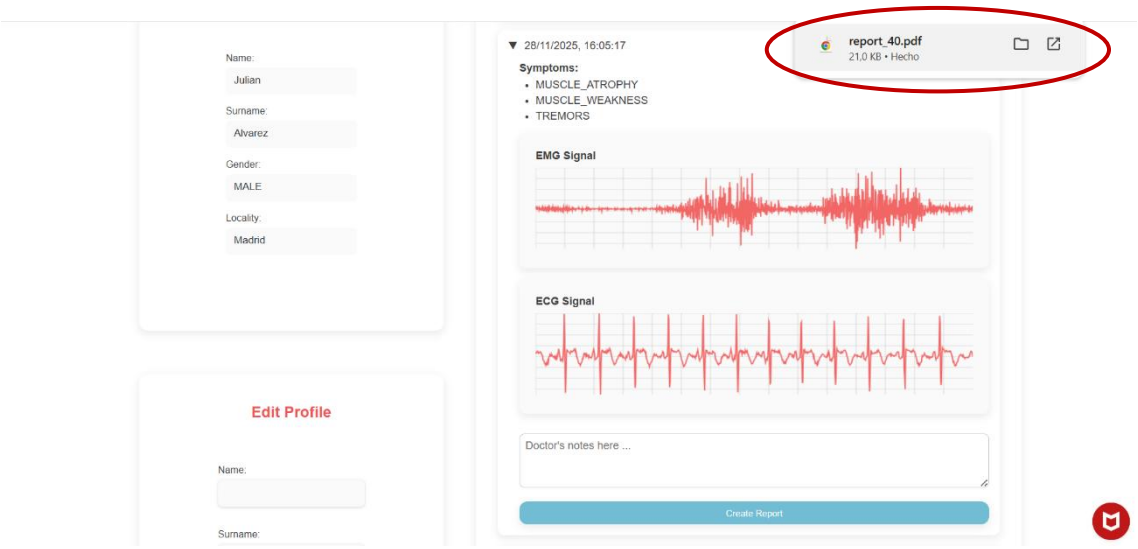
This feature allows doctors to export a formal clinical document for a specific session, useful for medical records. The same reports will be visible for your clients.

1. Navigate to a Session: Follow the steps to "See Measurement Sessions" for a patient.
2. Select Session: Click on a specific date (▶ 12/11/2024, 24:09:58) to expand the details.
3. Generate: Locate and click the button labelled "*Create Report*".
    - You can add any



- *System Action:* The server compiles the patient's data, the list of symptoms, the signal graphs and comments you can add to the report into a single PDF file.

4. Download: The browser will automatically download a file named report_[reportId].pdf.
   - Now the PDF file will appear in your downloads in the top-right section of your browser:

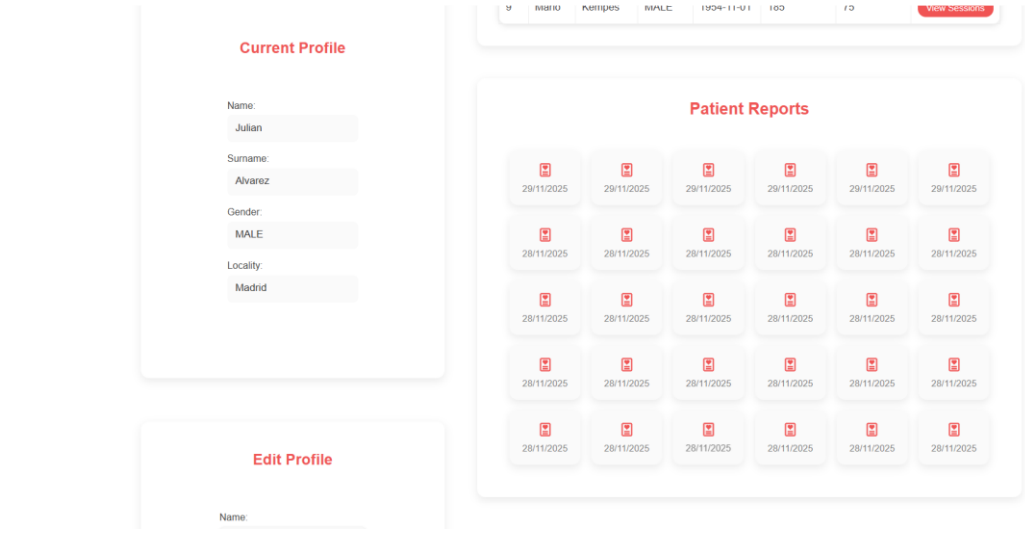


   - We recommend saving the report in your local computer and changing the name, so it is easier to identify where the report came from. For example: *MarioKempes9_12/11/2024Moring.pdf*
   - Now your patient will be able to see their own generated reports with your notes.

Note: Please consider that if sensitive information can be inferred from the report and must be written in the notes, we recommend contacting the patient before saving and uploading the report into the server.

5.5. See all generated reports

As a doctor you are able to see all report generated by you in the bottom section of your dashboard called "*Patient Reports*"



6. Logout

To ensure the security of medical data, it is mandatory to close the session when you finish using the platform.

1. The navigation bar at the top of the screen.
2. Click the "Logout" button in the top right corner.