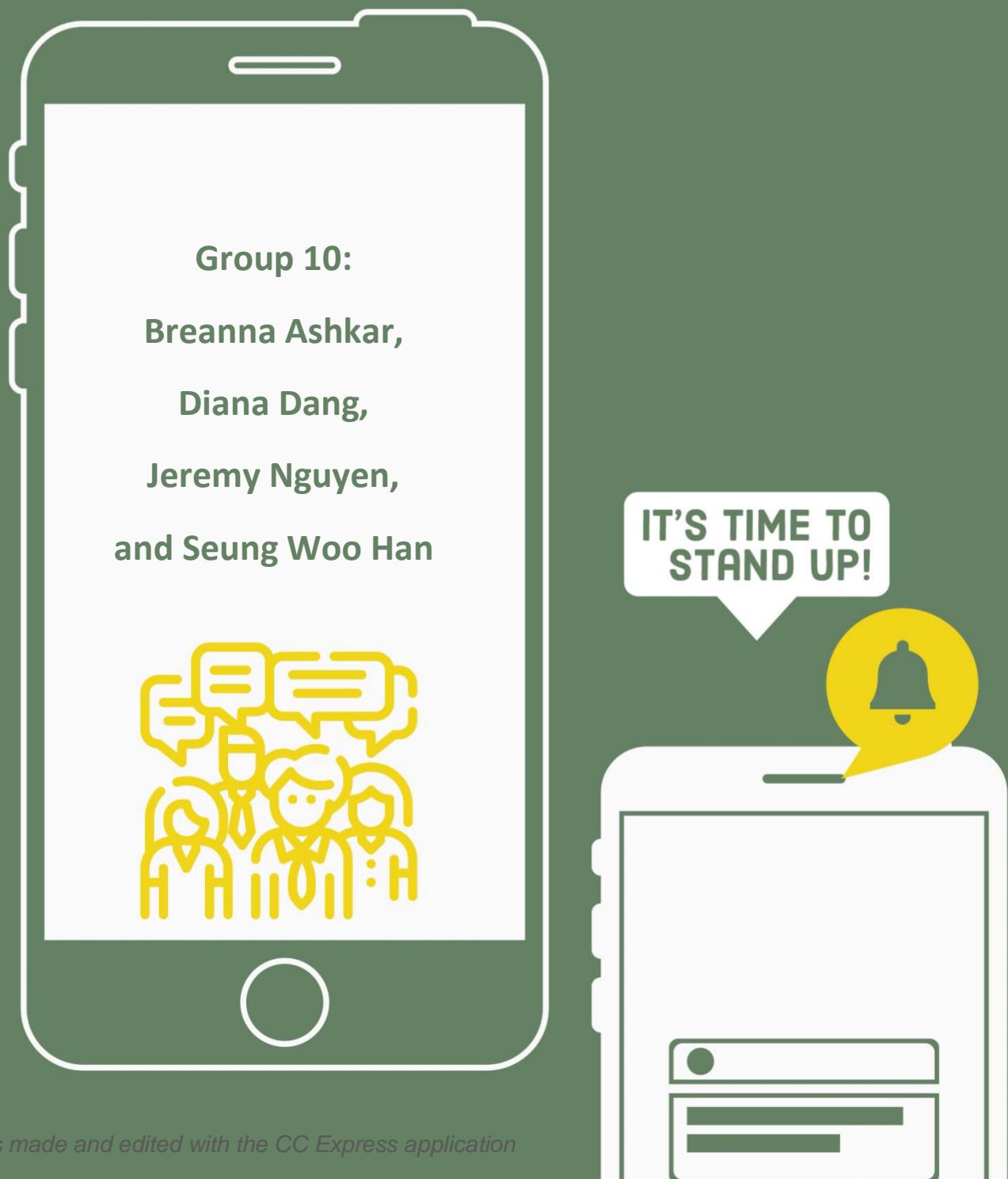


APPLICATION REPORT:  
OBSERVATION, IDEATION, AND  
PROTOTYPE TESTING

CCT380: Human-Computer Interaction  
and Communication



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## User Observations, Analysis: User Needs and Pains

### Introduction To The Observations

The problem we want to solve is the discomfort people are experiencing after sitting for extended periods of time (due to being stuck at home, having nowhere to go, and little to do but sit and work). The solution we are proposing is a mobile phone application that alerts you at set times or set intervals throughout the day and guides you through some sort of physical activity at each time. Users have many options when setting up a routine for themselves using the application's provided options; pre-set routines can be heavily tailored to best suit each user since everyone is different.

The timed alerts can be made to coincide with your work/school breaks or to go off a few times per day at regular intervals. The activity will be tailored to the length of activity that you select when setting it up so that it does not ask you to take more time than the free time available to you. You can pick the sort of activities you would like suggested to you, but they all require little to no equipment and are suitable for doing at home. The activities include things like yoga/stretches, simple bodyweight-based strength training exercises, and walking – they are aimed at the average person and do not require you to be super fit to do them. The application will have animated pictures on the screen showing you how to do any movements it calls for, and will have a timer display too, and the general 'mood' will be a supportive, encouraging, "you can do it, you've got this!" type of attitude. The alert tone options include an upbeat array of chimes and rings since many people feel 'down' about their stuck-at-home situation.

### Observations

We noticed more people experiencing discomfort and pain due to physical inactivity throughout the COVID-19 pandemic. Many must work from home, and many of the social activities requiring people to get up and leave the house have been paused or gone online. We observed 14 people in total to formulate our observations. As a result, friends, classmates, and family spend many hours sitting around the house, often seated in front of a screen, with practically no other movement. Sitting in the same spot for a long time without moving negatively affects your health, especially when you do something for hours every day or almost every day. It ends up causing muscle stiffness and soreness, which is unpleasant and can be quite painful. Significant restlessness due to stress was observed in Persons 1 and 2. The health and wellness concerns rapidly rose during the pandemic with the unattentive usage of technology in day-to-day life. Person 3 of the individuals we observed was seen bending over awkwardly, shifting her shoulders up and down, and making facial expressions that indicated she was in pain.

Our family members did not have any physical activity trackers on their devices, according to our observations. Whatever breaks they take from their smartphones or computers were not substantial physical activities. These breaks include going to the washroom, retrieving food, or doing chores, maybe with the occasional stretch before they go. Persons 4 and 5 do regular exercise during the day, resulting in less physical activity during breaks. We noted that Persons 1-7, 9-12, and 14 had more than one device to view (e.g. a phone and a tablet or a desktop with two screens). From the observers, users

differentiated from the combination of devices and brands at hand. Often, one device was being used while the other was dormant. Additionally, at least 1 person in each team member's observation had some equipment at home or in their surroundings.

However, others are noticeably reliant on physical activity trackers and have set daily intentions to monitor their goals and achievements. For example, Person 9 chose to walk instead of driving for errands because they wanted to reach their 10,000 daily steps to maintain their monthly streak amongst friend groups and unlock new features. While being physically far from others, Gamification promoted a sense of long-distance connection and healthy competition with Persons 10 and 11.

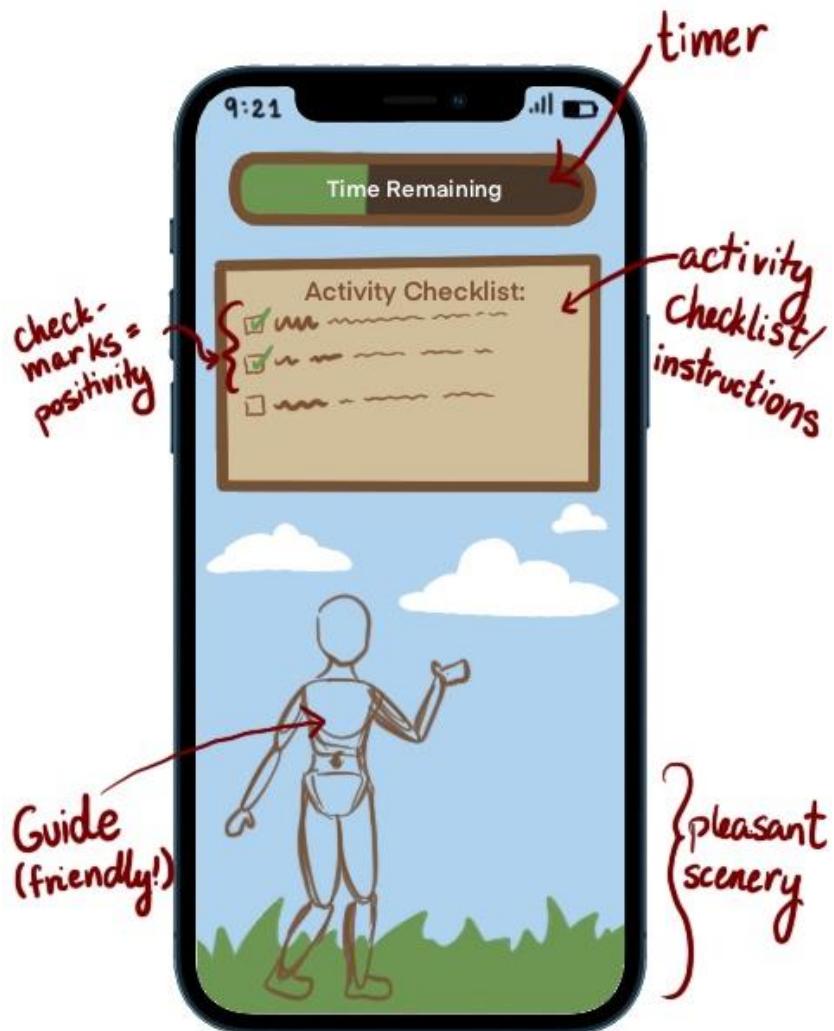
Another point of concern was the increased screen time on individuals' phones during work/study from home. Persons 12 and 13 had difficulties sleeping from using smartphones in bed, even at night. Consequently, this leads to unproductive online activity, leading to more procrastination issues invading the balance of work/study at home. Our observations from noticing people getting uncomfortable during their long work hours have evolved to address the lack of physical exercise as a point of user pain concern. Endless smartphone scrolling for news and social media entertainment during in-between tasks replaced physical walks and lunch breaks with co-workers. They became almost 'trapped' in staring and scrolling while sitting and not moving at all.

## Ideation

The activities would be tailored to be suitable for those at home because that is where we observed most people are spending the majority of their time. The amount of fitness equipment owned varied from person to person, based on those we observed, so we thought it would be best to require as little as possible, just in case the user does not own any.

Since the observed family members had more than one device or screen at their disposal, a cross-platform app would utilize whichever screen is not in use. This app would recommend timely breaks and could give exercise suggestions to do during these breaks if requested by the user. The observation caters to the app being social, something to do with friends/family/co-workers in cooperation with a daily routine. Members could monitor each other's progress and hold each other accountable via features in the app that had long-term goals and streaks. You would be more motivated to participate because your friends are cheering you on, not just an app telling you to do an activity.

Combating screen time with another application on the mobile app (another screen) might sound counterintuitive. Still, the goal is to provide a healthier alternative to the existing habits that most of us adhere to already. Instead of an endless scroll, the app would promote filling your time in between daily tasks more effectively. The application aims to address the users' concerns of passive screen time to more efficient active exercising. For example, following a quick 10-minute meditation in the morning (instead of checking Instagram) and sharing it with friends might be something that the app would recommend. In addition, this app would display content, including advice, from wellness specialists and health-conscious members, creating a community with a positive outlook on the "social health" platform.

**Ideation sketch:****User Summary**

Our group observed 14 people in total during the day on their devices either for work or recreational purposes. These observations aimed to see how they spent their breaks away from their devices. 9 of the users were family members, and the other 5 were friends. Of the 9 family members, 5 were parents with ages ranging from 40 to 60s, with all other users around the age of 20 to 25. In general, all observed personnel had their phones on them, with a majority (13/14) taking short breaks after prolonged sitting.

**Roles (Who Observed Who)**

Breanna (persons 1-3), Jeremy (4-7), Diana (8-10), and Jayden (11-14).

## Qualitative Observations

These notes describe some qualitative observations gathered. They take a subjective, personal perspective to describe some overarching issues, behaviours, and relevant aspects of the observed individuals.

- Person 1 experienced intense discomfort/pain - this was observed in her movement. She clutched her back, rubbed her shoulders, and was wincing when moving in certain ways after a long day of working behind her computer (sitting there for nearly the entirety of her workday).
- People 2 and 3 were both students who were learning from home, and they would go on their phones between classes because they felt they did not have enough time or any motivation to go do anything significant in the 'shorter' time gaps (15-20 minutes). (Further, others expressed this sort of sentiment as well.)
- Persons 8 and 10 are working from home and do not have a substantial physical activity routine but have great concerns and stress regarding health issues. Tiredness and back pain was noticed in their sitting.
- Person 9 is a proactive health-conscious person who cares for and monitors their physical activity throughout the day. They are constantly looking at the smart device to track their progress.
- Person 13 said they lack the motivation to do physical activity since he could do everything lying down on the bed.
- Most people were multi-tasking by using multiple devices or using the split-screen features on the device.
- Twelve participants had multiple devices in front of them. Often they were sitting in front of a computer/laptop to do school work, participate in classes, or do their job; the other two also had a cellular device/phone nearby.
- Many of the participants use digital calendars in some way. People used them to track their assignments, workdays, appointments, et cetera.
- The amount and type of fitness equipment owned varied greatly from person to person. For example, some had just a few dumbbells or a yoga mat, while others had an actual workout machine (such as a treadmill or multipurpose strength training machine).

## Quantitative Observations

These notes describe the numerical/quantitative observations gathered. They take an objective perspective to get an idea of some facts pertaining to the observed individuals.

- All 14 users had their phones on them throughout the day.
- 13 users took short breaks when using their phone (i.e. used the phone for a task and stopped using it once done).
- 5 users expressed and showed some physical discomfort from prolonged sitting.
- 13 users were observed sitting for 3 or more hours at one place.
- 10 users had exercise equipment available to them at home.
- 12 users had 2 or more devices available to them while sitting.
- 10 users are active on social media.

- Only 3 use activity trackers or smartwatches.
- 6 users lack the motivation to do physical activities.
- 4 users are working out on a regular schedule.
- 8 out of 14 users are using a digital calendar.

### Quantitative Observations Table of Summary

	Person													
Observations	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Had phone on them throughout the day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spent short breaks on the phone	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Physical discomfort from prolonged sitting position	✓	✓						✓		✓	✓			
Prolonged sitting in one place	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Access to physical equipment at home	✓		✓	✓	✓	✓	✓		✓		✓	✓		✓
2 or more digital devices/screens	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓
Active social media usage	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	
Physical activity trackers; smartwatches, Fitbit etc.								✗	✓		✓	✓		
Lack of motivation to do physical activity	✓	✓	✓					✓		✓			✓	

Scheduled workout routine			✓	✓	✓				✓						
Digital calendar usage	✓	✓	✓					✓	✓	✓		✓			✓

## Affinity diagram



## User and design requirements

### Functional Requirements

“Task Analysis” describes how we expect users to be able to interact with our system. “New System” describes what we expect our system will be able to do/some main features it will have. “Specific Capabilities Required” describes what we expect of users who will be using our system.

- Task analysis:
  - Users will be able to set up the app to work according to their schedule, specifically when they have breaks in-between (the app will have blanks for them to fill in with break times the length of those breaks)
    - We observed people working on schedules and having timed breaks, so this would be helpful for people
  - They will answer a short questionnaire at the start, asking for basic information about them, such as their age, physical capabilities, and the fitness equipment they own (various options will be available for selection on their screen)
    - We observed this varies a lot from person to person
  - After the aforementioned initial setup steps, going forward, the user will be prompted to participate in physical activities and will have to touch a button on their device’s screen to begin an activity
    - We want this to be straightforward and easy to start, as we observed people getting distracted scrolling on social media apps on their phones)
- New system:
  - The app will prepare physical activities for the user to participate in that are measured to fit within the duration of the user’s break times
    - People had the mentality of their breaks being too short to do much more than just scrolling on their phones, so this would help them by ensuring that they do have time for the activity
  - The physical activities will be catered to the user’s skill level (when it comes to physical/fitness activities) and the fitness equipment owned by the user
    - We observed this varying greatly; to be effective and for people to want to do the activities, the activities ought to match their skills and capabilities
- Specific capabilities required:
  - Owning a “smart” tablet, phone, and/or computer
    - We saw everyone having a computer and touch screen/tablet type device
  - Being able to operate a touch screen
    - We saw everyone having a touch screen/tablet type device
  - Digital literacy, to understand how to follow the initial prompts and provide the required input to set up the application
    - We believe most people who can use their smartphones are capable of this
  - Being able to see and/or hear (it is primarily visual-based, but there are accessibility options for the visually impaired, which are audio-based; our observed group were all individuals without blindness or deafness. However, we recognize that others have disabilities.

