1. How would your profession benefit from this project?

Help speech pathologists know more about and rehabilitate swallowing. It would also help speech pathologists give more specialized treatment to patients. Patients benefit from visual feedback.

1. What in your view would make this a successful project?

To be done in time to make it to the symposium, to make it to market. Be working. Also write an article and get published.

1. What functions are desired?

Visualization, thresholds, hold time with target, repetitions count, isometric vs isotonic exercise. Percentages of 1-rep max. Separate training module and exercise module.

1. What is the priority of each feature or function?

Visualisation, CTAR.

Endurance, strength. (80%) threshold. ← Make it or break it. So, very important!

Hold time with target, repetition.

Visualizations to appeal to multiple demographics - adults/kids

Training module? Follow along with a visualization.

1. What are the business requirements?

Something that works, and works reliably.

Replicate on normals and get the same data.

Sensors can’t be all over the place.

Price point. (People need to be able to pay cash for it). Probably < $200

1. What results are required/desired?

Hope it works. Reliable, affordable. Accessible

1. Metrics to define success?

Max pressure, Time holding at a pressure. Done on time, makes it to symposium, to market

1. Are there any other requirements we should be aware of?

As long as there is no personal information in the app, we don’t need to comply with HIPAA

1. Are there any products/projects related to this one?

Synchrony emg, IOPI, omni sEMG

1. Is there anything we didn’t discuss?

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1. What is the current process?

Various CTAR exercises, Synchrony sEMG,

1. What type of exercises would this project be used for?

Same thing.

1. What kind of people will the primary users be?

Adults - long term care. App can also be used for kids.

1. What are the pitfalls and what is inhibiting success with the current process?

Process is successful just primitive

1. What’s been done to solve this already?

CTAR, sEMG

1. How much history would you like stored and who should have access to it?
2. What level of security is required?
3. What kind of training do you anticipate needing?
4. How would you like to be involved in the rest of the project, and what’s the best way to reach you?
5. Is there anyone we need to speak with who isn’t on our list?
6. What worries you about this project? What’s the worst thing that could happen?

Notes:

Yen Tao Shen?

Pressure sensor. Resistive ball. Strength training for certain swallowing disorders.

App reads the pressure.

Repetition counter, Maximum press, so many times and take an average. (called a 1 rep max). Calculate 80% threshold from there. Work at 80% threshold for so many repetitions was. Or work at 60% to give more reps.

Update max every session.

Give option for taking average max, or total max to take 80% from.

Isometric vs isotonic holds.

Isometric: hold as long as they can. Endurance task. Here we would be interested in how long they can sustain a certain pressure.

Isotonic: keep pushing on pushing.

Patients prefer visual feedback. Visibly see how hard they are pressing for example, that way the clinician can see as well.

Just the CTAR is out there right now.

Just do Android and Apple.

Iopie

Work with Iopie to generate games? Wait, i think she’s talking about the other project again?

Geared towards adults. BUT make neutral so it can be used for children and adults.

Surface electromyography. Fast Fourier Transform?

Synchrony is what is there for these now.

EMG on tablet or cell phone. ← i think another project.

Terri’s notes:

Pressure sensor in ball

App reads pressure, counts reps, stores the 1 Rep Max (Press as hard as they can for 3 times and take an average, which is used to determine the 80% (or 60% with more reps) threshold. Sometimes they take the highest of the three).

Update max every session - probably increases as they get stronger

Isometric - hold as long as they can - endurance

Isotonic - repetitive pressure over a bunch of reps

Printable graph?

Patients perform better with visual feedback.

Age range - adults, long term care

Neutral games will be better

Records - EMR - Electronic Medical Record

-Could upload a pdf or histogram

-No HIPPA issues as long as we don’t store identifying values - we can use their medical records number which they can get from their clinician.

Take home where they could do ‘homework’

Other possible projects

EMG on a tablet or phone

Hydrogel with wireless sensors/patch electrodes

Surface Electromyography

FFT - fast fourier transform

Measure with accelerometer - effortful swallowing

Electrodes that measure speed or force or distance/

Electroglottography

Free floating ball sensor that can move to either side of the mouth and possibly emulate swallowing

Very small bluetooth sensors?

Competitors (EMG)

Synchrony by ACP (accelerated care plus)

IOPI

Once a month meeting starting in December - email times that work

Other people to interview:

Kathryn Allen - [kathrynallen@med.unr.edu](mailto:kathrynallen@med.unr.edu)

Amanda Morrisey - [amandamorrisey@med.unr.edu](mailto:amandamorissey@med.unr.edu)

Other things to look up:

Neuroplastic Principles

CTAR

IOPI