HCI PROJECT

MicroMove Compito 3

Task, Storyboard & First Prototypes

> This document presents the main tasks, storyboard, and early prototypes for MicroMove, a system designed to support discreet micro-breaks during study sessions at Polimi.

TEAM MEMBER

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VALUE PROPOSITION

Helping engineering students restore energy and reduce discomfort through discreet, well-timed micro-breaks during study sessions.

RESTORE ENERGY

REDUCE DISCOMFORT

WELL-TIMED

CURRENT SITUATION

The Problem

Sedentary Behaviour

Students spend long periods seated, losing track of time and ignoring physical discomfort.

Social Inhibition

They avoid moving because they feel observed in shared study spaces.

Lack of Awareness

Limited perception of total sedentary time accumulation.

MICROMOVE APPROACH

The Solution

Discreet Detection

System detects prolonged sitting and sends subtle cues without user input.

Context-Aware

Suggests invisible or socially acceptable micro-breaks suitable for libraries.

Seamless Integration

Supports behavior change without interrupting concentration or attracting attention.

OVERVIEW OF THE THREE TASKS

Structured progression from simple interactions to complex goal management

1

SIMPLE

Respond to a Micro-break Reminder

Responding to a subtle haptic or visual cue that prompts a break without disrupting the study flow.

2

MODERATE

Choose Context-Appropriate Break

Selecting a specific micro-break type that fits the current study environment (e.g., library vs. home).

3

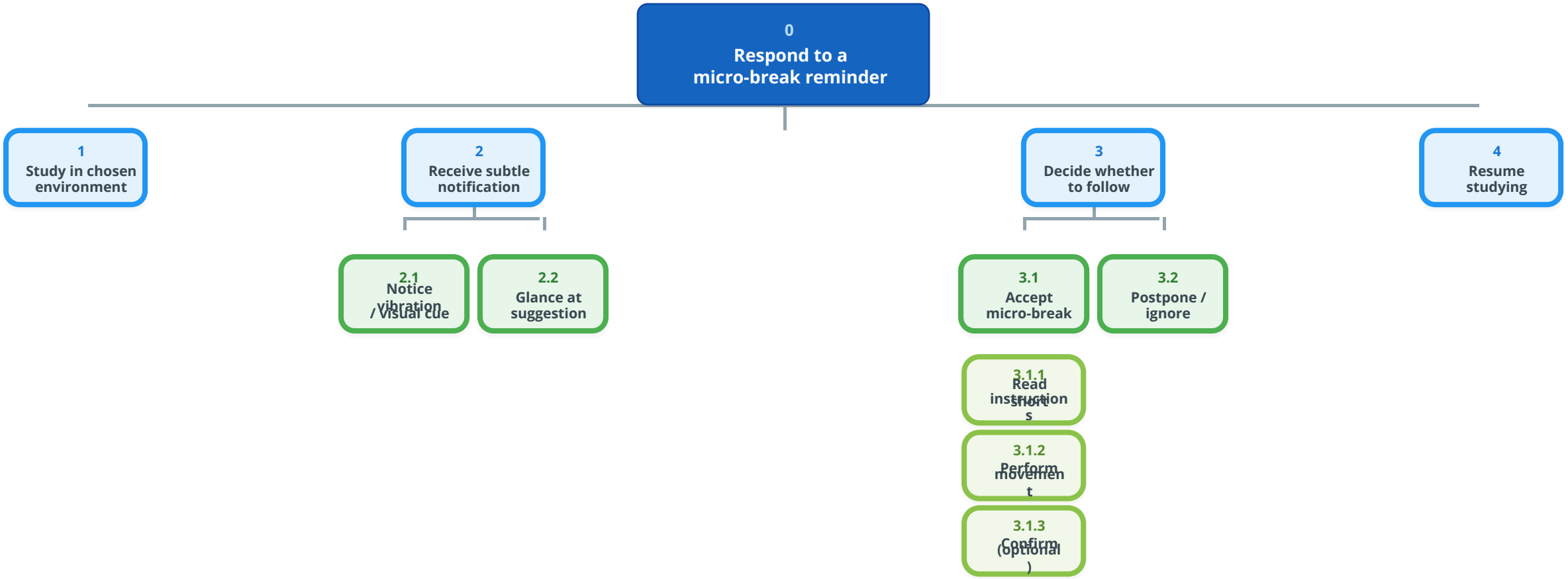
COMPLEX

Adjust Goals & Review Sedentary Time

Personalizing daily goals, configuring reminder frequency, and reviewing accumulated sedentary data.