## Technical Design Requirements

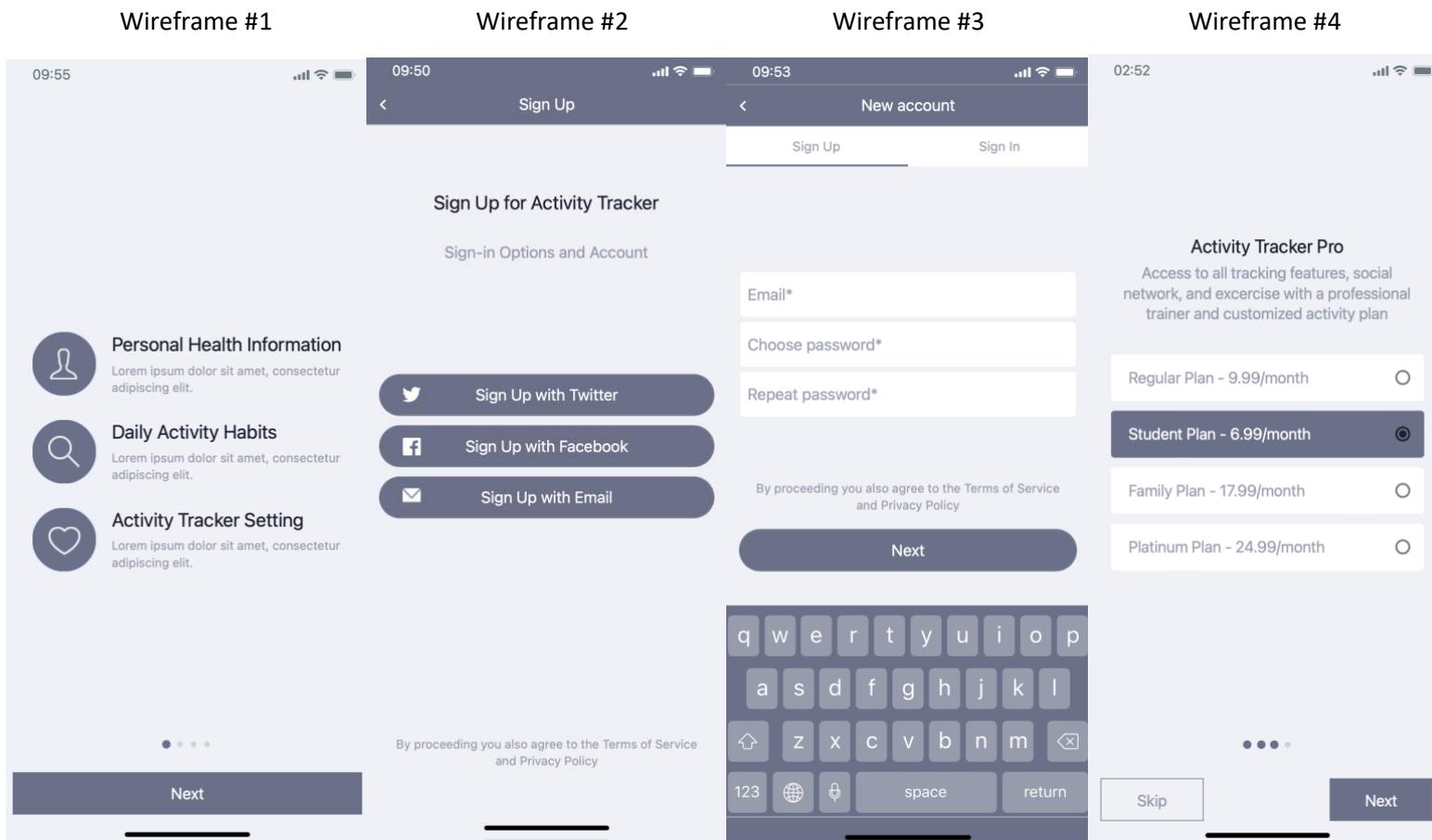
The “Price and size” design requirement is based on the pricing and storage space of the app. We wanted as little storage on the users device as the majority of observed users (11/14) already had social media apps on their phone taking storage. “Compatibility with other technologies” was the feature of having the app work on multiple platforms in correlation with the storage being cloud based. This was based on the observation of most users having one or more device on them (12/14). With this feature they could still be active on our app regardless of platform. Lastly was the “Adherence to standard” where the app had to meet different app distributing standards to be sold on them (i.e. Google Play Store and App Store).

- Price and size
  - Users will pay a monthly fee to use the application
    - Some were willing to pay for fitness-related items, so we believe this would be an additional step to building a routine for the users
    - A trial membership will be offered as part of the testing experience for users to get acquainted with the application without having to commit long-term
  - The application aims to save data on the cloud database to save memory space on the devices
    - We observed the sort of devices people use, so we want to make the application just as easily implemented as a social media platform to the users' daily lives
- Compatibility with other technologies
  - The application should be accessible from a touchscreen device for ultimate integration of the new routine. Exercises are specifically designed to be used anywhere the user takes the device and to motivate them to pursue an activity
    - Touchscreen device users are the main group to use this feature as we observed people frequently checking their device while on break/ in-between tasks
  - The application will run on any “smart” tablet, phone, and computer that can connect and sync data on multiple platforms after it is downloaded
    - For this assignment we chose to create a mobile application as the main medium for usability as we believe it is the most common device that can be accessed anywhere from our observation
  - The cross-device connection intends to integrate the application into the daily livelihood routine for the users' convenience and ease of use
    - Again, we observed people using different devices, so the most convenient solution will be one that can be accessed wherever and whenever a user wants
- Adherence to standard
  - The application will be available to download via App Store and Google Play to cater to users of different operating systems
    - This is necessary because the individuals we observed had different types of smartphones and computers/laptops

- The application is compatible with syncing existing contacts from the device and social media friends and family members as a mean of connection and shareable platform
  - We saw social media/friends encouraged individuals to reach their fitness goals, so this appears helpful to incorporate.

## Low Fidelity Prototype Progress

### Prototype Wireframes: Iteration 1



1. Intros: people's fitness and personal capabilities varied, so inputting information about the app will work toward the setting up process (swipe motions would give the user more helpful info about the app content and usage).
2. Sign up: people use social media, so they may want to connect with their social media accounts (also, they may choose to share their achievements/progress through social media).
3. Making an account: we ask for an email address to connect to since we observed people using computers and phones (which typically require one to have an email address to use).
4. Membership sign-up: this asks users to choose their package that indicates their level of group activity interest in the application. Different membership levels incentivize users to join with family or sign up for additional individual perks.

**Wireframe #5**

02:50      02:51      06:05      02:55

Home      Activity Tracking      Calendar      Wednesday March, 16 2022

Wednesday March, 16 2022

Avg Temperature 23°

12 PM 6PM

Take a Rest

Social      Calendar      Equipment

Activity      Excercise      Setting

99 ❤️ 204 Steps

12AM 6PM 12PM 6PM

Walking + Running Distance 57

Stand Hours 37

Active Energy 22

Resting Energy 57

December

1 2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26 27 28

January

1 2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26 27 28

February

1 2 3 4 5 6 7

Yesterday Today Tomorrow

Today's Schedule

March 16 THUR Indoor Run 60 mins 10:30-11:30 Start Edit Event

March 16 THUR Taking a Break 30 mins 13:00-13:30 Start Edit Event

Add New Activity      Add Schedule

HOME ACTIVITY CALENDAR EQUIPMENT SETTING HOME ACTIVITY CALENDAR EQUIPMENT SETTING

**Wireframe #6**

02:51

Activity Tracking

Today's Activity

99 ❤️ 204 Steps

12AM 6PM 12PM 6PM

Walking + Running Distance 57

Stand Hours 37

Active Energy 22

Resting Energy 57

**Wireframe #7**

06:05

Calendar

December

1 2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26 27 28

January

1 2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26 27 28

February

1 2 3 4 5 6 7

**Wireframe #8**

02:55

Wednesday March, 16 2022

Yesterday Today Tomorrow

Today's Schedule

March 16 THUR Indoor Run 60 mins 10:30-11:30 Start Edit Event

March 16 THUR Taking a Break 30 mins 13:00-13:30 Start Edit Event

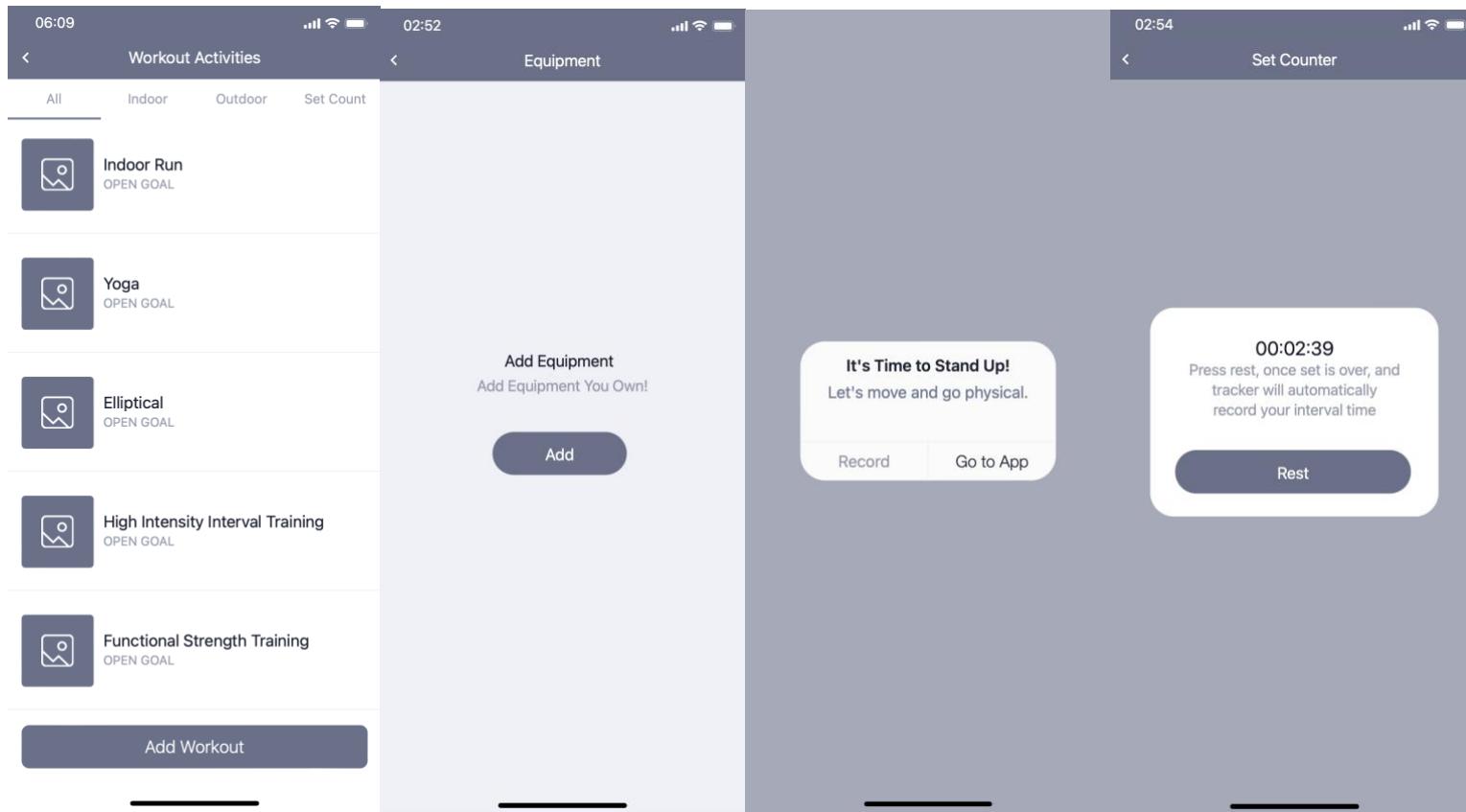
5. Home Screen: easy access to all of the menus on the app, weather, and date information on the top.
6. Notification: the daily actions page metrics show the current status of the users' activity.
7. Calendar: we observed people using calendars/schedules to organize themselves, so this is an understandable approach/aspect for our users.
8. Schedule: we proposed a weekly outlay for users to track their progress and follow a routine.

Wireframe #9

Wireframe #10

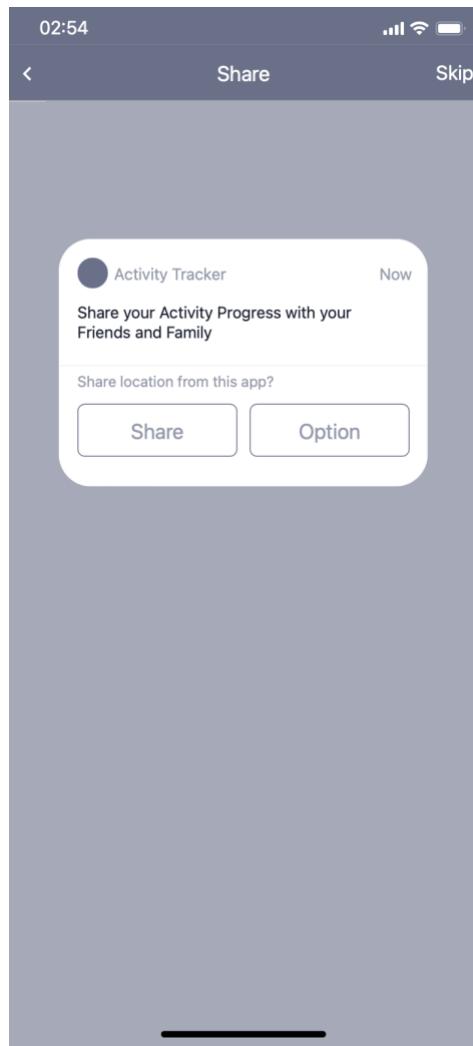
Wireframe #11

Wireframe #12



9. Different types of activities offered: what people can and are equipped to do varies, so this list will vary between users.
10. The equipment page: allows users to add home equipment and personalize workout routines.
11. Start page: indicates the start of the workout break time and records the proceeding activities to the cloud.
12. Set counter: this helps people manage/keep track of their exercise, making it easier and motivating them to get it done.

## Wireframe #13



13. Sharing option: we observed that sharing progress with friends motivated people to pursue their goals, so we incorporated this frame.

