FlexiCare: A Digital Patient Management System for Physiotherapy

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What is FlexiCare?

What It Does

FlexiCare is an online tool that helps manage physiotherapy treatment. It makes planning, tracking, and communication easier for both therapists and patients.

Two Connected Apps

- Web App for Therapists (built with ASP.NET Core)
- Mobile App for Patients (built with React Native)

These apps work together to make physiotherapy more organized and effective.

Main Goals & Benefits

For Physiotherapists

- Saves time by digitising records, appointments, and plans
- Helps track progress and give feedback
- Makes it easier to focus on patient care

For Patients

- Tracks daily exercises and sends reminders
- Offers helpful information and keeps them motivated
- Makes it easier to stick to their program and stay in touch

Research Insights

Why Patient Involvement Matters

Patients who stay involved in their treatment recover better and faster. They are more likely to do their exercises and stay motivated.

Staying Safe & Connected

FlexiCare keeps patient data secure using login protection, encryption, and regular updates and has the potential to connect with healthcare systems.

User-Centered Design: Surveys & Personas

What Therapists Said

- Patients often forget to do exercises
- Motivation is a big issue
- Therapists require tools like videos, reminders, and customised plans

User Personas

- Two typical users were created:
- Sarah, a therapist who wants simple ways to track and manage patient care
- John, a patient who needs help remembering his exercises and staying on track

Features & What's Possible

Key Features

- Web and mobile apps
- Assign and track exercises
- Give and receive patient feedback
- Customise treatment plans

Can It Be Done?

Yes, but it involves addressing:

- Data privacy and safety
- Making it work on different devices
- Managing time and learning new tech
- Keeping users interested

System Architecture & Technology

Tech Used

- Frontend (Mobile): React Native, Expo + NativewindCSS
- Backend (Web/API): ASP.NET Core, C#, Entity Framework, SQLite
- Interface: HTML + REST APIs

System Design

- Built in layers: User Interface, Server Logic, and Database
- Uses MVC for easier updates and maintenance
- Keeps data in sync and protects it with secure login systems

App Design & User Experience

How It Looks

The design is clean and easy to use. Key screens include:

- Dashboard
- Today's tasks
- Exercise programs
- Appointments
- Feedback and settings

Made for Everyone

Simple, clear design helps older or less tech-savvy users. Features like reminders and easy feedback make it engaging.

How It Was Developed

Step-by-Step Process (SCRUM)

- Sprint 1: Tried out early ideas
- Sprint 2: Built backend with C# and .NET
- Sprint 3: Made the mobile app

Each step ended with a review and changes based on what was learned.

Tools Used

- VS Code – coding
- TablePlus – managing the database
- Figma – designing the interface
- Notion – writing things down
- GitHub – version control
- Miro – planning and brainstorming
- Azure - web app hosting

Testing the System

How It Was Tested

- Backend: tested with MSTest (C#)
- Frontend: tested with Jest (JavaScript)
- User testing planned for the future

What We Learned

The system works well technically, but more testing with real users will help improve ease of use.

Challenges & Limitations

Learning New Tech:

- C# and ASP.NET Core were initially challenging but ended up being the best fit for the backend.
- Tried Python/Flask and JavaScript/Express before returning to C# for better MVC and API support.
- Switched from PostgreSQL to SQLite for easier setup and faster development.

Adapting to Changes:

- Multiple tech changes required flexibility and quick problem-solving to stay on track.

Time Constraints:

- Limited time meant focusing on core features first, with advanced ones to be added later.

Lessons Learned & What's Next

Skills Gained

Improved skills in design, coding (frontend and backend), user research, and solving problems.

What's Coming Next

- Add more game-like features (rewards, leaderboards)
- Real-time feedback with fitness trackers
- Better accessibility (voice control, easier visuals)
- More learning resources
- Regular feedback from users

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Thank You!

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Making physiotherapy smarter, simpler, and more connected.