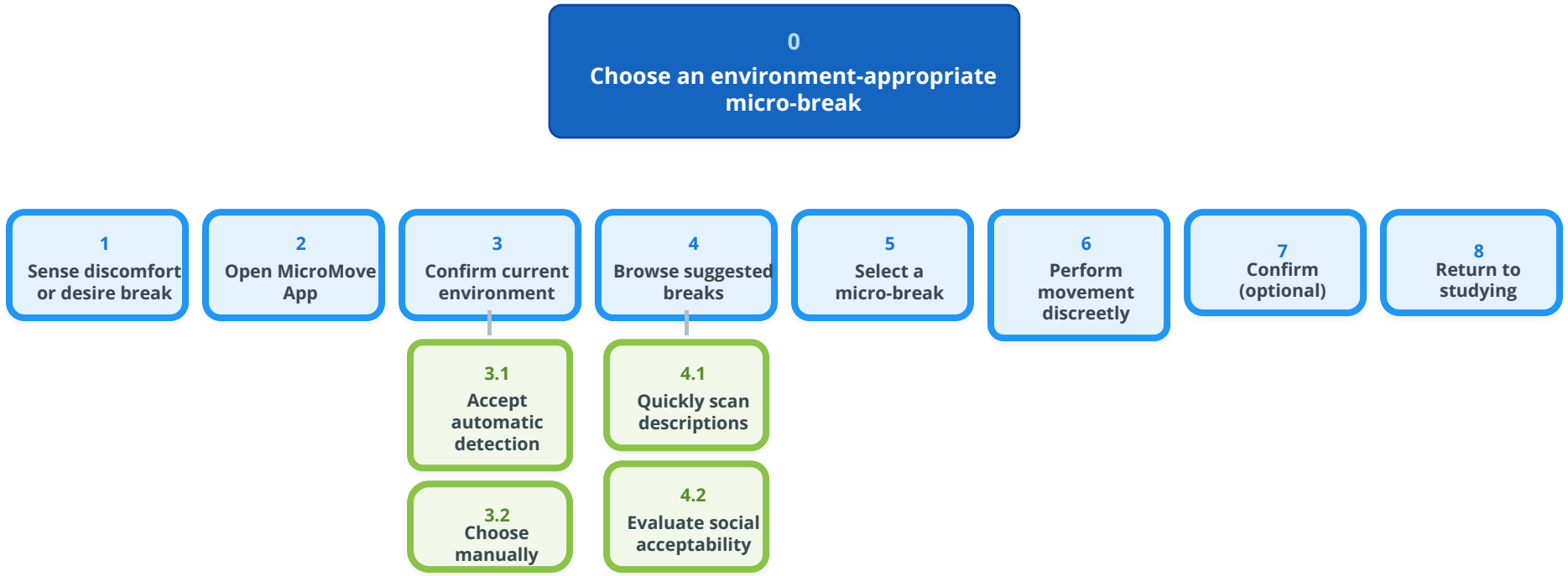
HTA – TASK 1: RESPONDING TO A MICRO-BREAK REMINDER

Hierarchical Task Analysis (Simple Task)



HTA – TASK 2: CHOOSE A CONTEXT-APPROPRIATE MICRO-BREAK

Hierarchical Task Analysis (Moderate Complexity)



HTA – TASK 3: ADJUST GOALS & REVIEW SEDENTARY TIME

Hierarchical Task Analysis (Complex Complexity)

TDH (OBJECT–ACTION TABLE)

Mapping key system entities to their functional capabilities

OBJECT	ACTIONS / FUNCTIONS
User	perceive decide select perform review Interacts with the system loop, makes decisions based on notifications, and performs physical movements.
Environment	influences Determines acceptable movements and constraints (e.g., silence in library, space in computer room).
Device	delivers Provides reminders (haptic/visual) and suggestions based on sensor data and settings.
MicroMove UI	displays Visualizes micro-breaks lists, user settings, sedentary summaries, and progress tracking.
Micro-break	action Small posture reset, mobility exercise, or breathing technique designed to

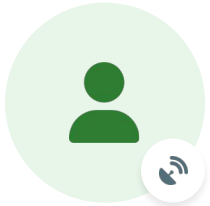
SCENARIO OVERVIEW

How students interact with MicroMove

To illustrate the system's impact, we follow three engineering students with different habits and study environments.