## Heuristic Design Problems and Solutions:

(trial-test; refer to appendix A5)

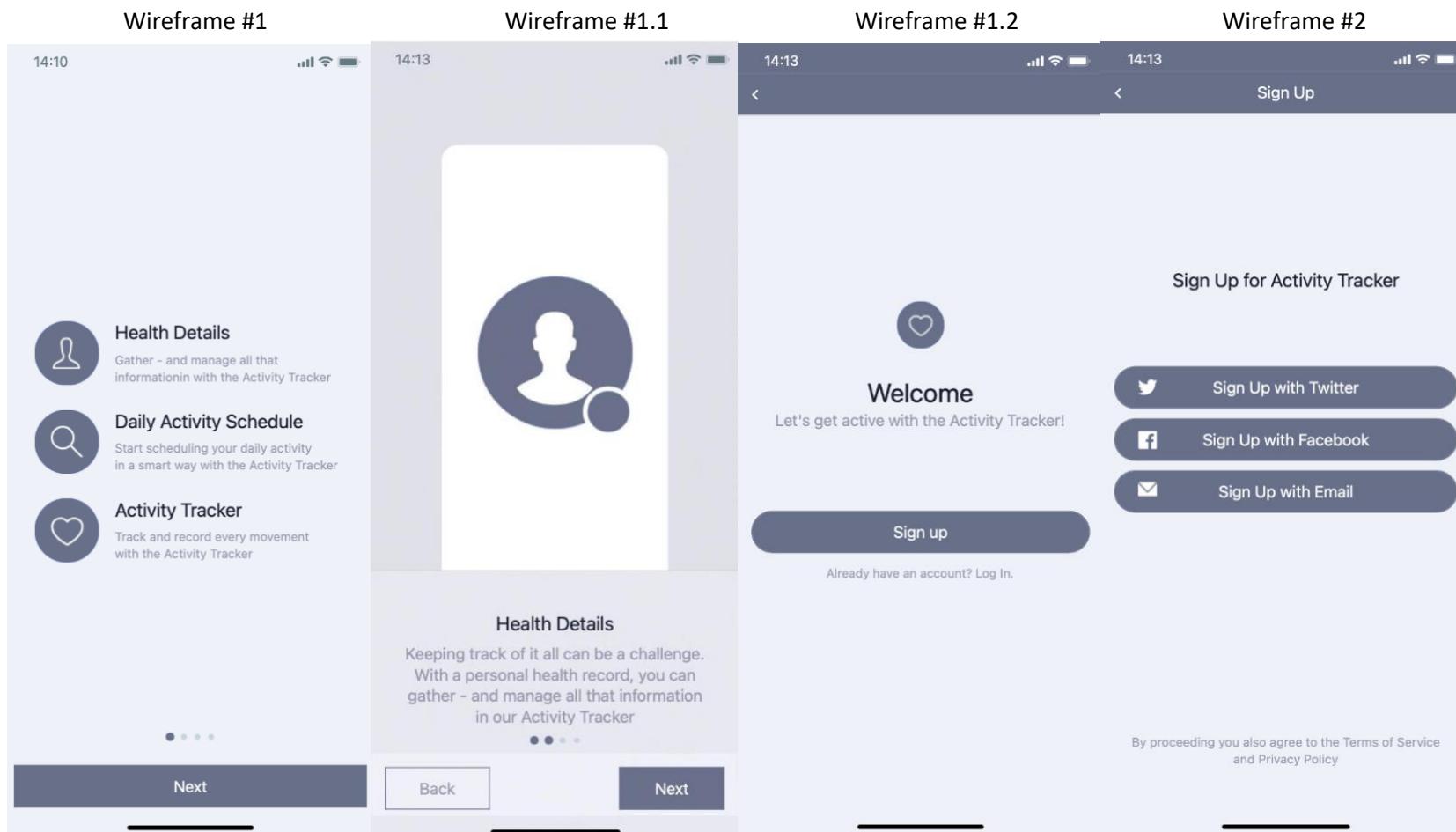
We performed a basic sort of user testing to draw out some heuristic design problems to work on going forward. In this section, we describe issues with features of our app that we intended to create, as well as how we plan on solving these issues. Refer to the following section for images of the wireframes mentioned.

- **EXAMPLE** - Intended feature of the app
    - **Problem** observed during the evaluation
    - **Solution** example done to wireframe (refer to iteration 2 in the next pages)
- 1) Have people successfully sign up and log in to the application
    - **Problem:** Users found the ‘introduction screens’ were confusing to our users during our trial test - they thought the icons on the first screen were pressable buttons (which they are not) and expressed that the order seemed awkward to them
    - **Solution:** We added a frame that gives more in-depth information about the app’s purpose (Wireframe #1.1); added a welcome page to indicate the end of the introduction (Wireframe #1.2)
  - 2) Have people set up for membership
    - **Problem:** Users were confused with the flow of the frame and the skip button; they asked us what the skip button would do and asked us how to get back and forth between pages, which showed us that they were struggling to understand these aspects
    - **Solution:** We eliminated skip button for a more clear two-directional flow (“Back” and “Next”; Wireframe #1.1); made a menu bar at the bottom in all main frames of the application (Wireframes #5.1—#13.1) for easy “Home” menu access during the usage
      - Added complementary frames for sign up (Wireframes #3.1 and #3.2) to indicate the full process of ‘joining’ the app
      - Added a conditional frame for already existing user who want to sign in (Wireframe #2.1)
  - 3) Have people be able to input what fitness equipment they own
    - **Problem:** There were issues with understanding this when users assessed our initial paper prototype, as the equipment items appeared selected already (as they had a coloured-in circle beside them to begin with)
    - **Solution:** We added an explanation to 'add equipment', referred examples (Wireframe #10.1)
  - 4) Have people find the calendar to set their schedules
    - **Problem:** Users found the calendar in our initial paper prototype confusing to operate; the screen showed too many days to schedule workouts (i.e. 2 months in advance), and users expressed that they did not want to see so many months on the calendar at once
    - **Solution:** We reduced the calendar to one month at a time, with daily activities now implemented into the page to set a routine (Wireframe #7.1)
  - 5) Have people understand how to share their achievements on social media
    - **Problem:** With our initial paper prototype the “share” button leads nowhere and users were unsure of how to select the social media platform they wanted, since there were no recognizable social media icons (such as a twitter or facebook logo/app symbol)

- **Solution:** We added social media platform icons for users to select where to share it (Wireframe #13.1)
- 6) Have people record their resting and activity time to the application, and be able to view their history
- **Problem:** Users were unsure of how to record their activity (when we asked them to do so, they stared at the prototype, seeming to not know what to do); they also stated that they did not know how to see their activity history and expressed interest in having the option to see it
  - **Solution:** We added a history button to the homepage while also making it more clear to track exercises when reminded to do so. Show homepage and new "Let's Stand Up Page" (Wireframe #5.1 and #11.1)
- 7) Have users recognize each feature of the application
- **Problem:** We did not have icons in our original mockup, and our users commented that the addition of icons would likely add a lot of clarity as to how to navigate the application
  - **Solution:** We added icons to our menus (Wireframe #5.1).

## Changes to the Interface: Iteration 2

These are the wireframes to be used in our initial usability testing session. Refer to the previous section for the explanations of the reasoning for changes in the wireframes' designs.



Wireframe #3

14:13

New account

[Sign Up](#) [Sign In](#)

Email\*

Choose password\*

Repeat password\*

By proceeding you also agree to the Terms of Service and Privacy Policy

[Next](#)

q w e r t y u i o p  
a s d f g h j k l  
z x c v b n m   
 space return  
123

Wireframe #4

17:34

Activity Tracker Pro

Access to all tracking features, social network, and exercise with a professional trainer and customized activity plan

30 Days Trial - After Trial 9.99/month

**Regular Plan - 9.99/month**

Student Plan - 6.99/month

Family Plan - 17.99/month

Platinum Plan - 24.99/month

...

[Back](#) [Next](#)

Wireframe #3.1

14:13 14:13

Terms of Service

[Sign up](#) [Done](#)

1. Introduction

**Applicable Terms.** Thanks for using Activity Tracker. Activity Tracker is a service provided by Activity Tracker LLC ("Activity Tracker", "we" or "us"), located at 3359 Mississauga Rd, Mississauga, ON, L5L 1C6 CANADA. Your use of Activity Tracker (including tracking feature, sharing feature) or other digital content or services (referred to as "**Content**") available through it is subject to these Activity Tracker Terms of Service ("Activity ToS") (together referred to as the "**Terms**"). Activity Tracker is a "Service" as described in the Activity Tracker ToS. If there is any conflict between the Activity Tracker Terms of Service and the Activity Tracker ToS, the Activity Tracker Terms of Service shall prevail.

2. Your Use of Activity Tracker **Access to and Use of Content.** You may use Activity Tracker to browse, locate, view, stream, or download Content for your mobile, computer, tv, watch, or other supported device ("**Device**"). To use Activity Tracker, you will need a Device that meets the system and compatibility requirements.

By proceeding you also agree to the Terms of Service and Privacy Policy

[Sign Up](#) [Start Activity Tracker](#)

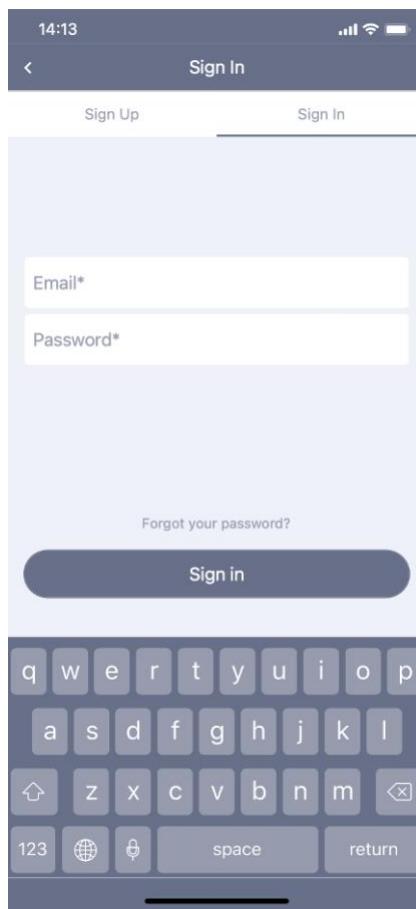
Wireframe #3.2



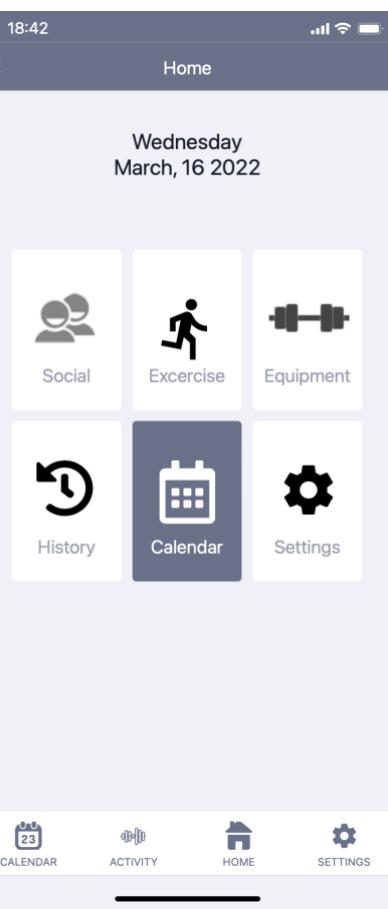
**Sign up was successful.**

You can start using the Activity Tracker now.

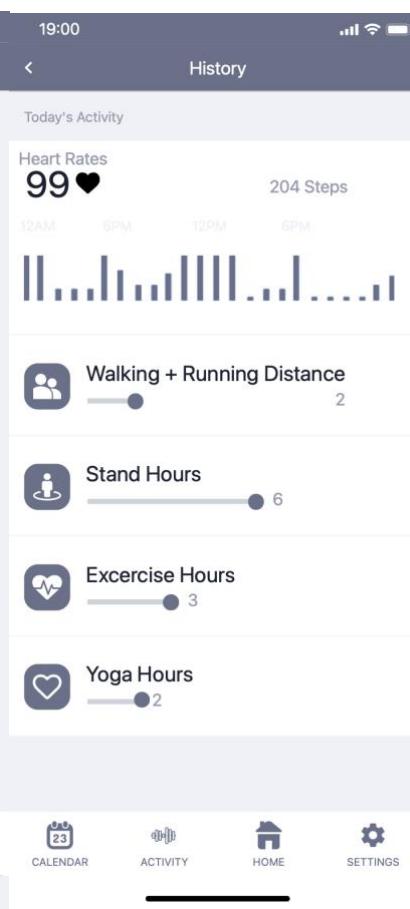
Wireframe #2.1



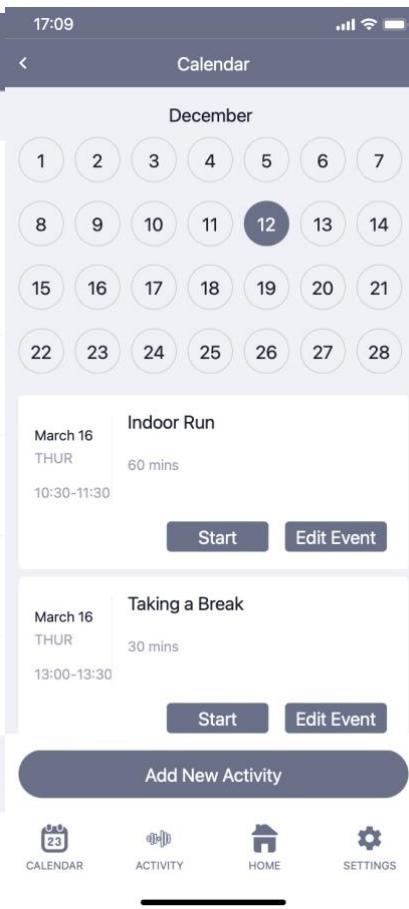
Wireframe #5.1



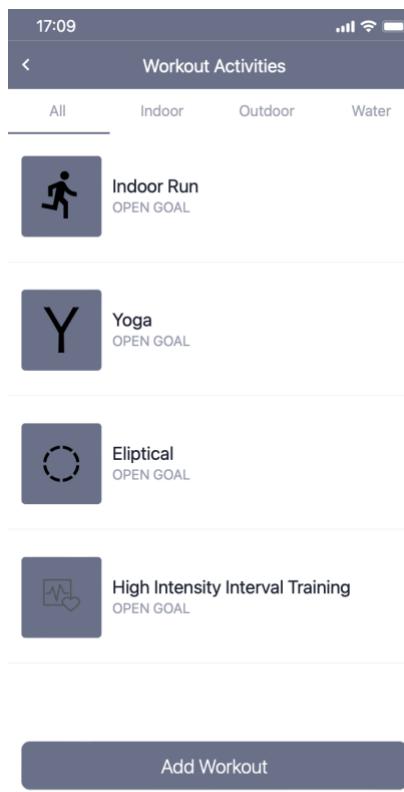
Wireframe #6.1



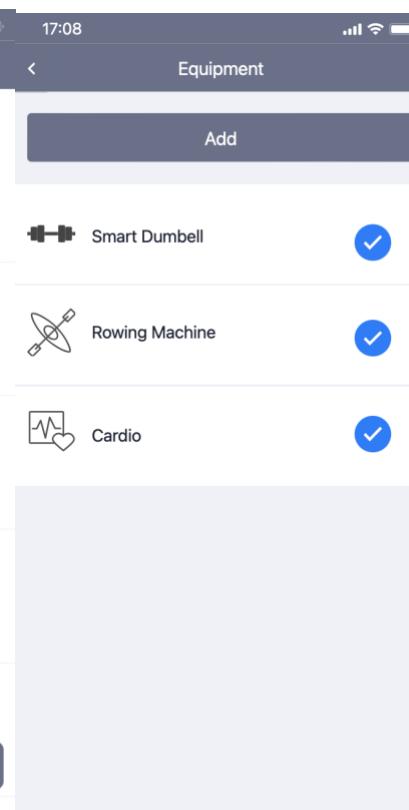
Wireframe #7.1



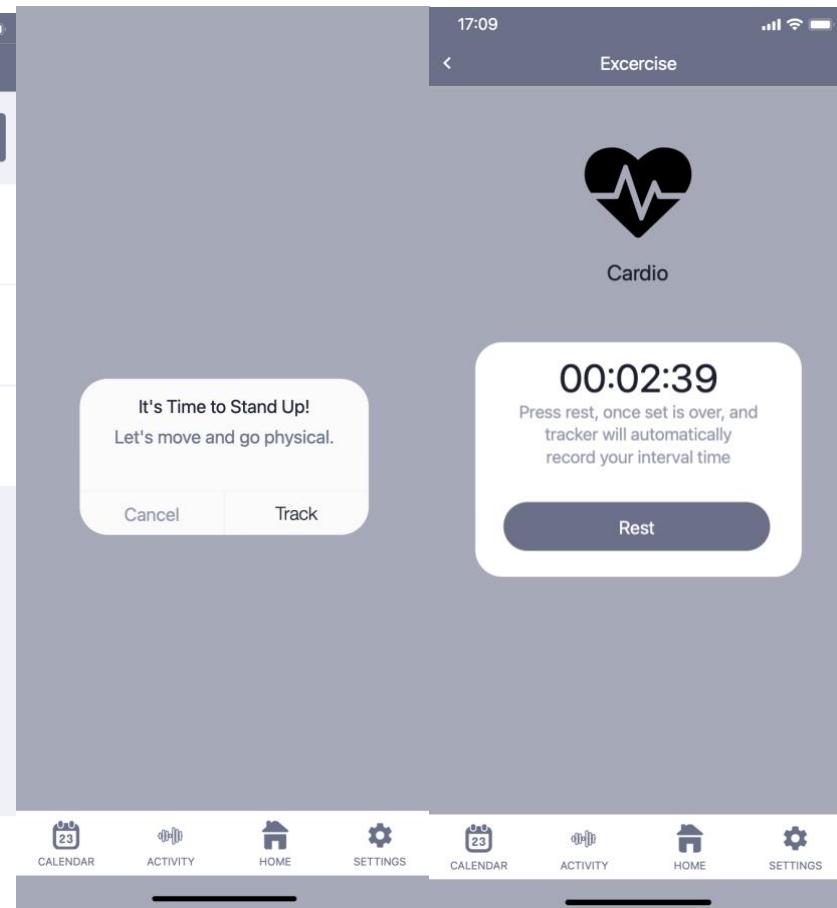
Wireframe #9



Wireframe #10.1



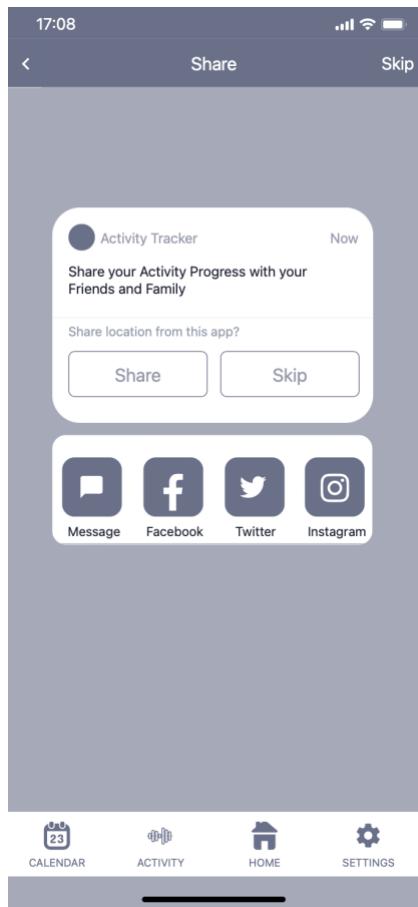
Wireframe #11.1



Wireframe #12.1



## Wireframe #13.1



## Testing: Evaluations Protocol

### Methods for Collecting Data

These are the ways in which we will be gathering information during our usability testing. By gathering both quantitative and qualitative observations, we strive to generate data that can be used to improve our app going forward.

