TENDON LOADER PROJECT



Web Portal Wireframe Design Cont. + Summary Data

KOHLE MERRY, PHD STUDENT IN REHABILITATION SCIENCES APRIL 12, 2021

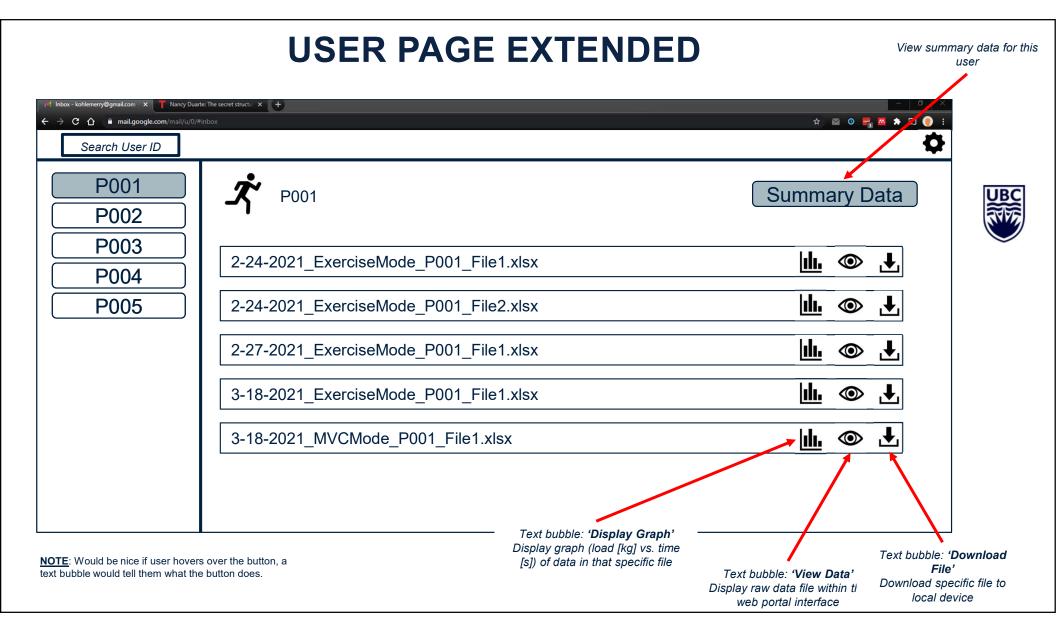
DOCUMENT GOAL

- This document aims to provide an extension of the initial design overview for the *Tendon Loader* web portal to help guide developers
- Further information has been provided relating to 'summary data' features on the web portal
- Please reference previous presentation
 'TendonLoader_WebPortalMockUp_Mar18.ppt' for more information