Giulia

COMPUTER ENGINEERING



Ruben

TELECOMMUNICATIONS

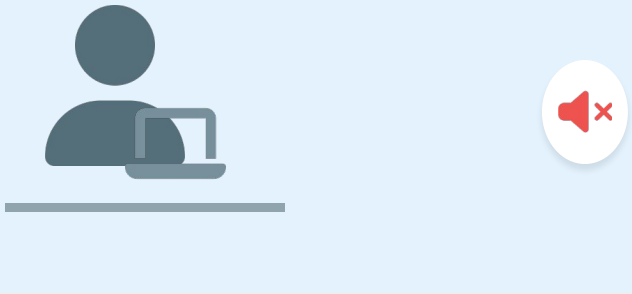
Elena

INDUSTRIAL ENGINEERING

STORYBOARD PANELS 1–4

Scenario: Giulia (Computer Engineering) in the Library

1



PROLONGED SEDENTARY STATE

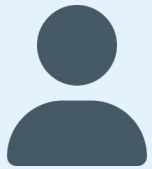
Giulia studies for long periods and often ignores physical discomfort to maintain focus in the quiet library.

2

SUBTLE NOTIFICATION

MicroMove sends a discreet haptic vibration to her smartwatch indicating prolonged sitting time.

3

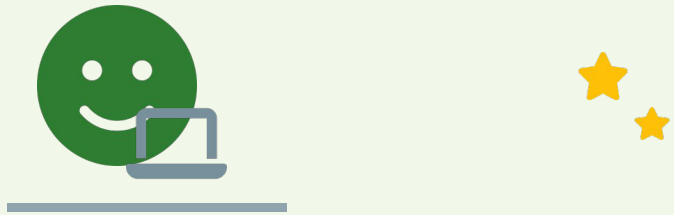


INVISIBLE MOVE

DISCREET MICRO-BREAK

She performs a subtle shoulder roll or posture reset without attracting attention from others.

4



RETURN TO FOCUS

Giulia feels physical relief and resumes studying immediately without losing her concentration flow.

STORYBOARD PANELS 5–8

Scenarios: Ruben (Telecommunications) & Elena (Industrial Engineering)

5

CONTEXT CHECK

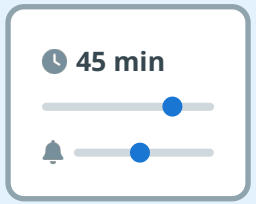
Ruben checks his phone and confirms "Library Mode" to browse discreet movements suitable for the quiet environment.

6

DISCREET SELECTION

He selects a subtle hand stretch exercise that provides relief but remains socially acceptable and invisible to others.

7



GOAL ADJUSTMENT

Elena opens the settings to adjust her break frequency to every 45 minutes, matching her current energy levels.

8

ADAPTIVE SYSTEM

MicroMove automatically updates the session timeline, personalizing future recommendations based on her new goals.

STORYBOARD ANALYSIS

Evaluating the effectiveness and limitations of the proposed design scenarios

STRENGTHS

Reflects Real Student Behaviour

The scenario accurately captures the tendency to ignore physical discomfort during intense study sessions at Polimi.

Covers 2 Main Tasks

Seamlessly integrates Task 1 (responding to reminders) and Task 2 (selecting context-appropriate actions) into a single flow.

Highlights Social Pressure

Address the core user need for discretion ("invisible movements") to avoid feeling observed in shared spaces.

VS

WEAKNESSES

Visual Representation Limits

Some "invisible" micro-movements (e.g., glute squeezes or breathing) are difficult to depict clearly in a static storyboard.

Simplified Context Detection

The technical complexity of automatically detecting "Library Mode" vs. "Outdoors" is glossed over for narrative clarity.

EXPLORATION OF MODALITIES

Evaluating technology form factors for the study context

MODALITIES CONSIDERED

Smartwatch

Smartphone App

Web Dashboard

Wearable Ring

AR Smart Glasses

CHOSEN ECOSYSTEM: DUAL-DEVICE INTERACTION

Smartwatch Role

Discreet Cues: Best for silent haptic feedback that doesn't disturb others in libraries.

Immediate Action: Supports very fast interaction (glance & tap) for Task 1.

+

Smartphone Role

Rich Interface: Ideal screen real estate for settings, summaries, and browsing (Task 2 & 3).

Configuration Hub: Necessary for managing goals and reviewing long-term sedentary data.