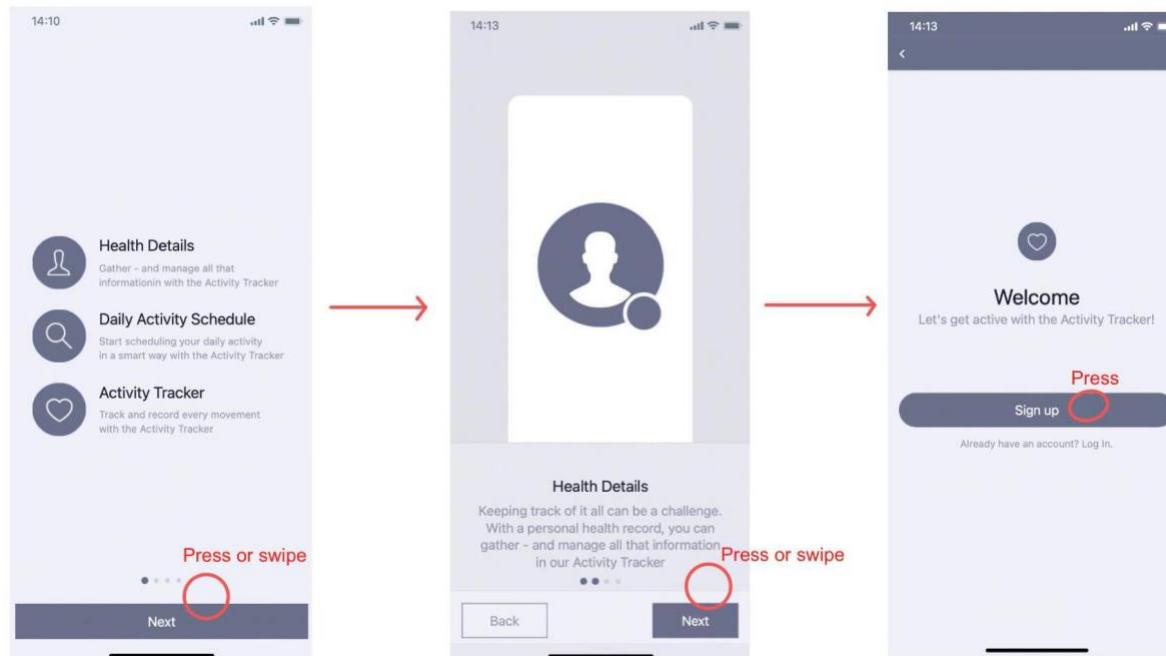
- Pre-testing background questionnaire (see Appendix A6-2)
  - The purpose of gathering background information is to establish the testing participants' profile, their initial relation to owning a device, and current exercise engagement
- Scenario interview with the Lo-Fi prototype
  - The scenario implicates an assumption of action-based participation from the users. The interview testing with the current prototype establishes the flow of usability and understanding of the users' perception while using the application
- Free-hand note-taking (see Appendix A6-3, Appendix A7-2, and Appendix A8-2)
  - Gives extensive data on each participant and their test experience. This method provides detailed-oriented actions and comments that the users made during the test for further investigation and changes needed
- UI Form for guiding the requirements of the scenarios (see Appendix A6-4, Appendix A7-4, Appendix A8-3)
  - The form initiates the main functionality and purpose of each frame. During the live interview testing, the form serves as the main criterion for users' comprehension of the app, frame confusion, and buttons errors
- Post-testing questionnaire (see Appendix A6-5, Appendix A7-5, Appendix A8-4)
  - Gives an immediate user impression of the application by a rating of usability and app coherence. This method is to be used in conjunction with the free notes and usability form for comparison purposes of the users' perspective.

## Script and Scenarios

For our scenarios we wanted to test most features and important procedures of the app listed in the design requirements in the time frame given. These were the set-up of the app and the feature that guides users through the exercise itself.

- Introduction (see Image 1 below)
  - Our system is an application designed to help people get in physical activity while working or doing school, or just staying at home
  - Our app is meant to motivate you to move during those times; it will notify you and guide you through an activity session that it designs to fit within the break you have

Image 1. The correspondent flow of introductory wireframes 1-1.2



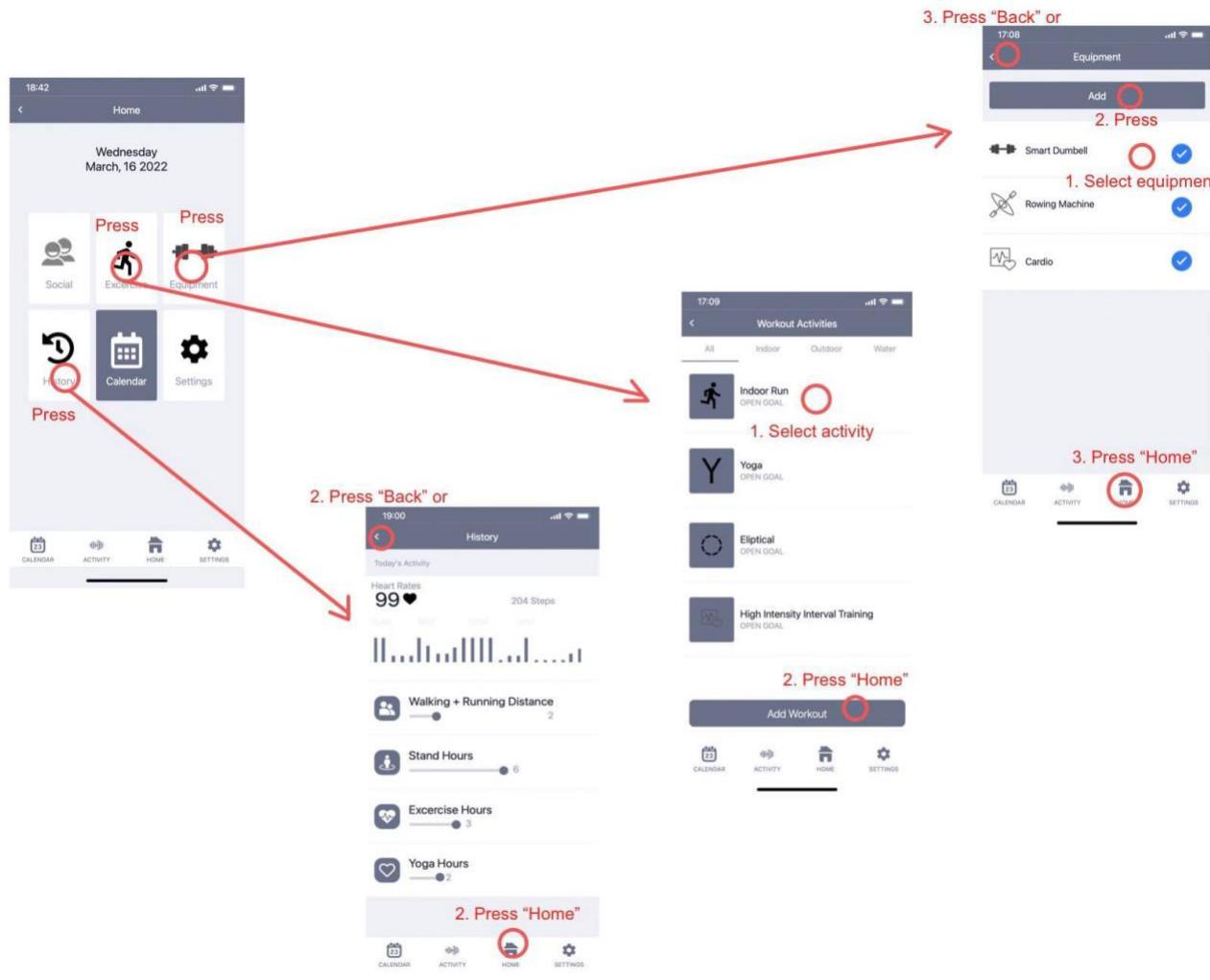
## Scenarios

1. How would you go about setting up the app?
  - a. Fill out personal information (see Image 2)
  - b. Sign up for membership (see Image 2)
  - c. Add what fitness equipment the user owns (see image 3).
- Criteria of success: The user should be able to (a) input their email to set up the app without any confusion about the UI. After inputting their information, the user (b) sign up for free trial membership for the app (or sign-in with an existing account) and continues to the home screen, where they (c) navigate the home screen to the equipment, history, or exercise page and understand the UI.

Image 2. The wireframes are in correspondence to scenarios 1a and 1b with two options of flow depending on what the users choose to click



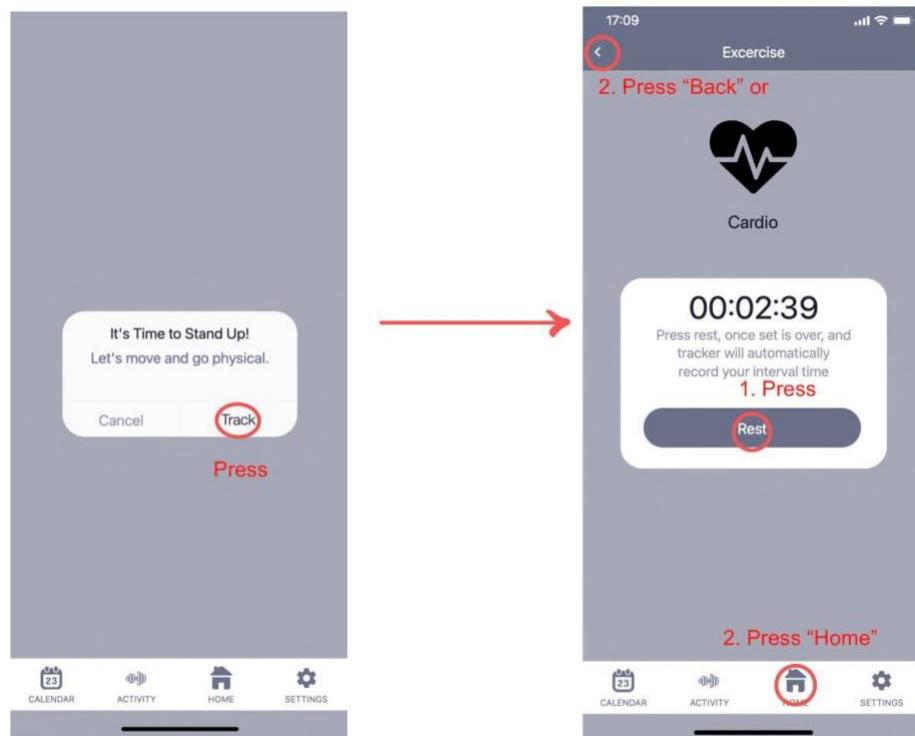
Image 3. The wireframes illustrate the three options of interaction from the Home page for users to explore and operate scenario 1c.



2. How would you begin and go through an activity session (using the app)?
  - a. Accept notification (see Image 4)
  - b. Follow the steps shown
    - Criteria of success: The user relies on the app to (a) remind them of their scheduled exercise period by accepting the notification and (b) guide them through the timing and steps of the exercise.
3. How would you start a rest period during an activity?
  - a. Press the "Rest" button to start rest periods (see Image 4)

- Criteria of success: The user understands the UI of the workout frame and the functionality of the buttons without being told. The user then (a) begins a rest period.
4. How do you know when the activity is done and how do you go back to the home page?
- a. Recognize the activity is done and accepting/closing it (see Image 4)
  - b. Presses the home button from the global navigation bar (see Image 4)
- Criteria of success: The user realizes the purpose of the completion frame (a) and is guided by the frame to (b) look at the global navigation bar.

Image 4. The flow iterates the Exercise flow and scenarios of the user starting the activity in scenario 3 and starting the rest time in scenario 4.



## User Testing Limitations

- We intend users to be able to understand the linear process of navigating our application; the set-up process guides you through, and notifications that guide the user to begin activities
- We do not ask users to choose a paid option (we do not have wireframe image for a payment page as it's not part of the core functionality)
- We do not ask users to try to open the application's "settings" (we do not have a wireframe image for the settings page as it's not part of the core functionality).

## First Usability Evaluation: Data Analysis and Changes

### **Testing Objective**

The purpose of this testing is to gather user evaluations in a controlled setting to check the conceptual model of the application in the early prototype stages. The goal of the user testing is to reflect on the participants' background and select the main tasks that focus on the purpose of the application and its usability. The testing serves a meaning to further synthesise the data for app improvement and later testing.

### **Test Details**

- Test date: March 23, 2022
- Users tested: 4
- Method: Interview-based Usability Test

### **Roles**

These are the roles assigned to each group member prior to the testing date.

- Diana: Asking pre-testing background questionnaire questions and completing requirements success form
- Jeremy: Introducing and running through the scenarios
- Breanna: Recording free-hand notes
- Jayden: Controlling/swapping wireframes

### **Users' Profiles (see Appendix A6-2).**

All the participants in our test are in the age range of 18-22 years old. They all use at least two devices regularly. 1 out of 4 users (25%) indicated they have a regular exercise routine.

### **Executive Summary**

Our application was positively received overall, yet there were some noteworthy points of concern. The overall positive response was largely a result of our users finding the system quite intuitive - they recognized the symbols and processes as things they were familiar with, so they found them easy to navigate. Where the application was less successful was the exercise and equipment wireframes. The users expressed that they found the exercise wireframe's contents confusing and illogically arranged, which left them unable to understand how it functioned. The equipment wireframe was confusing in both its presentation and purpose: people did not know what to do with the screen's contents or what the contents were supposed to relate to in the grander scheme of the application.

### **Summary of Data**

This is a visual synthesis of the data gathered during the testing session. The tables of summary form a set of observations, which communicate the main issues in the current iteration of our application's UI (see Appendix A6-3, 4, and 5).

### Task Completion Rates

We qualified a completed task as a task done by the user without assistance or evidence of confusion.

Participant	Task 1	Task 2	Task 3	Task 4	Task 5
	Sign up	Add equipment	Accept notification	Starts rest	Navigate closing, home bar, “Next” or “Back” buttons
1	✓	✓	✓	✓	✓
2	✓	✓	✓	✓	✓
3	✓	-	✓	✓	✓
4	✓	-	✓	✓	✓
Success	4	2	4	4	4
Completion Rates	100%	50%	100%	100%	100%

### Summary of Completion and Errors

A misclick is when a user taps the incorrect part of the screen during a given task. An error in usability is when a user misinterprets the content of a wireframe, either by expressing their confusion, interacting with the wireframe incorrectly, or expressing that they expected the system to work differently. For instance, clarification is needed when a user asks the test administrator for help/clarification about the system and/or a wireframe.