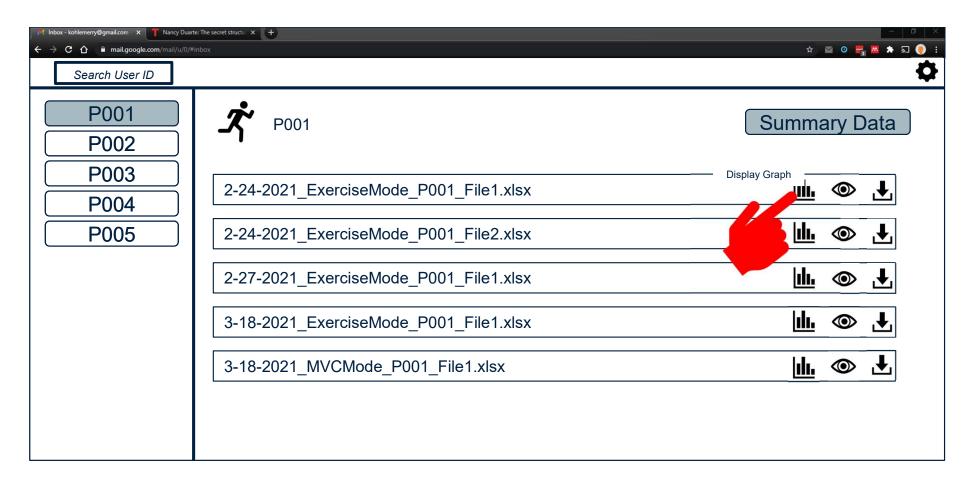


EXTENDED WIREFRAME DESIGNS FOR WEB PORTAL





USER PAGE – DISPLAY GRAPH





USER PAGE – DISPLAY GRAPH

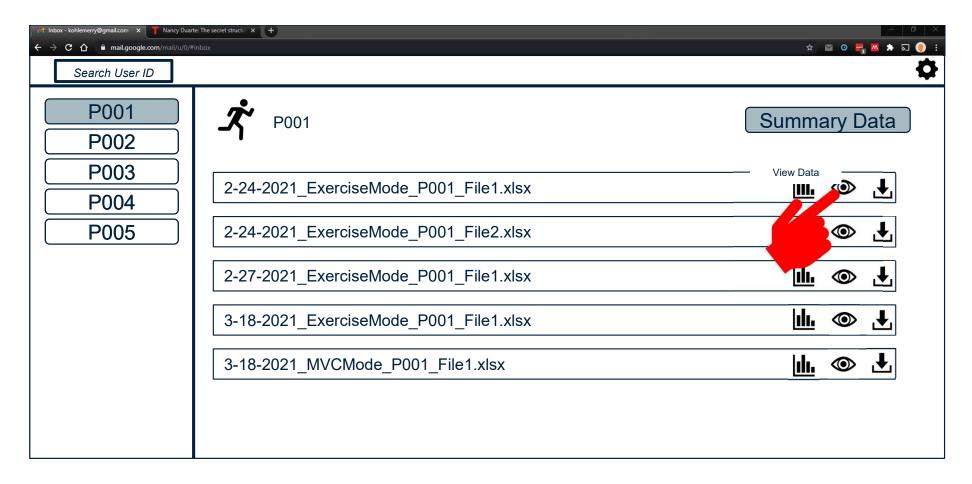




NOTE: We will have to do some thinking about how best to display these plots. Because each exercise session could be ~17 minutes long (See file 'TendonLoader_SampleProgram_ExerciseMode.xlsx' for reference), this would not be feasible to display in a single plot without zooming in/out on some features.

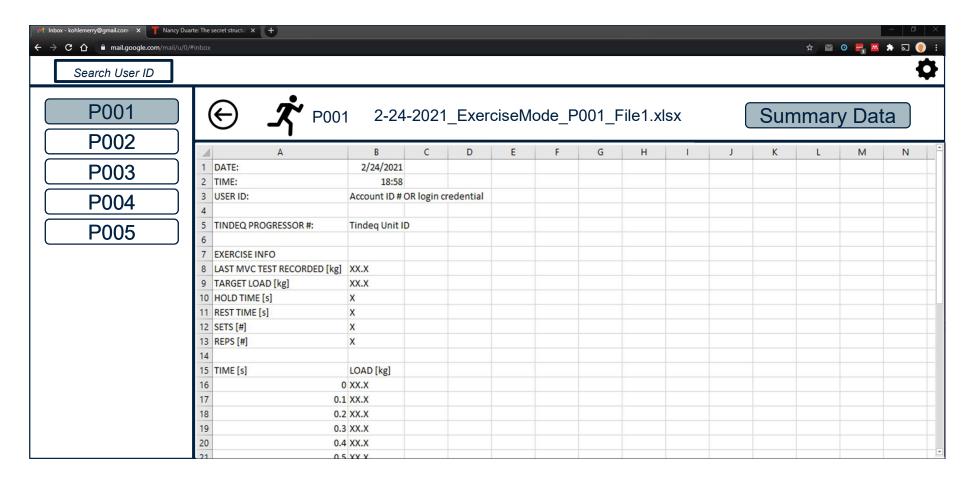
MyFitnessPal mobile application has similar functionality where you can change the x-axis (e.g. display first ~1min, ~5min, ~10min, all). Could be useful to incorporate something similar if we can.

