

Intervention Development Preliminary Needs Assessment – Combined Results

12.1.2020

Purpose

This document serves as a preliminary needs assessment to help guide user-centered development of the new physical therapy Load-Monitoring mobile phone application (herein referred to as PT Load-Monitoring app).

This document does not take the place of a formal needs assessment, which will likely be conducted in the coming months to gain an understanding of the needs and expectations with respect to the app outside of the immediate design team (specifically targeting end-users, PTs, etc.).

Results from this form will be used to help facilitate the initial app design (ideally starting in January 2021), which will then be revised following the formal needs assessment.

What features must you see in the proposed PT Load-Monitoring app?

- **Force Monitoring**
 - Accurate
 - Live readout (numerical data, refreshing/scrolling plot)
 - Visual + auditory customizable targets/signals
 - Easy-to-identify targets with bars at increments in x-direction on graph
 - Timer function for timing reps (i.e., time under tension)
 - Way to tare/zero the load cell
- **Exercise Program**
 - Ability to customize the dose (reps, sets) during the session
 - Ability to remotely monitor by therapist
 - Capable of testing MVC
 - Data tracking both for current exercise and past
- **Additional Biofeedback**
 - Question about how tolerable the session was at the end of a session
- **App Framework**
 - Available for both iOS and Android
- **Bluetooth Connectivity**
 - Way to connect & show that the bluetooth load cell is connected to the phone (e.g., text, light on one of the app screens, etc.) and ready for testing in the app
- **Misc**
 - Exercise mode: similar to live view, but first prompts the user to enter value for Kg force, hold duration, sets x reps. Once entered, it shows a live plot view with a target line. At the end of exercise, it asks the user if they would like to share the results with clinician

What features would you like to see in the proposed PT Load-Monitoring app?

- **Instructions for participants**
 - Demonstration graphic/short video of how to complete the movement(s) and how to set up the device prior to exercise
 - Timer with countdown function for start and stop of exercise (“3-2-1-Go!” and “...3-2-1-Stop!”)
- **Participant Pain Assessment**
 - Ability to administer VISA-A (optionally) to participants
- **Reminders/Notifications**
 - Optional notifications / reminders to exercise
 - Reminder to tare device (or done automatically)
 - Automatic notification if the MVC is unexpectedly lower or higher than the previous week, with request to check the positioning to make sure it’s the same
- **Calendar**
 - Program calendar + details of prescribed exercise
 - An exercise diary feature (to track how much other exercise people are able to do, and how much their Achilles interfered with that activity) (e.g. dropdown list of common activities, duration and intensity of activity, and how much Achilles interference there was)
- **Participant/Clinician Interaction**
 - Some way of interacting with the PT (messaging?)
 - Account feature where patient and clinician can login to track progress
 - Directed routines/exercises (possibly set/linked to therapist); remotely customizable dose
 - Prescribed Exercise mode: same as exercise mode, but parameters are set by a clinician via a web-portal. Results automatically uploaded.
- **Misc**
 - Summary statistics after each session (average, max, etc.), possibly comparing with previous sessions (to help “gamify” the process a bit)
 - Ability to change units
 - Export data from a test to .csv or .xlsx
 - Ability to connect two devices simultaneously (might be useful if expanding exercises)
 - Social networking features, for patient networking?

What information would you like tracked in the PT Load-Monitoring app (e.g., reps, sets, adherence, compliance to prescribed target loads for each individual session, progress over time, etc.)?

- 'Everything'
- Daily reps/sets, past reps/sets
- % target load achieved; time spent above force target (=time under tension)/day
- Current force; max force
- Other relevant health information
- Force & time for a single session with .csv export
- Progress over time in terms of...
 - Sessions *attempted* and sessions *completed* (i.e., #sets + #reps + time under tension were all achieved)
 - Total load applied (force x time)
 - Progression of both target loads, max loads, MVC (discrete MVC instances)
 - Graphical would be nice

How would you like the user interface to look in the PT Load-Monitoring app (e.g. Colourful/graphical; Clean/minimalistic; Text-based; mixed; etc.)?

- Age-friendly/easy to understand
- Simple/minimalistic + clean
 - Text-based for summary pages
- More graphical, less word-based
 - Background colour changes when target force is achieved
 - Keep the live data in the center of the screen, Tindeq Progressor app live data scrolls out to the right and disappears
- Minimal use of clinical/scientific terminology
- Possibly similar to FitBit interface

Do you expect to see an overview dashboard to show the summary of progress and/or relevant program information in the PT Load-Monitoring app? If yes, what information would you like displayed as an overview?

- Things tracked over time...
 - MVC progress (probably discrete instances)
 - Total load applied (force x time)
 - Program targets/goals
 - Number of days completed 'to program specification'
 - Summary of average/max forces for each rep/set/session
 - Could be text-based, but also show some components graphically over time (e.g. plot sessions showing average force across sessions)
- Other
 - Last exercise session info

What type of security protection do you expect to see in this PT Load-Monitoring app to protect personal health information?

- “I have no technical base to answer this but as with all my apps I would expect my info to be private and not stored on external drives if possible”
- Unsure if personal information (name/phone number/email/etc.) is even needed on the app side
- Should not record name, birthdate, etc. If there’s a clinician portal, only anonymized patient ID should be displayed.
 - Password access for clinician portal.
 - Patient login can be via password or Google login.
 - HIPPA Compliant if to be used in a clinical context (password protection, encryption, etc.)
 - For the study we could deidentify the participants (i.e. only coded participant numbers entered) to get around this for the first iteration of the app.
- On the technical side I don’t think this app needs to track too much personal information other than what the device itself is measuring and recording
- Reach out to Brad Wheeler (Technology Transfer Manager, University-Industry Liaison Office, UBC) for referral to relevant contact

Please list any other comments or relevant information that may have not been captured by the above questions.

- Simple, concise and easy to use and set up seems to be the theme of this device and app.
- We don't want confusion or error to potentially put a user in a position to harm themselves trying to do some exercise past recommended levels
- Different "versions" of the app that we can control (with feedback, without feedback, gamified, raw data, etc.) so that we can compare how effective each version is with regards to patient adherence, etc