Participant	Task Completion by Scenarios	Misclicks	Errors in Usability	Clarifications Needed
1	5	1	0	2
2	5	0	0	1
3	4	1	1	2
4	4	1	0	2

<b>Success</b>	<b>18/20</b>				
<b>Completion Rates</b>	<b>90%</b>				

### Summary of Post-Testing Questionnaire and Means of Satisfaction

These results come from questionnaires administered to our users after they tested our application. We considered ratings of ‘satisfied’ and ‘very satisfied’ as evidence of our system being considered effective and successful from the user’s point of view.

	1 (Very unsatisfied)	2	3	4	5 (Very Satisfied)	Mean Rating	Percent Satisfied and Very Satisfied
<b>Ease of logging in</b>				<b>1</b>	<b>3</b>	<b>4.75/5</b>	<b>100%</b>
<b>Ease of setting up for membership</b>					<b>4</b>	<b>5/5</b>	<b>100%</b>
<b>Functionality of the layouts</b>					<b>4</b>	<b>5/5</b>	<b>100%</b>
<b>Ease of navigation within app</b>				<b>1</b>	<b>3</b>	<b>4.75/5</b>	<b>100%</b>
<b>Content of pages</b>				<b>3</b>	<b>1</b>	<b>4.25/5</b>	<b>100%</b>
<b>Overall experience</b>				<b>1</b>	<b>3</b>	<b>4.75/5</b>	<b>100%</b>

### Results

Our application’s layout and functions appeared intuitive to the users. All four participants (100%) indicated being “very satisfied” with the layout. There is consistency in the app that bears a resemblance to other apps the users currently use or have used in the past. For example, our users recognized the settings and social icons and found them similar to platforms like Facebook. Signing up/logging in through other platforms or via email is instinctive to social media apps like Instagram and Facebook, and the membership-based subscription tiers offered are similar to Netflix or Audible, so

these processes were also familiar to our participants. These findings were indicated to us post-testing as a comment on our application. No participants had trouble with the application's flow, i.e. the users did not have trouble going forward or back between frames. 3 out of 4 (75%) test participants indicated setting up as relatively easy. The icons and symbols were clear to understand, such as the "back" button and the picture of heads being a symbol associated with social activities.

However, all four users (100%) also experienced frustration with the Exercise wireframe. Even though they all understood the button function, they all required clarification on the wireframe's content, indicating low recognition of the intended purpose. The Exercise wireframe needs a clearer visual pinpoint for users to follow. Specifically, we added the title of the exercise being done and a timer counting down until the end of the activity session. These were aspects that Participants 1 and 4 (50%) expressed that they expected to see but did not see. Appropriate feedback from the system would inform the user more efficiently and effectively of what is happening. The updates would indicate the timer for the break to start, and the "Rest" button would inform the user to press it when they are ready to set it.

The Equipment page was operated differently than expected by 2 users (50%). This was observed when users had trouble 'saving' the equipment and understanding the flow of the application and the purpose of the frame in general. These concerns indicated the need to simplify the actions to set up the exercises and routine around equipment. To address these concerns, we have removed the equipment page and given the user the responsibility to choose exercises based on their own equipment instead of dynamically changing the list based on their saved equipment.

### **Problems and Solutions**

These are some of the most noteworthy problems that arose during our usability testing session. We deem these particularly noteworthy because they appeared repeatedly (i.e., multiple users had these issues).

**Problem #1:** Participants click on one of the paid membership programs and ask how they will pay for it. They express that they expect to see a screen where they can input their credit card information or a payment page similar.

**Solution:** Users will be directed via scenarios to use the trial membership (the scenario is limited) so that they do not expect to have to input payment information.

**Problem #2:** Participants do not understand the content of the Exercise wireframe. They express confusion as to what the parts of the screen mean and how they work together. They do not know what physical activity they are supposed to be doing. They do not know how much time there is remaining in the exercise session.

**Solution:** We added the description of the exercise and the time remaining (see Image 5, Wireframe #12.1).

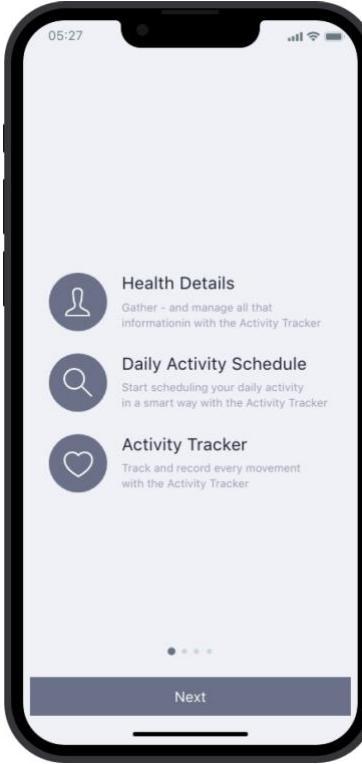
**Problem #3:** Participants are unsure how to navigate the Equipment wireframe. They do not know that they need to save their selection or understand that they can select equipment options. They believe that the equipment options are already "selected" because they have a coloured circle beside them. Overall, there is confusion about the function of this wireframe and how it is supposed to work with the rest of the app.

**Solution:** Eliminated frame #10.1 for more minimal action-required tasks

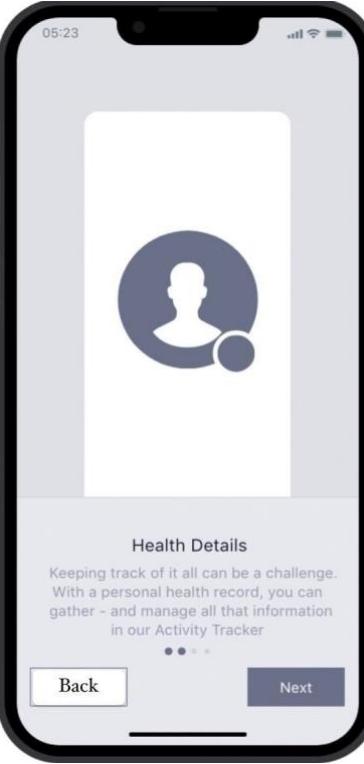
## Changes to the Interface: Iteration 3

The first set of images consists of the wireframes we prepared for our usability testing with an addition of the phone frame for a better visual perspective of the wireframe designed for mobile use. The images following that set show the changes and additions we implemented.