USER PAGE – VIEW DATA



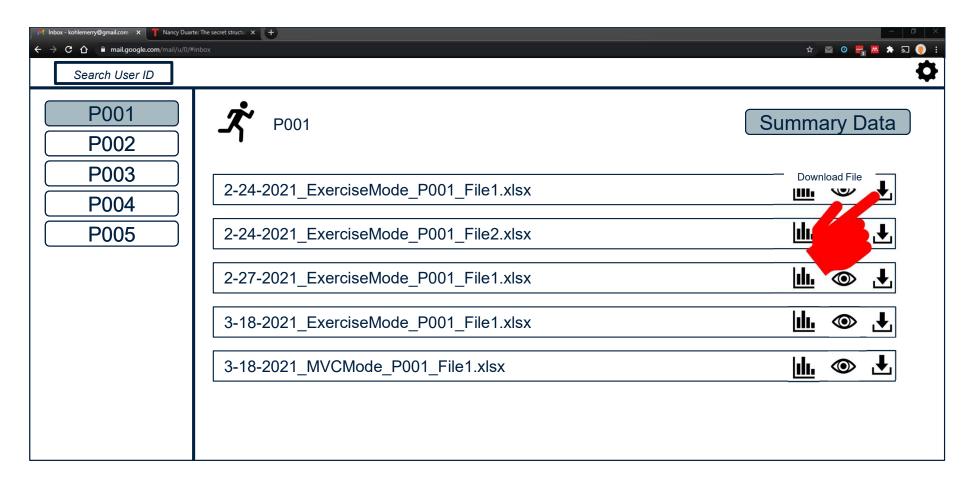


USER PAGE – VIEW DATA



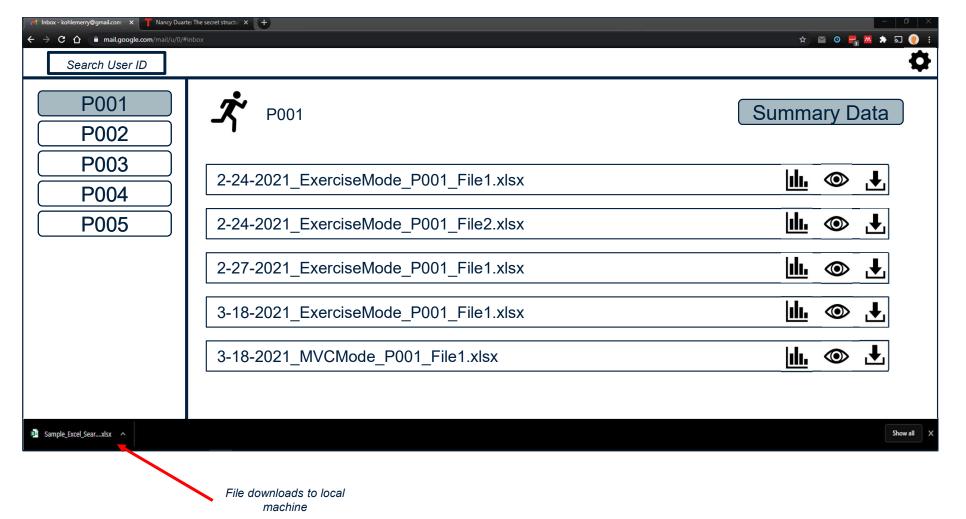


USER PAGE – DOWNLOAD FILE





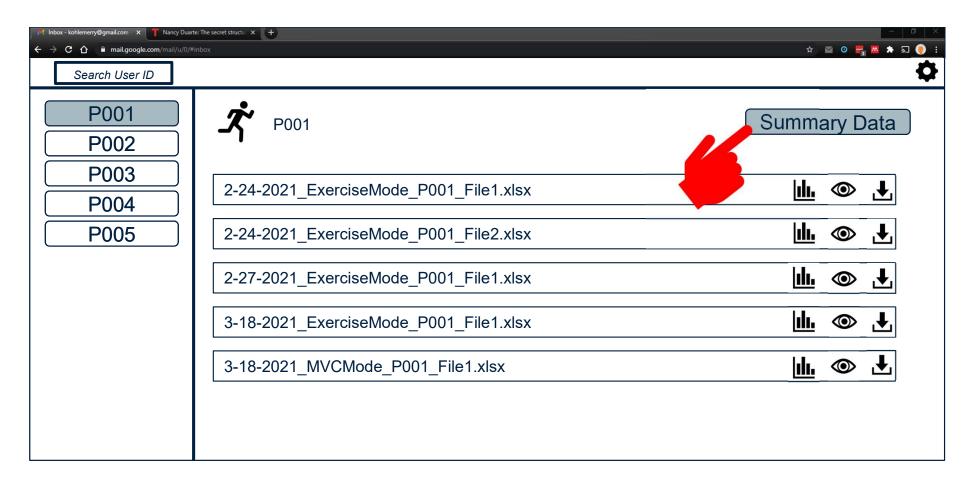
USER PAGE – DOWNLOAD FILE





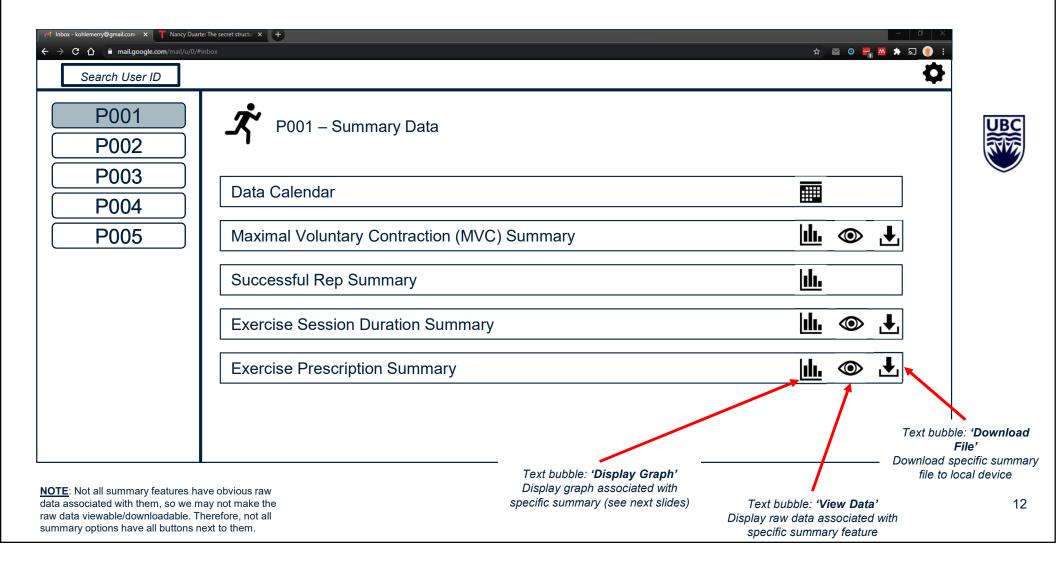
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USER PAGE – SUMMARY DATA

