ReHealth

Introduction

Remote Rehabilitation for Athletes is the project for the LMD module "Design of Human Machine Interface" in the winter semester of 2021/2024, led by Prof. Ingrid Spath and Prof. Veronika Wöpke.

Partnering with Global Design Studio, which has created students' projects in multiple fields including medical technology, we collaborated with Dr. Stephan Ellner, a sports physical healthcare specialist.

We also had the opportunity to Susan Buckeye from Lindenfels University in Sweden for a talk on user journeys, benefitting from her international perspective and creative insights.

We were also privileged to collaborate with Dr. Stephan Ellner, a specialist in sports medicine, who aided us in our research on physical therapy.

The central question:

How can we use modern technology to support remote rehabilitation for athletes?

The task:

Design interfaces for both a patient and a therapist

The goal:

Learn how to approach and structure a small project beyond just visual design

The process:

- Research
- Concept
- Persona and User Journey
- Paperprototyping
- Wireframing
- Moodboard and Logo
- Screendesign
- Storyboard
- Movie

Research

From the beginning, it was clear to us that we wanted to focus on knee injuries, as these are easy to relate. We therefore started out researching knee injuries, their causes, and the rehabilitation process. We found that ACL injuries are the most common and most severe knee injuries. We finally decided on the anterior cruciate ligament tear (ACL tear), as this is one of the most common injuries and can also occur in everyday situations.

We then researched common tears in ACL recovery, documented the basic process, and formulated the basic goals of the involved parties. For this project, it made sense to focus especially on the period between diagnosis and full recovery. We also explored the extent to which remote monitoring is already taking place and how to motivate and engage patients.

We found that remote monitoring is underutilized and that patients feel disconnected from their therapists. Thanks to his talk, we learned that there are large waiting lists for therapists, which leads to delays in the beginning of rehabilitation for patients. Overall, we realized that therapists face major challenges in terms of time and capacity.

Concept

Therapist:

- Overview of all patients
- Progress of patients
- Patient comparison
- See medication
- Write prescriptions
- Filter patients
- Create/adjust exercise plan
- Send messages
- Chat with patients
- Calendar
- Help through AI

Smart brace:

- Bluetooth connection
- Controls training execution
- Warning/pain vibration
- Measures adjustable angle

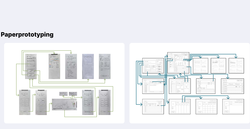
Tracks:

- Steps
- Distance
- Blood Pressure
- Pulse
- Temp

Patient:

- do exercises
- live training/feedback through AI
- see medication/prescriptions
- unlock new exercises
- chat with therapist
- make an appointment
- calendar
- see achievements
- information about the injury
- change medication

Personas



User Journey

Tessa's Journey
Before injury
During injury
Before surgery
During surgery
After surgery
After injury
Timeline
Emotion
accident
injury is not so big yet, so it is not worried
the injury gets worse, the pain increases
the injury gets worse, the pain increases
the surgeon tells her that she can't play anymore
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