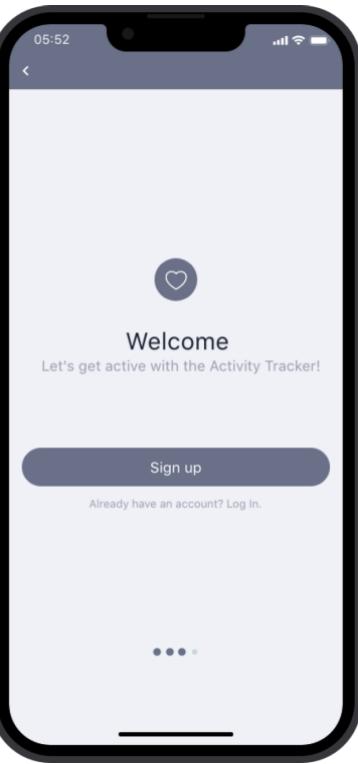
Wireframe #1



Wireframe #1.1



Wireframe #1.2



Wireframe #2

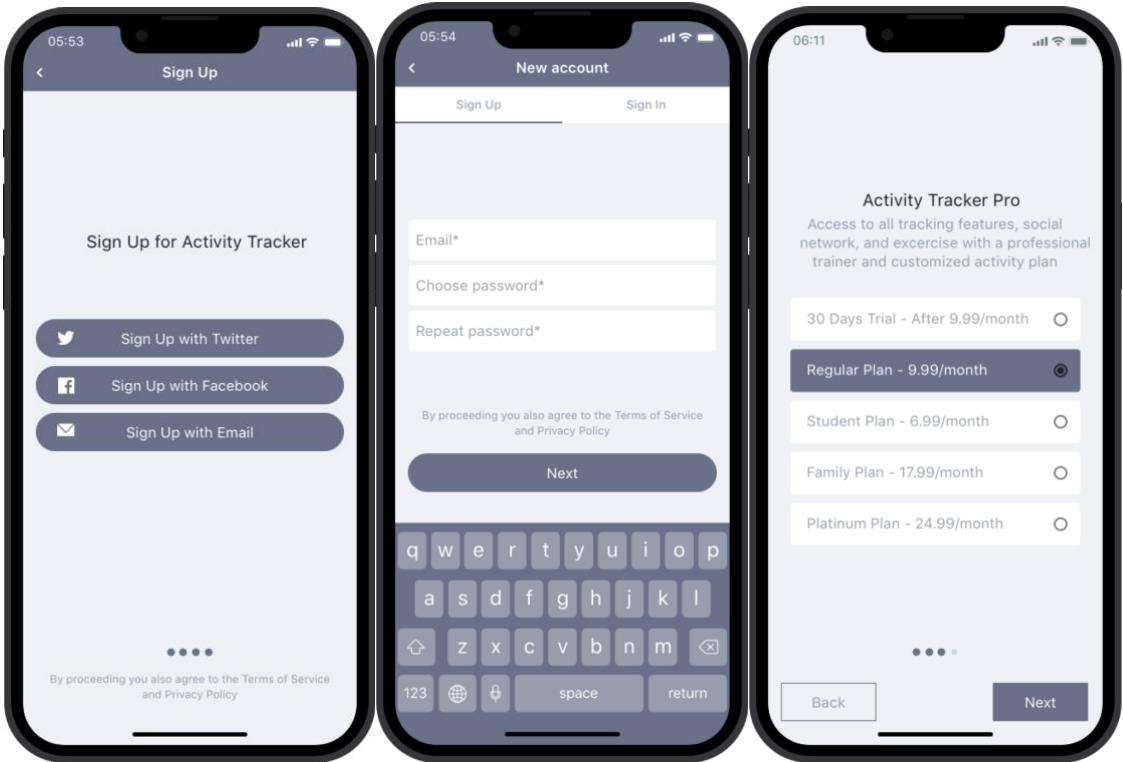


Wireframe #3

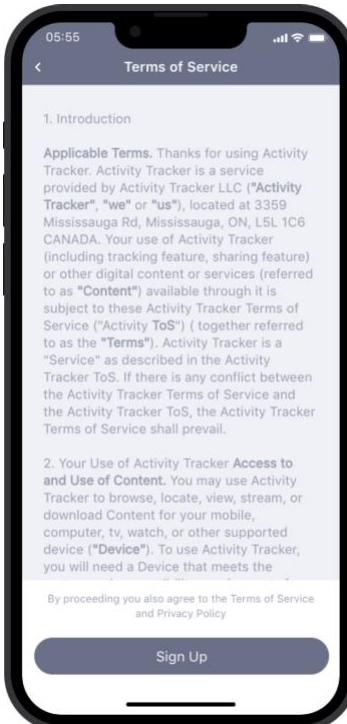


Wireframe #4

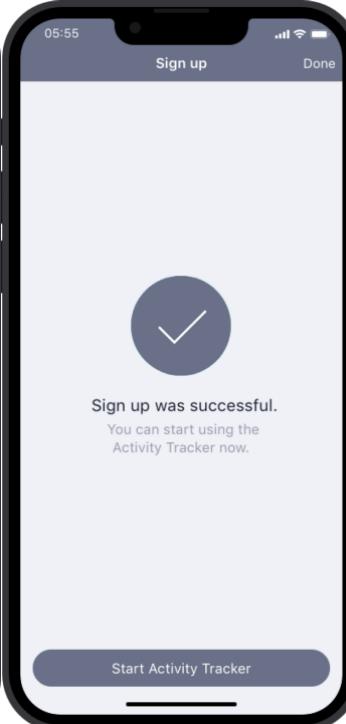




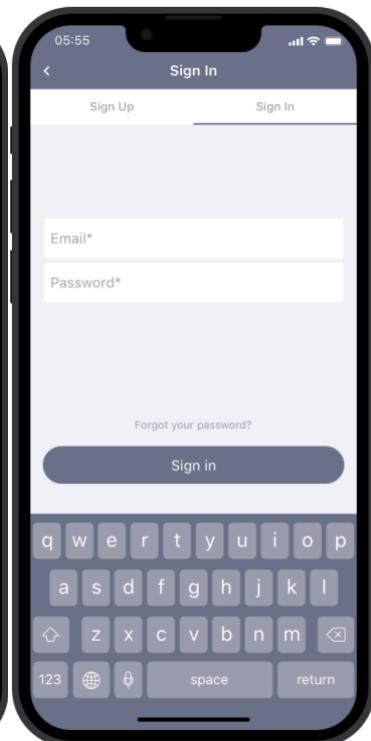
Wireframe #3.1



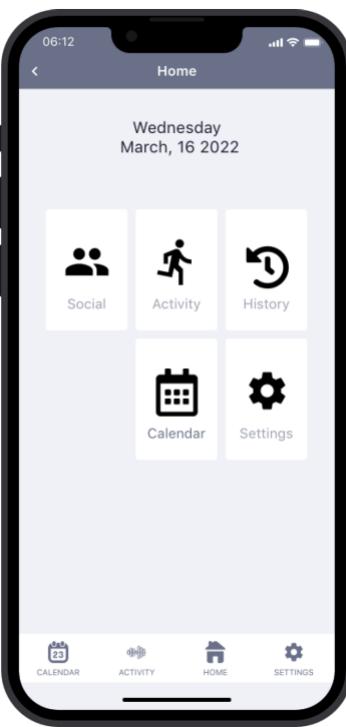
Wireframe #3.2



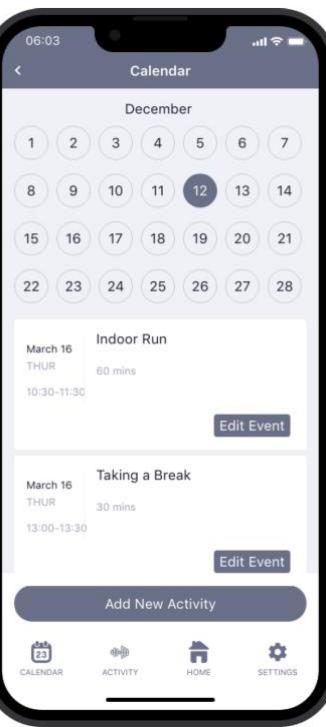
Wireframe #2.1



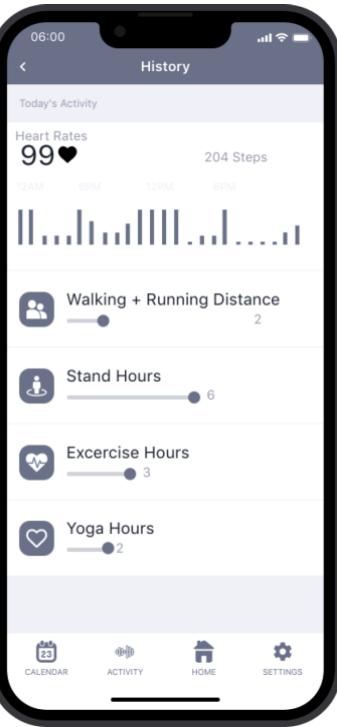
Wireframe #5.1



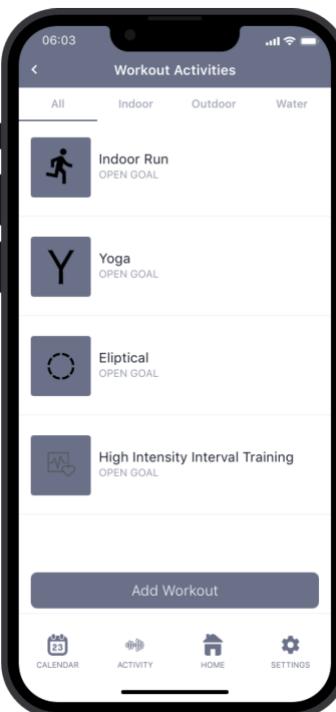
Wireframe #7.1



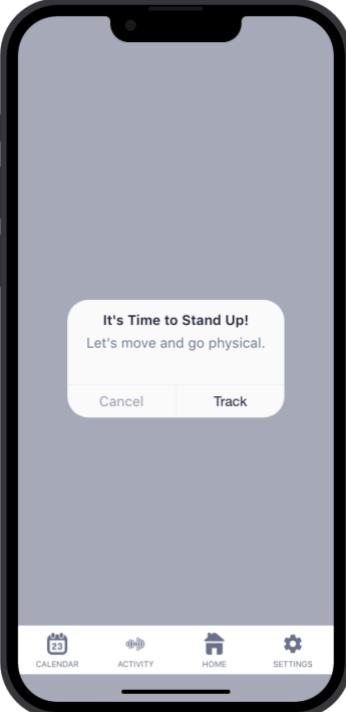
Wireframe #6.1



Wireframe #9



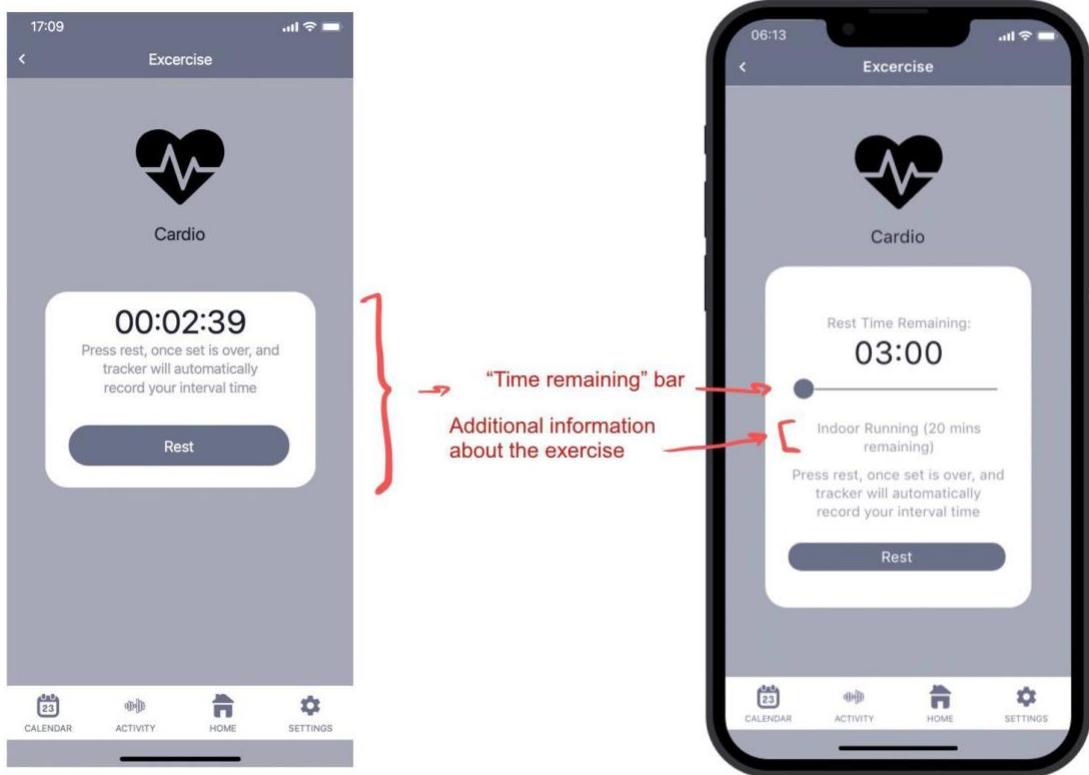
Wireframe #11.1



Wireframe #13.1



Image 5. Changes to the Activity Page Wireframe #12 (left: wireframe from first testing session 1; right: wireframe from testing session 2 - Wireframe #12.1 )



### Other Identified Problems:

These are issues that we identified based on users' behaviours and comments during our usability testing session that we did not make changes based on. We prioritised working through issues relating to our app's main functions instead, yet still noted these down, as we feel they could be worked on in the future if we were to pursue developing our app further.

1. Users have concerns about language preference and setup. They ask us how we would change things like the language and size of text should they need to.
2. Users think that the introduction icons are buttons. We know that this is the case because individuals both tried to tap them as if they were buttons and commented that they thought they were buttons.
3. Users ask about inputting height and weight as a means to track health. They comment that they think the app should be asking them to input more personal information as a part of the setup.

### Changes to the Testing Protocol

During our first phase of testing, we found that it was beneficial to take video recordings of our users interacting with our wireframes so that we could reference the videos later. In the next testing session, we will record the users and allow a more private environment to fill out the post-testing questionnaire for the sake of user comfortability (as we just had them fill out the questionnaire where they were sitting during our first tests). These changes were based on users requesting privacy and our group recognizing that professionals recommend recording usability testing.

Thus, the changes are as follows:

- Additional video recording for the next testing

- Gives additional large data on the participants. This method provides a reliable source of information analysis of users completing or having difficulties with the task. Videos are complementary data to the UI form for deep analysis of the functionality and users' comprehension of the frames during the tests
- Privacy given during post-testing questionnaire
  - An important aspect of this procedure is to set up a private space for the users to take the post-testing questionnaire, so that they can take their time answering and not worry about their answers being seen by the questionnaire-givers (that is to say, this is done for the sake of preserving anonymity).

## Revised Scenario for Testing 2

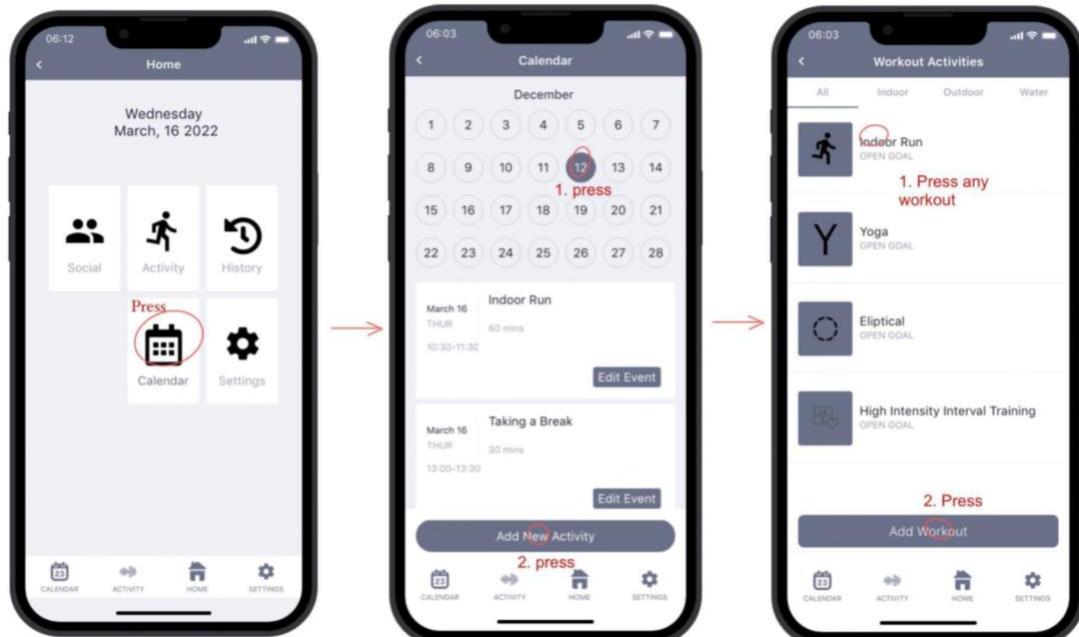
Scenario 1c (setting up the application by adding fitness equipment) requires smaller tasks broken down into steps to gather more efficient data on the wireframes:

- You are taking a break and want to set a workout on December the 12th. How would you go about doing that from the home screen?
  - a. Open calendar page
  - b. Select December 12th
  - c. Choose an exercise

Criteria of Success: The user should be able to (a) navigate to the calendar page from the home menu and recognize that the dates are selectable and (b) choose the right one from there and (c) press the "Add New Activity." Hopefully, the users will choose any workout they wish to do from the Workout Activities Page and press "Add Workout."

Image 6. Corresponding flow of the changes to the scenario 1c:

Wireframe#5.1 >>> Wireframe #7.1 >>> Wireframe #9 (the scenario ends with the user going back to the Home page)



## Second Usability Evaluation: Data Analysis and Changes

### **Testing Objective**

The purpose of the second testing session is to see how users respond to the current, revised iteration of our application. In the process, we want to gather more data and valuable insights from the users, so that we can improve our application going forward.

### **Test Details**

- Test date: March 30, 2022
- Users tested: 6
- Method: Interview-based Usability Test

### **Roles**

- Diana: Asking pre-testing background questionnaire questions and completing requirements success form
- Jeremy: Introducing and facilitating the scenarios
- Breanna: Recording free-hand notes
- Jayden: Controlling/swapping wireframes and video recording

### **Users' Profiles**

All the participants in our test are in the age range of 20-21 years old. They all use at least two devices regularly, with smartphones being the most common among them and laptops being second. 2 out of 6 users (33%) indicated they have a regular exercise routine.

### **Executive Summary**

This testing session clarified to us that our application's set-up process was working well, but that its exercise screen was still in need of significant improvement. The set-up/'onboarding' process consistently was completed by the users with ease, thus we felt we could stop testing it going forward. The exercise screen continued to be confusing to users, despite the changes we made to it. When asked to explain how they thought the exercise page would work, the users appeared to struggle and not be confident in answering, and some expressed that they were unsure of how to answer to begin with. However, their answers highlighted a series of specific issues that we have noted and will work on resolving, going forward.

### **Summary of Data**

This is a visual synthesis of the data gathered during the testing session. The tables of summary form a set of observations, which communicate the main issues in the current iteration of our application's UI (see Appendix A7-2, 3, 4, and 5).

### Task Completion Rates

We qualified a completed task as a task done by the user without assistance or evidence of confusion.

Participant	Task 1	Task 2	Task 3	Task 4	Task 5
	Sign up	Add activity	Accept notification	Start the rest process	Navigate closing, home bar, “Next” or “Back” buttons
1	✓	✓	✓	-	✓
2	✓	✓	✓	-	✓
3	✓	✓	✓	-	✓
4	✓	✓	✓	✓	✓
5	✓	✓	✓	✓	✓
6	✓	✓	✓	✓	✓
Success	6	6	6	3	6
Completion Rates	100%	100%	100%	50%	100%

### Summary of Completion, Errors, Mean Satisfaction

A misclick is when a user taps the incorrect part of the screen during a given task. An error in usability is when a user misinterprets the content of a wireframe, either by expressing their confusion, interacting with the wireframe incorrectly, or expressing that they expected the system to work differently. For instance, clarification is needed when a user asks the test administrator for help/clarification about the system and/or a wireframe.

Participant	Task Completo n	Misclicks	Errors in Usability	Clarifications Needed
1	4	2	1	1
2	4	0	1	3
3	4	1	1	2
4	3	0	1	1
5	3	1	1	1
6	3	0	0	3
Success	21/30 tasks complete			
Completion Rates	70%			

### Summary of Post-Testing Questionnaire

These results come from questionnaires administered to our users after they tested our application. We considered ratings of ‘satisfied’ and ‘very satisfied’ as evidence of our system being considered effective and successful from the user’s point of view.

	1 Very unsatisfie d	2	3	4	5 Very Satisfied	Mean Rating	Percent Very Satisfied or Satisfied
Ease of logging in		1	1		4	4.17/5	67%
Ease of setting up for membership		1		1	4	4.33/5	83%

<b>Functionality of the layouts</b>		<b>2</b>	<b>2</b>	<b>2</b>	<b>4/5</b>	<b>67%</b>
<b>Ease of navigation within app</b>		<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3.83/5</b>
<b>Content of pages</b>			<b>1</b>	<b>3</b>	<b>2</b>	<b>4.17/5</b>
<b>Overall experience</b>				<b>4</b>	<b>2</b>	<b>4.33/5</b>

## Results

In the “Task Completion Rates” table tasks 1,2,3, and 5 all had 100% completion rates where no users had any guidance. In task 4, though, we see that only 50% of users started the resting process needing some guidance. From these results, we can see that our signup process and “back and forth” navigation is comprehensible and can be done intuitively. Since the signup process has been consistently successful we will no longer be continuing testing and directing our efforts to other features of our app. From viewing the results of task 4, this leads us to believe that our workout frame (Wireframe #13.1) needs revision to make it more comprehensible to users without any clarifications.

In the second table “Summary of Completion, Errors, Mean Satisfaction” we can see that 70% of total tasks across all users were completed without clarifications with task 4 being the only one needing clarification, as seen in the “Task Completion Rates” table. In total there were 4 misclicks (i.e., instances in which a user pressed the screen incorrectly), 2 from participant 1 and 1 misclick from participants 3 and 5. Across all users, each participant had at least 1 case of an error in usability except participant 6. In terms of the clarifications needed column, there were 12 clarifications needed in total across all users with some needing more than others. From these results, we have a better view of what the issues are for the frames in task 4. It is both the layout of the frames and the actual elements themselves in the frame. From our free-hand notes, we noticed the break between the set timer and the time remaining of the whole exercise was not visually well indicated. We have broken down the scenarios for the next testing session to focus more on the behavioural aspects of participation rather than a cognitive understanding of the wireframe (see changes to the script, Scenario 1). The UI testing form would indicate clearer success criteria of the wireframe (see Appendix A8-3) with the specific additions to the scenarios (see Revised scenario for testing 3).

Four out of six users had a hard time understanding the progress indication graphic that helps the user to be able to graphically see the flow, which is in Wireframe #13.1. It looks more like a drag bar, and it can be updated so that users can simply understand its progression bar by using another graphic.

The flow of the scenarios missed a concluding frame that would tell users when the exercise was done. By adding a completion frame, the user would have a direct implication of the end of the scenario and testing. Accordingly, we plan to add this going forward.

One out of six participants was unsure if the application's intro page is swiping the function or should press next to continue with the flow. It would be ideal to delete the swiping process since all other compartments continue the application flow by pressing buttons.

In the last table, the overall satisfaction with ease of logging in is at 67% with some users selecting options lower than satisfied. This includes the functionality of the layouts and ease of navigation also being 67% satisfaction. With the ease of setting up and content of pages being 83%. The overall experience of our app though being 100% is the satisfactory range.

## Problems and Solutions

**Problem #1:** Participants share their confusion about the content of the “Exercise” page. The time remaining bar did not communicate visually its purpose of tracking the whole activity; often, it was misinterpreted as a time bar for resting.

**Solution:** We rearranged the content of the exercise part and the functionality of the resting timer. We added the title of an activity to the “time remaining” bar to indicate that this is the process of tracking rest during an on-going exercise; the progress bar was also made more defined for better visual cues. We included an additional instruction description that will further guide the user during the exercise testing as it is the main content of the frame. We changed the “Rest” button and the timer smaller and included them after the exercise content. The “Start Rest” button communicates to the user that by pressing it another “live” action will follow (see Image 7).

**Problem #2:** Participants were expecting a follow-up after finishing the exercise frame, something that would indicate the end of the process and completion of the task.

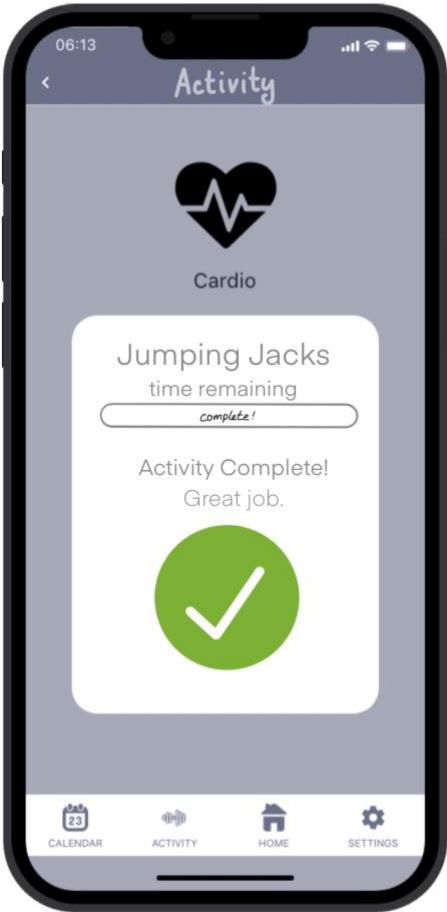
**Solution:** We added a new Wireframe #14 “Activity Complete” that would communicate to the user the finish of the exercise (see Image 8).