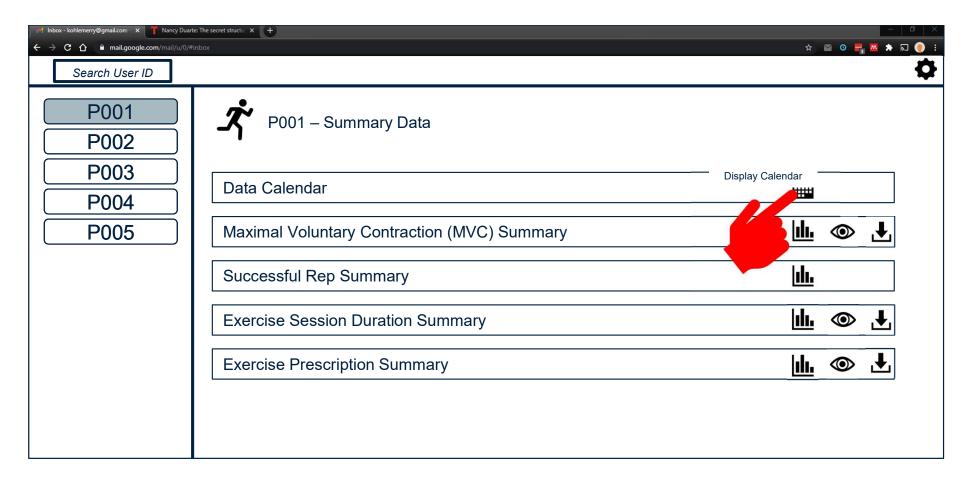




USER PAGE – SUMMARY DATA



USER PAGE – DATA CALENDAR





USER PAGE – DATA CALENDAR

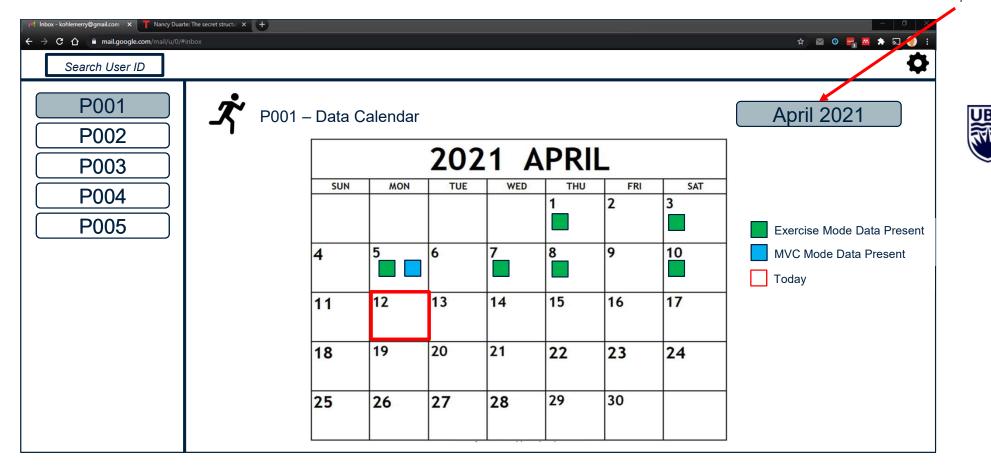
 Function: Display all days for which there is data uploaded for. System should check (based on title of uploaded data? Or metadata?) if data present for a specific day, then display dates that there is data for

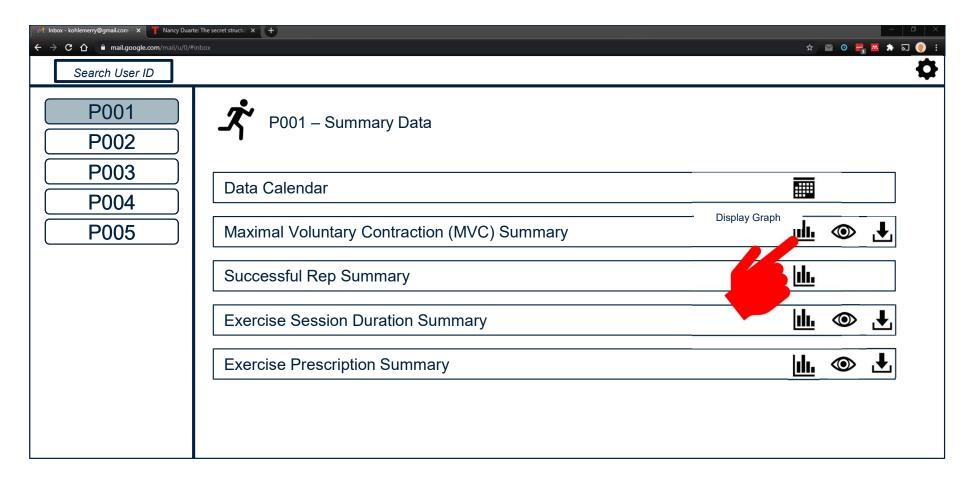


 <u>Purpose</u>: Quick reference for the clinician to see which days have data associated with them. Helpful for quickly checking if a patient is completing their program + remembering to upload data

USER PAGE – DATA CALENDAR

Dropdown button for clinician to select month of interest; should have all 12 months present