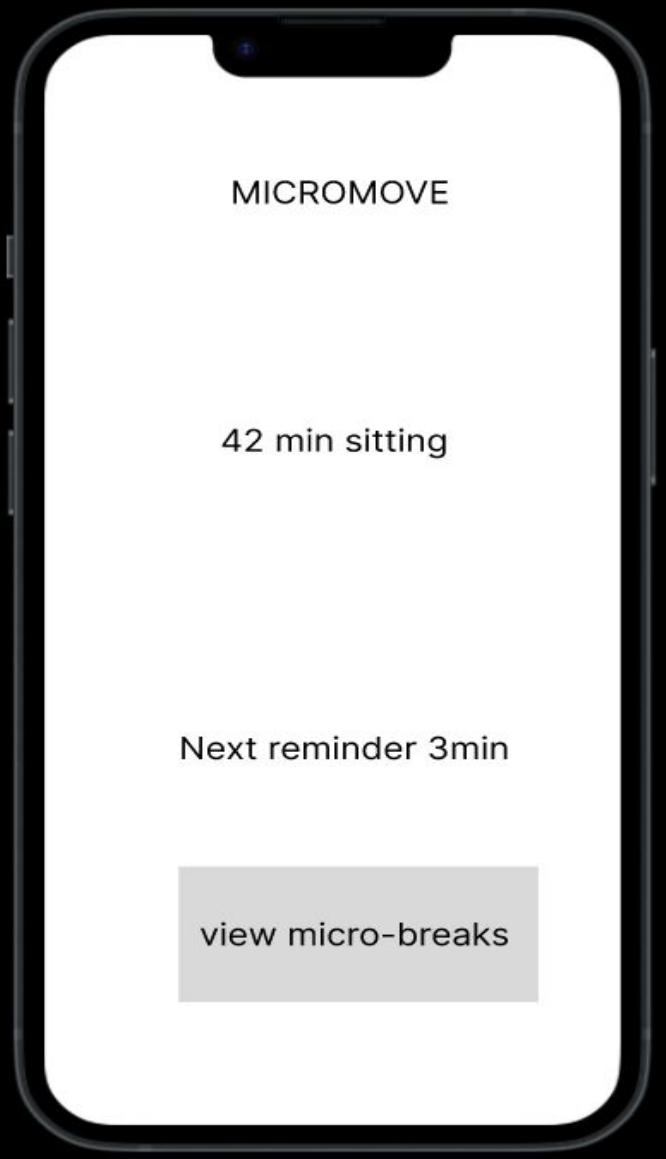
FIRST PROTOTYPE

https://www.figma.com/proto/O9uYdMHsWb6RPyIcCe4VMh/MicroMove-Prototypes?node-id=1-2&p=f&t=rtQTuhsB2mqcq5nU-1&scaling=scale-down&content-scaling=fixed&page-id=0%3A1