## Changes to the Interface: Iteration 4

Image 7: changes to the “Activity” page (left: wireframe from testing session 2; right: wireframe for testing session 3)



Image 8: Added “Activity Complete” Wireframe #14



### Revised scenario for testing 3

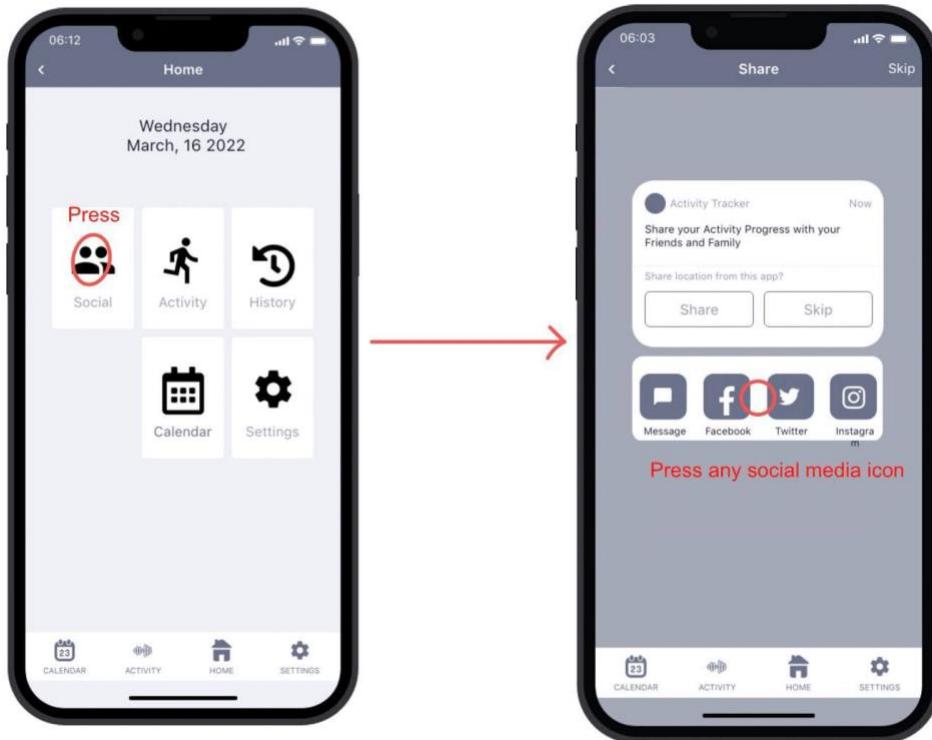
Eliminated the setup portion for testing to focus more on the Activity page procedure and Sharing feature of the application

- Edited Scenario 1:
  - The notification to start the exercise has popped up on your screen. This is something you would have already scheduled in advance since our app works according to the break times you have set up within it. How do you accept the notification?
    - Criteria of success: The user accepts the notification and presses “Track”
  - You have been exercising for a few minutes and are getting tired. You want to take a short, timed break mid-exercise (so that you can rest, but not for too long). How would you do that?
    - Criteria of success: The user taps the “Rest button”
  - The time remaining bar has gone down to 0 minutes and 0 seconds (and the screen changes to this screen). How do you know you are done?
    - Criteria of success: The user acknowledges the meaning of the “Activity Complete” screen and behaves as if they are done with the exercise
- Scenario 5:

You are now finished with the exercise activity and want to share your results. How do you share your progress?

- Criteria of success: The user (a) accesses the Social page from the Home page and (b) clicks any social media icon (see Image 9).

Image 9. Wireframes flow for scenario 5 of the third UI testing.



## Third Usability Evaluation: Data Analysis and Conclusion

### **Testing Objective**

The purpose of the final testing is to focus on the usability of the activity screen as well as the sharing function that was not tested before. The goal is to test-run the wireframes with old and new participants to document their reactions and use of the application for final adjustments (within the limited extent to which we are developing the application - future development is also discussed at the end of this section).

### **Test Details**

- Test date: April 6, 2022
- Users tested: 5
- Method: Interview-based Usability Test

### **Roles**

- Diana: Asking pre-testing background questionnaire questions and completing requirements success form
- Jeremy: Introducing and facilitating the scenarios and swapping wireframes
- Breanna: Recording free-hand notes
- Jayden: Absent

### **Users' Profiles**

All the participants in our test are in the age range of 20-21 years old. They all use at least two devices regularly, with smartphones being the most common among them and laptops being second. 3 out of 5 users (60%) indicated they have a regular exercise routine as well as gym equipment at home.

### **Executive Summary**

In this testing session, we found our improved version of our exercise wireframe to be significantly more effective, and we identified ways in which the calendar/activity-setting process and sharing/social aspect of the application could be improved based on users' behaviours. Users appeared more confident in operating our exercise wireframe: they all were able to confidently explain how it worked when asked and could identify when their activity was complete as well. We found our calendar page to need refining, as the aesthetic presentation of it confused all of our users in some way. The social wireframe of our application had repetitive elements which also left all our users confused, as they believed multiple buttons could do the same thing, hence they did not know which to select.

### **Summary of Data**

This is a visual synthesis of the data gathered during the testing session. The tables of summary form a set of observations, which communicate the main issues in the current iteration of our application's UI (see Appendix A8-2, 3, and 4).

### Task Completion Rates

We qualified a completed task as a task done by the user without assistance or evidence of confusion.

Participant	Task 1	Task 2	Task 3	Task 4	Task 5
	Add equipment	Accept notification	Start the rest process	Navigate closing, home bar, “Next” or “Back” buttons	Share results
1	-	✓	✓	✓	✓
2	✓	✓	✓	✓	-
3	-	✓	✓	✓	-
4	✓	✓	✓	✓	✓
5	-	✓	✓	✓	✓
Success	2	5	5	5	3
Success rates	40%	100%	100%	100%	60%

### Summary of Completion, Errors, and Clarifications Needed

A misclick is when a user taps the incorrect part of the screen during a given task. An error in usability is when a user misinterprets the content of a wireframe, either by expressing their confusion, interacting with the wireframe incorrectly, or expressing that they expected the system to work differently. For instance, clarification is needed when a user asks the test administrator for help/clarification about the system and/or a wireframe.

Participant	Task Completion	Misclicks	Errors in Usability	Clarifications Needed
1	4	1	0	1
2	4	0	1	1
3	3	0	2	1
4	5	0	0	1
5	4	0	0	1
Success	18/25			
Completion Rates	72%			

### Summary of Post-Testing Questionnaire

These results come from questionnaires administered to our users after they tested our application. We considered ratings of ‘satisfied’ and ‘very satisfied’ as evidence of our system being considered effective and successful from the user’s point of view.

	1 Very unsatisfie d	2	3	4	5 Very Satisfied	Mean Rating	Percent Satisfied and Very Satisfied
Functionality of the layouts					5	5/5	100%
Ease of navigation within app				3	2	4.4/5	100%
Content of pages				2	3	4.6/5	100%

Overall experience				2	3	4.6/5	100%
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## Results

From the “Task Completion Rate” table, scenarios two to 4 had a 100% success rate with all users completing them without any guidance on how to complete the scenarios. Task one and task five, on the other hand, had a 40% and 60% completion rate, respectively, where some users needed a little guidance to complete the scenario. This was due to the frame layout and buttons confusing the order of action to complete the scenario or not noticing the button to complete the scenario. These results lead us to believe that the frames for our “Add Equipment” and “Share Results” scenarios need revision to achieve a high completion percentage.

In the “Summary of Completion, Errors, Clarifications Needed” table on average users were able to complete 4 tasks. In total, though, 72% of scenarios were completed across all users. With incomplete tasks being related to the “Task Completion Rate” table where users needed guidance. There was only 1 “misclick” throughout all scenarios from 1 user. In terms of usability error, there were 3 cases in total where 2 users were confused about Wireframe #13.1 and Wireframe #7.1. For the final metric of Clarifications needed. All users needed 1 clarification for Wireframe #13.1. More specifically how the frame worked after noticing the “Share” button and the social media icons together. From these results, we can narrow the problems to why only 72% of total tasks were completed. With very few misclicks, errors in usability, and more clarifications, this suggests the layout of the frames are difficult to comprehend making the function unclear to the user. Overall, this is an improvement compared to our last testing session.

Finally, in the “Summary of Post-Testing Questionnaire” our system was considered very effective by all users in all categories of functionality, navigation, and overall experience, with each receiving 100% of ratings being satisfied or very satisfied. It should be noted that some of these higher scores could be after the fact that we gave clarifications to the user like the functionality of a frame.

## Problems and Solutions

**Problem #1:** Users were confused with the preselection of the date during the scenario testing and pointed out the inaccuracy of the date in the wireframe #7.1.

**Solution:** Eliminated the preselected choice and non-corresponding random dates to fit the narrative of the scenarios. The functionality and usability remain the same (see Image 8).

**Problem #2:** The frame already includes social media icons to choose from; the users indicated that the button “Share” poses redundancy and ambiguous functionality.

**Solution:** We eliminated the “Share” and “Skip” buttons to narrow the scope of functionality of the sharing process because the social media icons alone already communicate the choices given to the users. The skip button is already allocated in the right corner. Therefore, we

eliminated it, as it was in the middle of the page, reducing the scenario to be as straightforward as possible to the users in the future (see Image 9).

## Changes to the Interface: Iteration 5

Image 8: changes to the “Calendar” page (left: wireframe from testing session 3; right: wireframe for future testings)

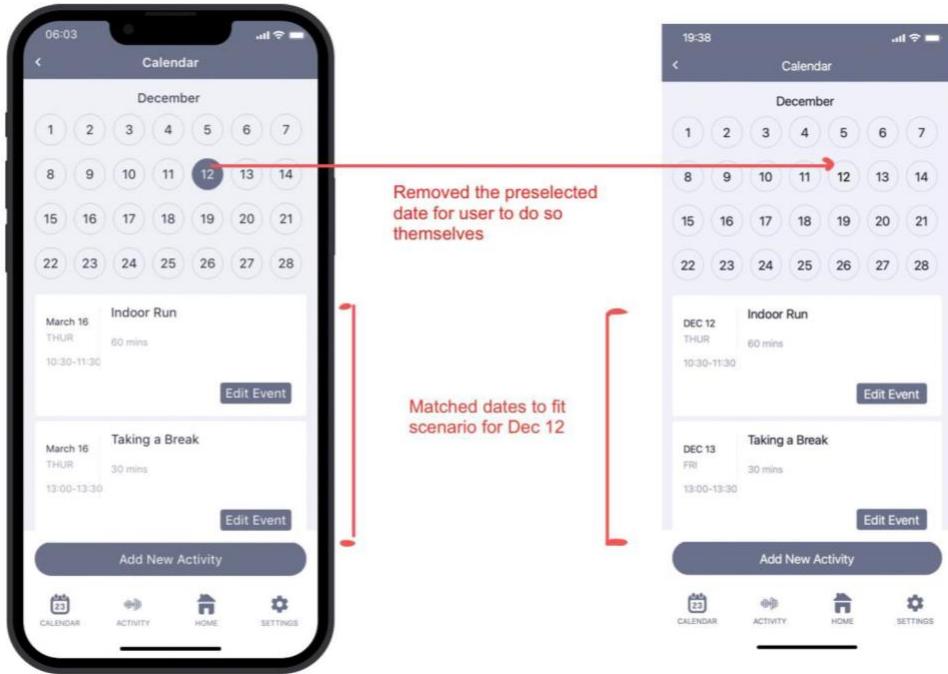
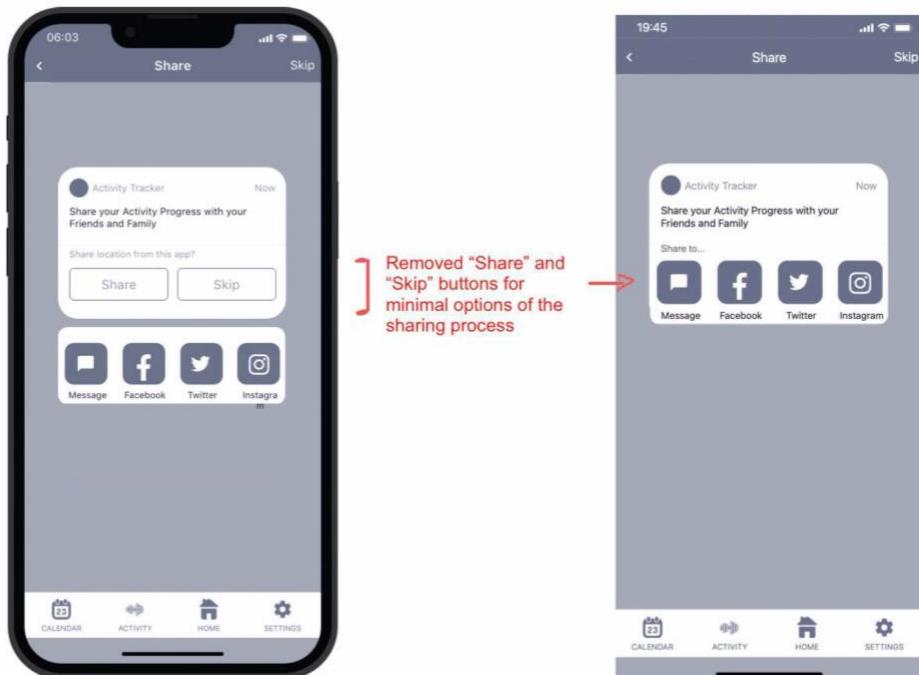


Image 9: changes to the “Share” page (left: wireframe from testing session 3; right: wireframe for future testings)



## Conclusion

Based on our initial observations we set out to create a way for users to keep active during their break times from their devices. The chosen medium we thought was best to tackle this issue was an app. Through multiple testing sessions, we found that our sign-up process was cohesive and intuitive with a few issues in the frames but what was lacking the most were some of the core features of the app. This includes the exercise wireframes as well as other features such as adding equipment and sharing on social media. Thus, these elements are what we focused on developing/improving, for the most part. Between testing sessions, we made a few revisions to our testing scenarios and our wireframes, and doing so allowed us to reach a point where our users were satisfied with our system/app.

## Ideas for the Future of Our App

We imagine that our application could be refined and improved further, should someone choose to conduct further usability tests and work on creating improved iterations of our design as it currently stands. Naturally, if this was ever to be a real app, there would have to be some usability testing done using actual digital devices at some point. However, before that, we think there ought to be wireframes made and usability testing done to work out the systems in our app that we have yet to address, such as language preference and text size/readability settings. Also, since we planned for our app to be accessible via laptops and other devices, wireframes would have to be made and usability testing would have to be done for all those other devices.

Additionally, a platinum membership would provide more elaborate premium features if the users choose such a plan, so that would need to be developed going forward. Our current application program caters to all exercises in a general form only. Notably, 7 out of 11 people from testings 2 and 3 had indicated they have equipment at home. A more premium feature could include equipment-based activities that would potentially be of interest to the users looking to make use of their already owned equipment. This ideation was postponed during our testing sessions to minimize the actions needed to set up the application; that is to say, we wanted to focus on the application's core functions. For further ideation, the application can serve more functionalities to fit the criteria of the needs and pains of the user.