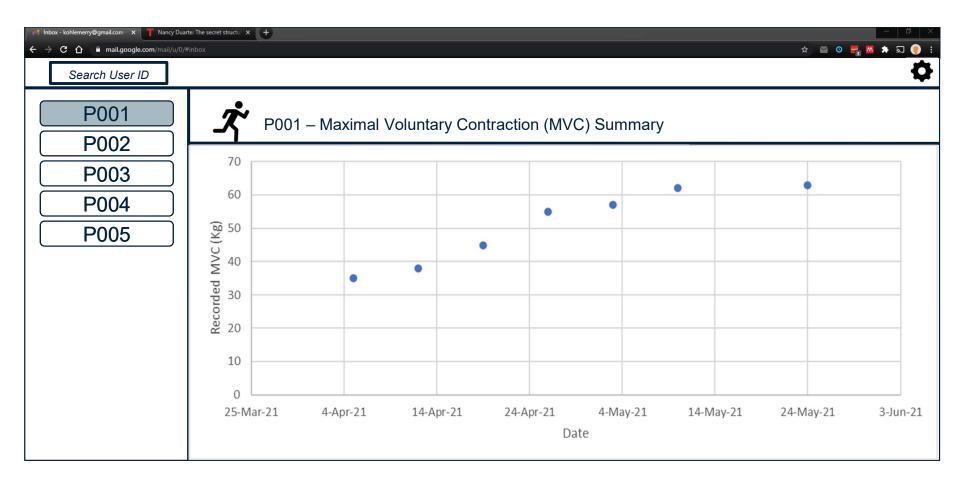




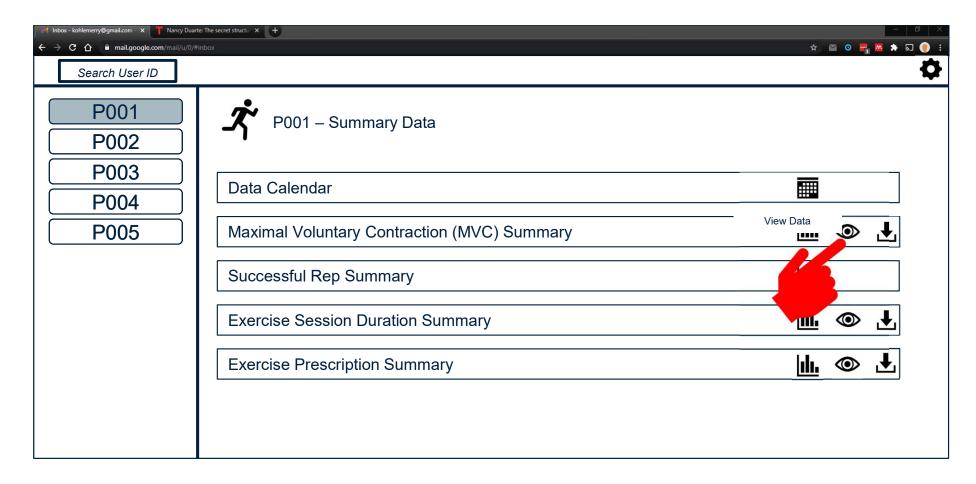


- <u>Function</u>: Display all MVC test statistics (Kg) vs. date
- Purpose: Quick reference for the clinician to see if the patient is getting stronger (we would expect the MVC tests to be going up with respect to time—as they do more of the program, strength increases, MVC should be increasing).
- Raw Data: To plot the data noted above, we will need 1 column with date, and another with recorded MVC taken from each uploaded MVC test file (e.g., take max load recorded from '3-18-2021_MVCMode_P001_File1.xlsx' and that will be the MVC value for 3-18-2021). Clinician could then download this 'MVC Summary' file in addition to viewing it ideally.

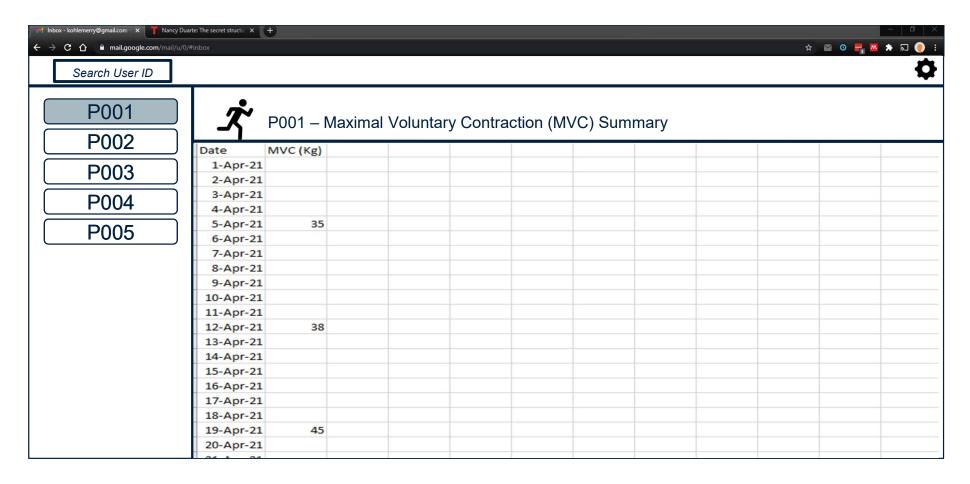




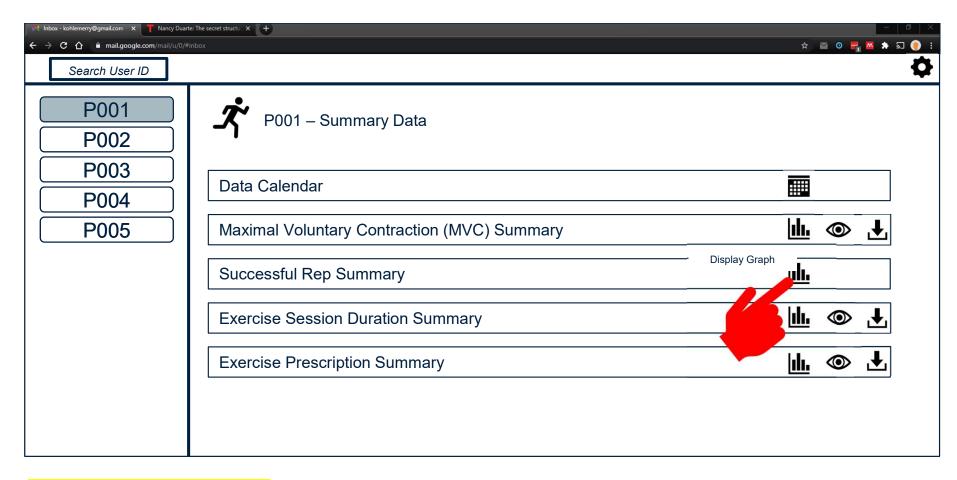














NOTE: **This feature may be omitted for now as this summary statistic has the highest level of complexity. Can possibly build this into future versions.

