Spellcasters Interviews with SMEs

PT1. PTA Wes - notes by Kassandra

- Success with xbox 360, also playstation controllers, patients enjoy them
- Traditional motions: should extension, elbow extension, all motions, mostly shoulder, elbow
- 3 sets of 10 or 3 sets of 15: shoulder extension, shoulder extension
- 60-70 age range of patients
- Each session is about an hour, 3 days a week
- Patients would play the Fruit ninja game for about 15 mins before they get fatigue
- Physical therapist are more frustrated due to technical difficulties
- Younger patients enjoyed the game more than older people
- Every other day for 2 weeks depends on the patients
- Motivation: highlight success and accomplishments
- How to show progress: electronic medical record, spider graph
    - Prefer spider graphs: a lot of info in once, functional mobility, eg. how many stairs they can walk, etc
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- Take home exercise: patients don't usually do it
    - People who do will do simple things, moving side to side, etc,
    - More advance bouncing motion, stands, etc
    - Basically do every motion possible
    - How high can they raise their arm, how far
    - Games can't tell if they use other muscles when unsupervised
- During game
    - Need an exit button back to main menu
    - Not clear on the direction of the movement
    - PNF pattern (full range), diagonal motion
- Post survey
    - Having a menu for spells would be preferred due to the flipping of the page being slow
    - Take home: 1-2 times of the week or if they like it 10-15 mins each visit
    - Start at a certain spot
    - Metrics interested : Measure How high the patient can reach, side to side, forward, etc
    - Graph collection: bar graphs

PT2. Dr Watson - notes by Kassandra

- Shoulder strengthening, range of motion, wrist, nerve related
- Bicep curls with wrist grip, wrist extension
- 2 - 3 sets of 10, last about an hour, with more shoulder than elbow and wrist. Number of exercise depends on the personngth
- Dr. Watson see people with upper body problems, shoulders, elbo
- Stroke patients: 3 times a week if recent stroke, balance and gate strews, wrist
    - Age range: 30-70

    - Motivation: depends on setting, cognitively affects motivation, if they like you they will be more motivated. Out patients are more motivated
        - Once they realize they are making improvements they will be more motivated
- Telehealth: they will ask the patients to do things and ask them to describe how they will
    - Covid: go to the patient's house
        - Same thing as regular but with more cleaning
        - Home exercise programs
            - They maintain anything they do together
            - Shoulder pain: pain free motions, pushing wrist into wall, table slides, progress to therabands
- Data collection interest: shoulder strengthen, range motion, muscular endurance
- Post survey:
    - Should target rehab hospital
    - Should use this game for about 20 mins
    - Would have an impact on the patients if they were to do the game at home
    - Motions to add: pronation and supination (turning wrist upwards and downwards)
    - Motions: arm out and rotate arm to floor then to ceiling, bend arm to 90 degree and push elbow to the lower body
    - Graphs want to know/ see: quality of the line, how long it takes to complete, measure force (strengthen, how hard they can grip)
    - Line graphs

PT3.Dr Martinez - notes by Sherry

Pre Survey

- **What kind of exercises do you normally give your stroke patients during your sessions?**
    - Depends on the patient
    - "The simplest way I can explain what exercises I give them is essentially the opposite of what they're doing"
    - "*If they can hold a controller*, but if they have issues with being able to extend that arm, a lot of time you're going to do is prolong the stretching for them. If you're going to be doing that, you can not only do stretching but you can use the muscles on the opposite side where they're tending to kind of stay in that position."
- **How many times do you have them repeat those kinds of motions?**
    - It depends; "If you have an overactive nervous system that is trying to put it back into that position. In that case, repetition and prolonged hold…"
    - More about how long they can hold the position
- **Games you used for the patients?**
    - Just very limited iPad games
    - XR
    - Neuro Con
        - It's a very expensive machine and not very fun or exciting either.
- **How much time do you think you would let patients play in VR?**

    - For typical balance training probably about 5 minutes to an hour (depending on patient)
    - Take breaks in between the hour
    - If the patient is very acute, then their tolerance is going to be poor
    - Will scale up the time of the exercise
        - "Last week you did 5 minutes, this week 10 minutes. And you scale it up."
    - Multiple times a day. Rather have the patients do 30 minutes for 3 times a day rather than 3 hours straight.
- **Metrics to measure mobility**
    - Prolong holds
    - The frequency
- **How are you currently monitoring the patient's progress at home?**
    - Through caregiver or family members. You can train caregivers to give the best feedback. Then they can give the feedback to the patient when they're training at home.
    - Give them written down cues
        - An image or paper
        - Website where they can refer to the exercises
- **PT's Insights**
    - Think midline is very important. Believes they can combine the exercises in spellcasters and it can really help them with the midline training too.
- **Age Range**
    - 55 and up
    - Neurological patients are a bit different, cause they tend to be the younger ones
- **How did the pandemic impact**
    - Dr. Martinez's client was able to stay open
    - Definitely tried getting people on telehealth, but it's much harder for neurological damaged patients because they need several cues (tactile, visual and audio) and not just verbal.
- **Exercises they do at home**
    - It just re-enforces what they do at the clinic
    - In the clinic, you work with them and give them feedback. Then, the patients work with the feedback to reach that new range of motions accordingly.
- **What if patients are reluctant to do things at home?**
    - There are psychological and social issues
    - If they're depressed, then they might need a different kind of support before the physical rehab
    - "I don't have any data to back this up, but I noticed my younger patients tend to be more motivated"
    - The older adults usually have caretakers and you can train them to help
- **Giving patients the motivation?**
    - Information and education helps
    - Some care about data while others just want to be able to do the things they like. Like golfing and knowing when they can hold their golf club again.
    - It's hard to find what motivates someone if you don't know what to look for. You can ask them about their hobbies before the stroke etc.