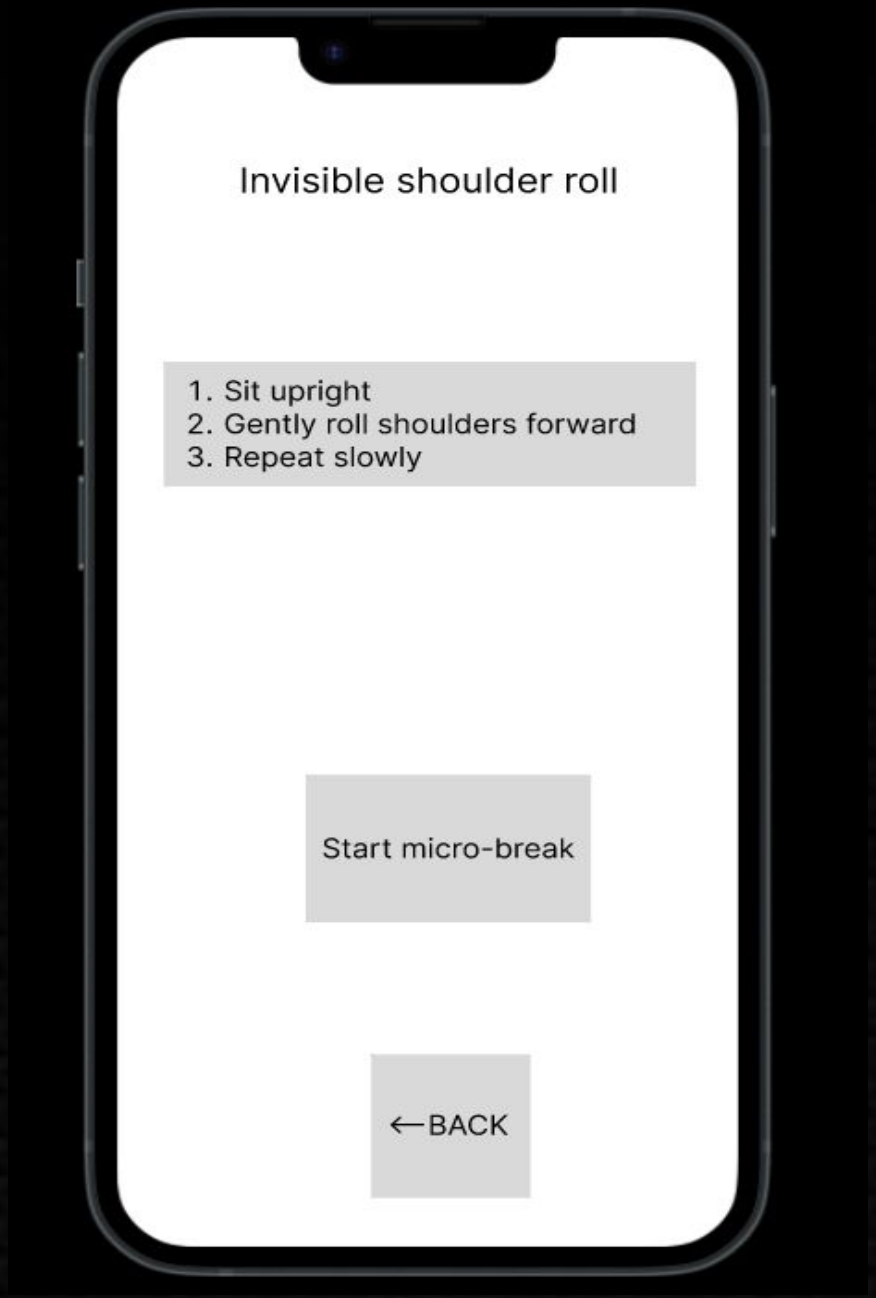

Shoulder roll - 10 seconds
“1. Sit upright.”
“2. Roll your shoulders slowly.”
“3. Repeat a few times.”
DONE


Micro-break completed
next reminder in 45 min

SECOND PROTOTYPE




←BACK
LIbrary-Invisible posture reset
Small movements you can do without being noticed
Silent neck stretch
Very small, no equipment needed
Outdoor energising break
More active movement for outside spaces


Invisible shoulder roll
1. Sit upright
2. Gently roll shoulders forward
3. Repeat slowly
Start micro-break
←BACK


Session setting
Reminder frequency
Every 30min/45min/60min
Intensity level
Subtle
Standard
Active
SAVE SETTINGS

SELECTED MODALITY 1

Smartwatch

Rationale

Why this device was chosen

- Silent, discreet haptic feedback suitable for libraries
- Very fast interaction requiring minimal attention
- Perfect for Task 1: Receiving and responding to micro-break reminders
- Supports execution of subtle and invisible movements

SELECTED MODALITY 2

Mobile App

Rationale

Why this device was chosen

- Better screen space suitable for lists & settings navigation
- Ideal for Task 2: Browsing and choosing specific micro-breaks
- Necessary for Task 3: Adjusting goals and reviewing sedentary data
- Complements the smartwatch experience seamlessly

Conclusion – Selected Prototype

Comparative Evaluation and Final Project Direction

Needfinding Phase

> After evaluating both prototypes, the **Mobile App** was selected as the most suitable direction based on five key considerations:

1 Better Task Coverage

Coherently supports sitting feedback, micro-breaks, and discreet interaction in public spaces.

2 Higher Familiarity

Fits natural habits. Students already use phones for study apps (Outlook, Beep, Timers).

3 Discreet Interaction

Enables silent vibration cues and private viewing, avoiding the "feeling judged" pain point.

4 Flexible Interaction

Larger screen allows detailed gesture explanations and richer navigation without cognitive overload.

Fewer Limitations vs. Smartwatch

The smartwatch was limited by screen size and input constraints, making it less effective as a primary solution despite being an interesting complement.

FINAL CHOICE

Mobile App

The most promising foundation for the upcoming high-fidelity design phase.

BEST REFLECTS:

- User needs & behaviors
- Discreet value proposition
- Polimi student expectations