Function: Determine and display all reps that are considered 'valid' for a given exercise session (e.g., a valid rep meaning reaching at least 90% of their target load at some point over the rep; if target load was set as 50 Kg by the clinician, any rep ≥ 45 Kg would be considered 'valid'). Note that in this example, if the hold time was 5s, if the user achieved ≥ 45 Kg at any time over that 5s rep, we would consider it to be valid (see next few slides).



 <u>Purpose</u>: Way for the clinician to assess if the individual is not only completing the exercise protocol, but completing it to the specification of the clinician

- Note: This may be a bit complicated for the web portal to calculate, in which case we may have to modify/remove this functionality at this time.
- <u>Data Manipulation:</u> For a given exercise mode file, the web portal would have to compare the data for each rep to the target load, and determine if a rep is valid, then add 1 to the 'total valid reps' counter. If a rep does not hit that target load, no value would be added to the 'total valid reps' counter.



Example - first exercise mode data set for P001: 2-24-2021_ExerciseMode_P001_File1.xlsx

	DATE:	3/7/2021
	TIME:	13:42
	USER ID:	A1
	TINDEQ PROGRESSOR #:	3752
	EXERCISE INFO	
	LAST MVC TEST RECORDED [kg]	50
	TARGET LOAD [kg]	50
	HOLD TIME [s]	3
	REST TIME [s]	10
	SETS [#]	5
	REPS [#]	10
- 1		

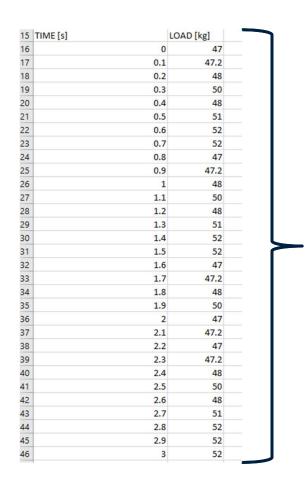
50 kg Target load specified which we will compare every rep to; if the load achieved meets or exceeds 45 kg during the rep, it's 'valid' and we add 1 to counter. If the load achieved does not exceed 45 kg, no value added to counter

(5 sets) x (10 reps/set) = 50 reps expected from this exercise session



Rep 1 (0-3s)

Example - first exercise mode data set for P001: 2-24-2021_ExerciseMode_P001_File1.xlsx





Because at least 1 data point exceeds 45kg, we increment the 'valid rep counter' (an internal index value) by 1.

Valid Rep Counter for this Session: 1



Example – first exercise mode data set for P001: 2-24-2021_ExerciseMode_P001_File1.xlsx

145	12.9	0	
146	13	43	
147	13.1	43.2	
148	13.2	44	LID
149	13.3	44.2	UBC
150	13.4	43	
151	13.5	44	
152	13.6	43	~
153	13.7	43.2	
154	13.8	44	
155	13.9	44.2	
156	14	43	
157	14.1	44	
158	14.2	43	No data point in rep 2 (rows 146-176 constitute rep 2) exceeds 90% of the
159	14.3	43.2	target load (50kg target load → 90% of target load = 45kg). This rep is not
160	14.4	Rep 2 (13-16s)	
161	14.5	44.2	
162	14.6	43	Because no data point exceeds 45kg, we do not increment the 'valid rep
163	14.7	43.2	counter' (an internal index value) by 1.
164	14.8	44	
165	14.9	44.2	
166	15	43	
167	15.1	43	From rep 1, no value added for rep 2
168	15.2	43.2	1 Tom Top 1, no value added for Top 2
169	15.3	43	
170	15.4	43.2	
171	15.5	44	Valid Rep Counter for this Session: 1 💆
172	15.6	44.2	
173	15.7	43	
174	15.8	44	
175	15.9	42	
176	16	0	

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Example – first exercise mode data set for P001: 2-24-2021_ExerciseMode_P001_File1.xlsx



Does not exceed 45kg therefore rep is not valid, do not add to counter



Valid Rep Counter for this Session (so far): 1

NOTE: System would have to check all 50 expected reps, not just the 2 showcased here

Example – first exercise mode data set for P001: 2-24-2021_ExerciseMode_P001_File1.xlsx

For each data set, compare 'valid rep counter' index to number of expected reps to determine *%Achievement* for that data set.



%Achievement for a data set =
$$\left[\frac{Valid\ rep\ counter\ for\ session}{(\#sets)x(\#reps)} \right] x\ 100$$

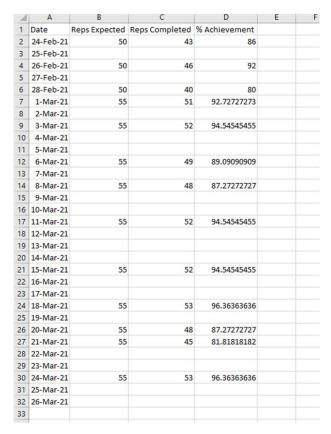
e.g., if the rep counter for the session was 43 (calculated by the system after checking every expected rep against the 45 Kg threshold), then...