## Appendices

### Appendix A5: Heuristic Evaluation

#### Rough Notes Recording During Heuristic Design Evaluation

- symbols added to homepage
- make notifications fullpage
- "where does skip go to" --> change back to home screen
- add home-bar/menu at bottom of screen
- do not skip payment page --> why skip button there?
- calendar --> show 1 month at a time, with 'switch to next month' button (too overwhelming to see all the months at once on a scrolling thing)
- add history page/tab (to see what you've done)
- social share page needs added icons for FB, instagram, etc. so people can share to those platforms
- Sharing/Social Confusion (pick one and stick with it)
- User freedom (back button)
- Consistency and efficiency (scheduling exercises once for multiple days instead on a daily basis)
- Industry standards (language options)

## Appendix A6: First Usability Testing

### 1. Testing Plan and Checklist

- Assign roles to team members
  - Testing lead and facilitators - Jeremy and Diana
  - Notetaker - Breanna
  - Media and wireframe designer - Jayden
- Testing planning
  - List of user tasks
  - List of possible mistakes
  - Scenarios based on user tasks, app goals, and usability
- Pre- and post- study questions
- Criteria of success in each scenario
- Script

### Walkthrough pilot test with team members

- Set up the wireframes in accordance to the scenario testing
- Conduct test
- Debrief with the team, capture possible testing errors/miscommunication errors during the procedure

### Data analysis

- Work with team to determine the final list of positive findings, usability issues
- Work with team to develop recommendations for improvement
- Prepare summary of findings and edits to the prototype

### 2. Pre-Study Questions/Participant demographic

	P1	P2	P3	P4
Age	22	20	20	18
Devices owned (laptop, computer, tablet, smartphone, apple watch)	Smartphone, laptop, iPad	Desktop, laptop, phone	smartphone, laptop	Laptop, smartphone
Do you have a regular exercise routine?	no	yes	semi-regularly	yes

### 3. Free Notes-Taking (Observations of Each Participant)

#### Participant 1

- Can I click top 3 circles on p1
- Reads info =, hits next, hits sign up
  - o Picks email to sign up

- Understands how to go about doing personal info inputting pages
- Checkmarks on equipment page “will they turn blue/checked when I tap it?”
  - o There is a lot to read on the workout page
- How u know ur workout is done?
  - o Thinks it will automatically jump back to the home page
- The user did not have the use the back button or the home bar
- The workout page needs work!! It is confusing and the tester had to explain it
- Feedback: exercising app – w/o scenario, no idea of what to do
  - o Want pop up instructions that teach me what to do
  - o How can I put in my personal preferences

#### Participant 2

- Knows to go for next on page 1
- Skips 2<sup>nd</sup> pg ‘I’m lazy’
- Knows to sign up bc does not have account
- Signs up with email
- Goes for student plan – cheaper than 30 day trial
  - o No payment page
- Sign up w/o reading terms
- Clicks equipment when asked to add equipment
  - o Knows to click back to return to home page
  - o Immediately understands checklist nature of the equipment page
- Workout page needs a lot of explanation
  - o Wants to pause timer then resume!
  - o Button should turn to a ‘resume’ button after user hits pause
  - o Assumes there is a visual that will pop up when it is time to end an activity session
- Asks how the social page would work
  - o Assume if u sign in w/ twitter it’ll connect automatically
- Asks about ability to add custom exercises?
- Customizability would be nice as a user – preset is nice, but it’d be nice to add his own too

#### Participant 3

- Reads thru info on first page, but only touches next button which is good
- “Is this assuming that I’m a first time user?”
- Sign up w/ email
- Goes for 30-day trial
- Ignores terms n conditions
- Knows to hit equipment – “Am I adding dumbbells”
  - o Initially Wants to hit add button, then used checklist once we clarified, then used back button to return to home screen
- When presses rest – have to explain that the rest timer counts down
  - o When do u know ur done ur workout? – the time remaining will hit zero à assumes a notification or sound will happen to signify that he is done
- Questionnaire should be anonymous so they cannot be seen when putting in data
- Thought it was good – the issues he noticed we said we are correcting

#### Participant 4

- Tried to touch circles on 1<sup>st</sup> page, had to tell him nothing happened – then he hit next when nothing happened – tried to touch 2 though, even though he knew the first circle didn't do anything
- Adding equipment à checks box then hits back button
- All know to hit 'track' to start the workout
  - o How to know when the workout is done – refers to timer
  - o Add a notification/visual signal to say when u are done the activity
- Feedback:
  - o Overall pretty good, likes how it works in steps, that makes sense to him
  - o The activity workout page is confusing
    - § What does rest mean?

#### 4. UI Testing Form

- All criterias are in order of the testing scenarios

Participant	1	2	3	4
Misclicks the button or icons	y	n	n	y
Knows how to operate next button	y	y	y	y
Knows how to operate back button	y	y	y	x
Uses the home menu tab	x	x	x	x
Understands how to input information	y	y	y	y
Needs clarification for tasks navigation	y	n	y	y
Can successfully add equipment (presses "save/add")	y	y	n	y
Understands how to operate the pop-up notification	y	y	y	y
Understands how to use the app during exercise	y	y	y	y

Requires more information about the frame	n	y	y	y
Understands the process of activity tracking	y	y	y	x

### 5. Post-Session Questionnaires

Participant 1

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in				x		Sign up button appears twice
Ease of setting up for membership					x	Very convenient
Functionality of the layouts of the pages visited					x	Very neat and clear
Ease of navigation throughout the app			x			Need pop up window and more instructions on pre-setting
Understanding the content of each page					x	Very good
Overall experience of the application				x		Very useful and neat functions

Participant 2

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in					x	Happy that there were many options
Ease of setting up for membership					x	Liked the fact that i was given multiple options (twitter, etc)
Functionality of the layouts of the pages visited					x	(grid layout is nice and readable)
Ease of navigation throughout the app					x	n/a
Understanding the content of each page				x		n/a
Overall experience of the application					x	n/a

## Participant 3

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in					x	

Ease of setting up for membership					x	
Functionality of the layouts of the pages visited					x	
Ease of navigation throughout the app					x	
Understanding the content of each page				x		
Overall experience of the application					x	

## Participant 4

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in					x	
Ease of setting up for membership					x	
Functionality of the layouts of the pages visited					x	

Ease of navigation throughout the app					x	
Understanding the content of each page				x		
Overall experience of the application					x	

## Appendix A7: Second Usability Testing

### 1. Pre-Study Questions/Participant demographic

Participant	1	2	3	4	5	6
Age	21	21	20	21	20	21
Devices owned (laptop, computer, tablet, smartphone, apple watch)	Phone laptop	Phone Ipad laptop	Desktop Phone Video game console	Laptop Phone iPad	Laptop phone	Phone Laptop iPad
Do you have a regular exercise routine?	no	no	no	no	yes	yes
Do you own any exercise equipment?	no	no	yes	yes	yes	yes

### 2. Free-note taking Free Notes-Taking (Observations of Each Participant)

Participant 1:

- Knows to press next, skip, etc – it's intuitive
- Sign up w/ email
- Set up process is very smooth, no hesitation; understands
- “After u register, welcome page à should be log in, not sign up – text should look more clickable, bolder, bigger”
- “click on activity maybe” when asked to work out
- A lot of questions about how the rest thing works during activity
- “Activity page: time remaining for the overall exercise should be bigger”

Participant 2

- “obviously I click next”
- “sign up with email”
- Seems to understand that the signup is successful from the checkmark success page
- “so I press track?” (to workout popup?)
- “3 mins remaining I assume? Oh, I have to run for 20 mins”
- Participant pointed out that we did the order wrong, swapped ¾
- Exercise page: “The rest page is confusing”
  - o “My rest time would end?”
  - o Needs it explained to understand

Participant 3

- “so this is what u guys gather”/“I spent more time reading that than I usually do” on pg.1
- “oh so there’s a skip button” (pg.2(?))
- “so that’s not a dragger? That is the counting of the remaining time?” (on exercise page)
  - o “so I just leave it for 3 mins while I relax”
  - o Needs it explained
  - o Thinks they are resting after 3 mins when it actually means they are resting for mins
- Was expecting to put in card information, but glad that did not happen
  - o This was when selecting the free trial from the paid/trial versions
- No complaints w/ layout
- Did not have to navigate
- The timer thing was confusing
- The bar is for my running but the timer is separate? This is confusing
- Would lose track of time w/o rest time
- The bar being right under the rest timer is confusing
- Rest bar circle makes it look like a slider/dragger
- Then thought it was a visual cue for the rest time

#### Participant 4

- She thinks she had 3 mins to rest
  - o Gets that the timer counts down
  - o Has to explain that the bar is tracking the time remaining for the entire exercise
- “If I start a trial, I want to subscribe later, what button should I click?”

#### Participant 5

- Forgot to hit next for a moment after selecting the trial
- Activity page à stares at it for a long time before doing anything
  - o “after a couple of mins, rest”
- Logging in à “the membership options page à usually they ask for payment method”
  - o “was confused bc usually do payment method first, then I select a plan”
  - o We explained that u would have to do payment if u selected other
- Want option to close what’s going on in the exercise page

#### Participant 6

- “can I swipe” on first page
  - o “If I were to swipe it’d bring me to [page 2]?”
- Exercise page à stares confused for an extended period of time
  - o “Not sure if I am supposed to be running right now, do I have to wait until the timer is over to start”
  - o Not sure how long to do cardio before clicking rest
  - o Understands what to do after going through it out loud and thinking about it
- Thought onboarding was smooth
- Explanation was good
- Activity page – wish there was
  - o “I was supposed to do a 20 min exercise, how would it work?”

- o Had to explain exercise page to participant
- o “This timer [bar] isn’t referring to the countdown for rest time?”
- o “Is there a reason why there was an alert rather than a whole page on the activity page?”
  - § She wants it to be a whole-page thing, not formatted like an alert on the screen

### 3. Usability Test Recording

[Participant #1](#)

[Participant #2](#)

[Participant #3-1; Participant #3-2](#)

[Participant #4](#)

[Participant #5](#)

[Participant #6](#)

### 4. UI testing form

Participant	1	2	3	4	5	6
Misclicks the button or icons	n	n	Y	n	n	n
Knows how to operate next button	y	y	y	y	Y	y
Understands how to input information	y	y	y	y	y	y
Needs clarification for tasks navigation	n	y	y	y	n	n
Can successfully add exercise (presses “save/add”)	y	x	x	x	x	x
Understands how to operate the pop-up notification	y	y	y	y	y	y
Understands how to use the app	y	y	y	y	y	y

during exercise						
Requires more information about the frame	n	y	y	n	n	y
Understands the process of activity tracking	y	y	y	y	y	y

## 5. Post-Session Questionnaire

Participant 1

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in			x			
Ease of setting up for membership				x		
Functionality of the layouts of the pages visited					x	
Ease of navigation throughout the app				x		
Understanding the content of each page				x		
Overall experience of the application				x		

## Participant 2

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in		x				
Ease of setting up for membership				x		
Functionality of the layouts of the pages visited			x			
Ease of navigation throughout the app		x				
Understanding the content of each page					x	
Overall experience of the application				x		

## Participant 3

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in					x	

Ease of setting up for membership				x	Take my money
Functionality of the layouts of the pages visited				x	
Ease of navigation throughout the app				x	
Understanding the content of each page			x		
Overall experience of the application				x	

## Participant 4

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in					x	
Ease of setting up for membership					x	
Functionality of the layouts of the pages visited					x	

Ease of navigation throughout the app				x	
Understanding the content of each page				x	
Overall experience of the application				x	

## Participant 5

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in					x	
Ease of setting up for membership					x	
Functionality of the layouts of the pages visited				x		
Ease of navigation throughout the app				x		
Understanding the content of each page				x		

Overall experience of the application			x		
---------------------------------------	--	--	---	--	--

Participant 6

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Ease of logging in					x	
Ease of setting up for membership					x	
Functionality of the layouts of the pages visited			x			
Ease of navigation throughout the app			x			
Understanding the content of each page			x			
Overall experience of the application				x		

## Appendix A8: Third Usability Testing

### 1. Pre-Study Questions/Participant demographic

Participant	1	2	3	4	5
Age	20	21	20	20	21
Devices owned (laptop, computer, tablet, smartphone, apple watch)	Phone PC desktop	Phone Ipad laptop	Ipad Desktop computer Phone smartwatch	Phone laptop TV Gaming console	Phone Laptop ipad
Do you have a regular exercise routine?	yes	yes	no	no	yes
Do you own any exercise equipment?	yes	no	yes	no	yes

### 2. Free Notes-Taking (Observations of Each Participant)

#### Participant 1

- Pressed activity instead of calendar when told to schedule a workout
  - Needed to be told that he was supposed to schedule a thing
- Assumes timer would pause when starting a rest
- Issues with wireframes being too tiny to read
- Understands home bar at bottom – uses it to leave exercise page
- “What would be the difference between me pressing share and the social media buttons?”
  - \*we were supposed to remove the share
- For the calendar/set up an event – issues for a brand new user, but becomes intuitive once you’ve done it once
  - Would be easy to go over the features; need time to explore the elements – doesn’t think they are an issue, just needs time to figure things out for himself

#### Participant 2 (Repeat Participant)

- Seems to understand calendar
- Got confused about the ‘indoor run’ in march visible on the calendar screen, but understood how to add an activity when she realized it wasn’t the date she wanted
- Would try to tap out of the pop-out when completed exercise à “oh wait there is a back button, so I would go back”

- Confused on social page à “I would pick share then facebook?”
  - Confused about the share button and the facebook – which was there
- The timer thing was better and easier to understand than last time
- Liked how we had the home page

#### Participant 3

- “Is Dec. 12 today?” – not sure how to read the calendar, which date is today or selected
- “I already have a run scheduled for today” – needed it pointed out that it is a dif day
  - “why is it so far in the future” @ march date
- Trouble reading wireframe for exercise
  - “resting doesn’t count toward my exercise minutes”
  - Compares to apple watch activity/exercise minutes
  - Would assume completion times out or she has to go press the home button
- To share on FB “I would take a screenshot or hit social”
  - Selects facebook (doesn’t try to hit the share button) on social page

#### Participant 4

- Needed a little clarification that she’d set the activity (was done doing it)
- Click complete on the complete page, then uses the bottom home bar to go to the home page
- “Hit facebook then share” on the social page
- Likes the idea, thinks it would help her bc she has no motivation – likes the reminder

#### Participant 5

- Pre-selected date on the calendar page is confusing
- “I guess track bc I don’t know what cancel would do” on activity notification page
- Understands that the rest is for 30sec, gets how it fits within the overall exercise
- Clicks home when done, before being shown completion page
  - Also clicks it when shown completion page
- Goes thru what she thinks each icon on the home screen would do before selecting social
- “Do I press share and then the social media icon or which order?” on the share page
- Calendar page à moved so fast on it à didn’t think of date, wanted arrows to go to the right month à wants to see the date grey/unselected bc it looks already clicked
  - Make it look like a clickable thing, or outlined
- The share page needs to be clarified bc not sure which button to use in which order

### 3. UI Testing form

Participant	1	2	3	4	5
Misclicks the button or icons	n	n	n	n	n
Operates the next button	x	x	x	x	x
Operates back button or uses menu bar	y	y	y	y	y
Uses the home menu tab to access the Calendar page	y	y	y	y	y
Needs clarification for tasks navigation/flow	n	n	n	n	n
Can successfully “Add New Activity”	y	y	y	y	y
Can successfully “Add Workout”	y	y	y	y	y
Responds to pop-up notification and tracks activity	y	y	y	y	y
Starts the rest timer during the exercise	y	y	y	y	y
Requires more information about the frame content	y	y	y	n	n
Shares the exercise to any social media	y	y	y	y	y

#### 4. Post-Testing Questionnaire

Participant 1

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Functionality of the layouts of the pages visited					X	
Ease of navigation throughout the app				X		
Understanding the content of each page					X	
Overall experience of the application				X		

## Participant 2

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Functionality of the layouts of the pages visited					x	
Ease of navigation throughout the app					x	Home page and tab bar is great for navigation
Understanding the content of each page				x		
Overall experience of the application				x		

## Participant 3

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Functionality of the layouts of the pages visited					X	The functionality was good, but I think that the spacing could be adjusted, just on a visual standpoint since it feels like it could be better spaced
Ease of navigation throughout the app				X		Navigation got a little complicated, it could also be because of the sizing but it felt a bit complicated since having multiple timers can be weird. My suggestion would be having the rest break being a different colour on the same timer, to say that it's using up the time allocated for something other than the exercise
Understanding the content of each page				X		The content was understandable for the most part, but it's not very intuitive. I would probably sit down and play with the app for a while before I could confidently use it
Overall experience of the application					X	I think it was a good app, and the pages are well thought out. I just think that visually it could be improved/simplified.

## Participant 4

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Functionality of the layouts of the pages visited					x	
Ease of navigation throughout the app				x		
Understanding the content of each page					x	
Overall experience of the application					x	

## Participant 5

	1 (very unsatisfied)	2	3	4	5 (very satisfied)	Comments
Functionality of the layouts of the pages visited					x	
Ease of navigation throughout the app					x	I am a visual person, so having icons to describe each step was very easy for me to move smoothly
Understanding the content of each page				x		The only thing that got me confused was the date in the calendar being automatically selected
Overall experience of the application					x	