%Achievement for this data set =
$$\left[\frac{43}{(5)x(10)}\right] x 100 = 86\%$$
 Achievement for exercise mode session done on 2-24-2021

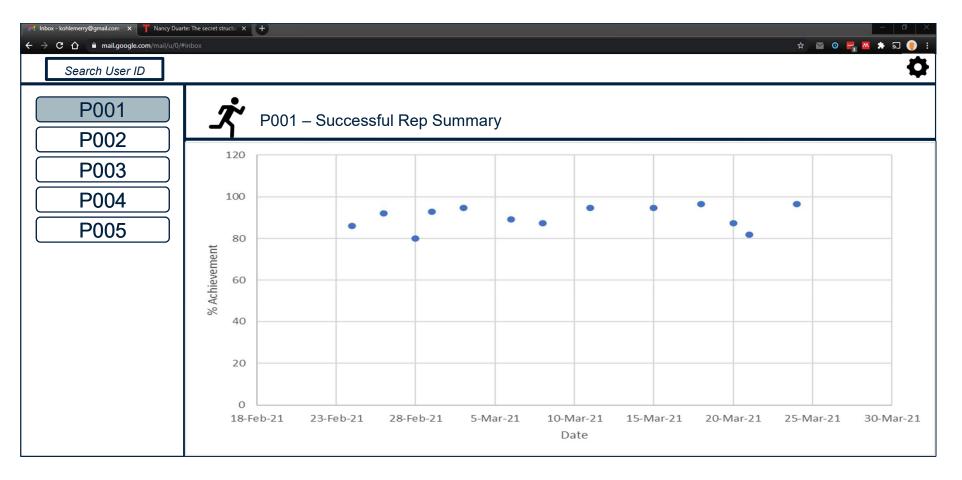
Example – first exercise mode data set for P001: 2-24-2021_ExerciseMode_P001_File1.xlsx

Then, do same %Achievement calculation for all exercise mode data

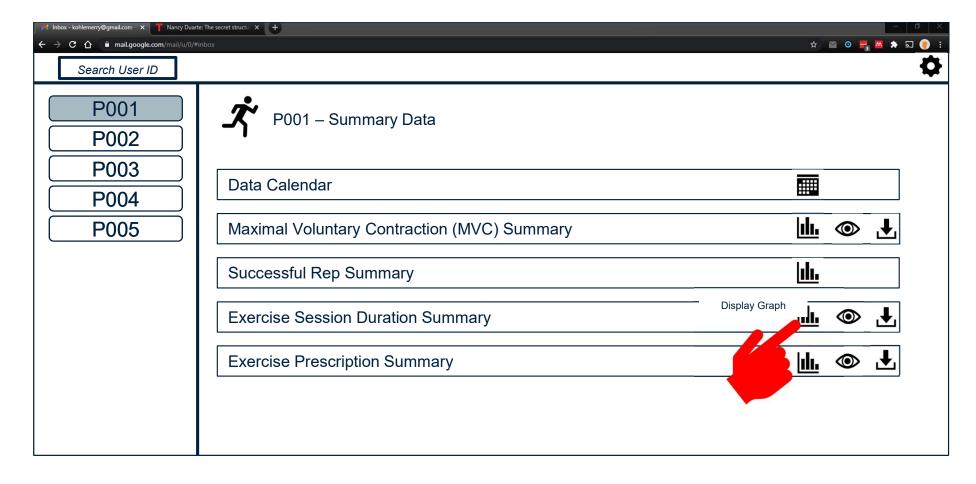
sets...final summary data set would look like:







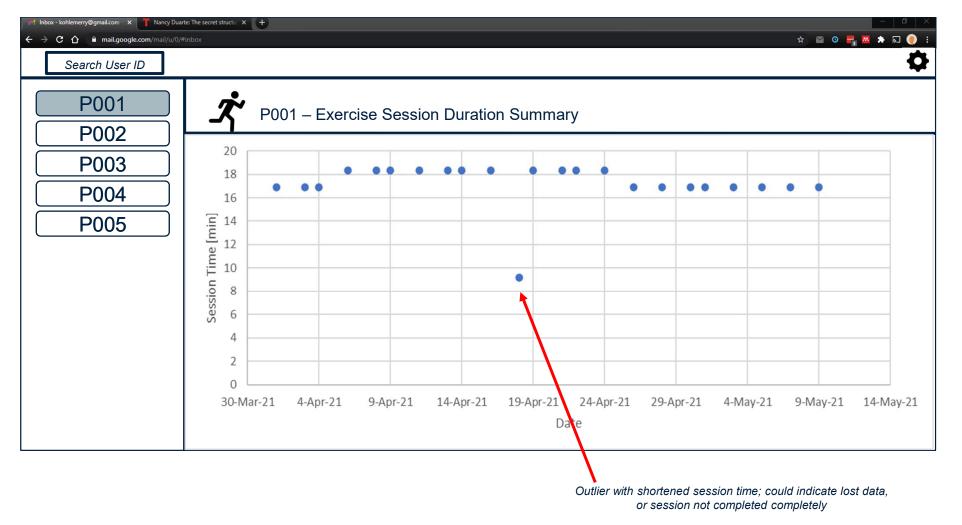




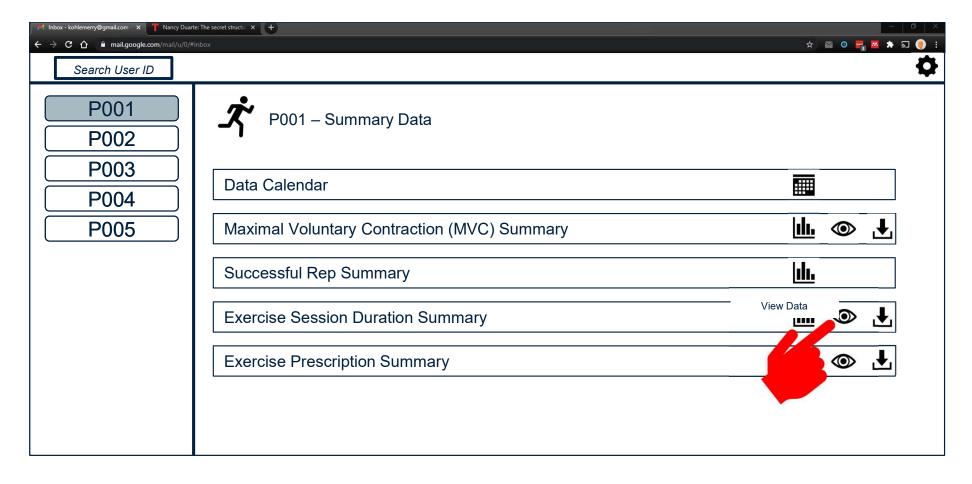


- <u>Function</u>: Display the total time [minutes] for all exercise mode sessions
- Purpose: Quick reference for clinicians to see if uploaded exercise mode data is appropriately long (most sessions would be expected to be ~15min, so if a session is ~5min, or multiple sessions are short like this, the user may not be completing the protocol, or we could be losing data).
- Raw Data: 1 row for each exercise mode session. First column would be date completed; 2nd column would be max time [s] taken from each individual file; 3rd column would be [s] to [min] conversion for display purposes as we prefer to display minutes over seconds

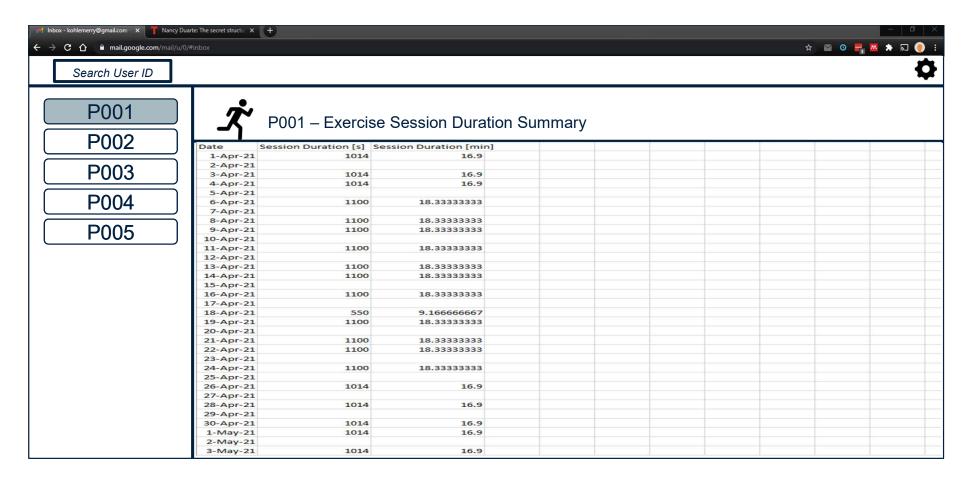




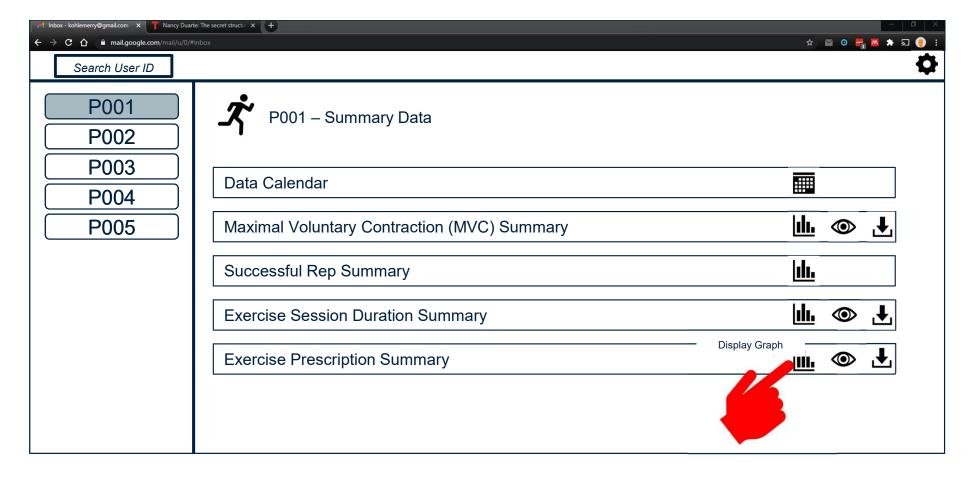














- <u>Function</u>: Visualize specific aspects of exercise prescription which can be pulled from each exercise session data set (they precede the actual data)
- <u>Purpose</u>: Quick way for the clinician to visualize the exercise prescription for a specific client, and how that prescription has changed over time. Specifically in relation to target load, hold time, rest time, sets, and reps.
- Raw Data: Each exercise mode session will have one set of these 5
 features, so raw data will be 1 row/exercise session, with 6 columns (date,
 target load, hold time, rest time, sets, and reps)



Dropdown button for clinician to select feature of interest: Target Load, Hold Time, Rest Time, Sets, Reps