- **Speed or accuracy more of a criteria?**
    - For the upper arm, accuracy is a bit more important.
    - “For upper extremity, then you're more worried about accuracy, and speed isn't necessarily something you're working for... Reflexes like reaction time. We typically do it more with lower extremities and cognitive motor control.” 9hold peg test. (measure your reaction time.)
- **Telehealth**
    - For adults, telehealth is really basic. It’s just a 2 way communication. It can be zoom or any video chatting software.
    - There’s nothing more interactive yet
    - There might be more telehealth apps for kids

During the VR session

- Grip Strength Insight
    - Measuring the grip strength will be an insightful data
    - Take measure initially and again in a few weeks

Post Survey

- Thinks the game gives a lot of freedom
- “I will find at task that I want my patients to improve”
- Liked that it gives freedom for more complexity tasks and less
- Thinks other PT might use it
    - “I think people would like to have this in their toolbelt and make therapy more exciting”
- Data the PT like to see
    - Number of repetition
        - “Hey look, the first time you did this, you were only able to capture 10 orbs… or 5 orbs before your arm got fatigued in this position. You did 20 today.”
    - Duration
        - “The first time you were able to perform this one activity that I sent up for you for 1 minute, 60 seconds total before your arm get fatigued then you needed a break… so your endurance.”
        - Duration you can grip the controller while doing the task.
    - Accuracy based on reaction time
        - “Hey, you were able to… If you put different orbs in different positions… Say you change the colors of them. 5 blue orbs and 2 red orbs and they’re mixed up in a bunch of different positions and you’re just trying to get the red ones out… so now you’re looking at accuracy.”
        - You can present accuracy based on reaction.
- What kind of graphs would you like to see?
    - A bar graph with a pre and post to show the progression of the patient

PT4.Dr Golben - notes by Sherry

Presurvey

- Post stroke patients aren’t very high. But a lot of shoulders and elbow patients.

- **Home exercise programs**
    - Flexion Abduction and strengthening
        - 12 rep (2 sets) and multiple different exercises once or twice a day
    - External Rotation (needs more training)
        - Lower load, but 20 to 25… Up to 50 rotations motion.
    - Based on the muscle you're trying to train
    - **Earlier on**
        - Have patients do exercises more frequently. Probably twice a day. 10 rep or twice.
        - Given the population I work with, not typically stroke… I'm looking to progress them into strength once they're in a spot they can do so.
    - **Later on**
        - Once a day, then every other day (2 sets, 12 rep with resistance)
- **How long are the sessions?**
    - 40 minute sessions
    - Typically 30 minutes for a follow up
    - Depends on where you work
- **How many times do you see a patient a week?**
    - Earlier: twice a week
    - Progress: Once a week, Once a month, then they're on their own
- **Digital Games?**
    - No, not at the moment
- **Are you interested?**
    - "I think it'll be an interesting concept"
- **Age Range**
    - Around 50 to 60s
- **Keep track of progress**
    - We have documentations of their progress
    - In terms of results, we do more functional goals and outcome measures. For example, for the shoulder, there's the DASH… The patient will answer questions and indicate the difficulties they have with different functional tasks. Then, they get a score.
    - The easier thing to track is Pain
- **Motivator**
    - Pain. If people don't have as much pain, they will think they don't need to do it as much anymore.
    - Says stroke will take a little longer
- **What would you like to monitor?**
    - Range of motion
        - How high can they lift their shoulders, and behind their back.
    - Strength
        - There's hand based resistance
        - But it's not super quantifiable
    - *Stroke is probably going to be longer term plan care. (Seeing patients 3 times a week)*

        - *They'll probably get see the most initial gain first then it'll slow down as it progresses*
- **How did you work with patient during Pandemic**
    - DoxyMe. Encrypted video service. Zoom didn't have enough privacy setting
    - Earlier on in the pandemic, 50% was via telehealth. But the other is in person.
    - Now 90% of the caseload is in person.
    - We just had to change more cleaning practices. We mostly kept the choice of doing telehealth for the patient.
    - The home exercise program
        - Just the video of the exercises
        - We used it before the pandemic

During the VR Game

- **Observation Notes:** The person in the VR connected the lines from the wrong side at first
- PT asked if there's any tracking for wrist motions
- **Observation Notes:** The person in the VR when creating their own spell missed which orb was the first one they placed. (When they were first creating the spell)
- PT wonders how the motion can translate to patients who have a different morphology than himself.
- Wondering if there's a setting for patients and PT can join the same realm from different locations.
- Asked about wands on both hands?
- I would like a library of spells - PT
    - Global library. From other patients to this patient.

Post Survey

- "It actually looks quite easy to figure out… My son was able to figure it out pretty easily."
    - "Maybe there can be a beginner and advanced tutorial for the PT"
- "For my current practice, it might need more functionality. But it has shown its potential and perked my interest."
- ***How we would use it ideally:***
    - Set it up in clinic
    - Have patient do it in clinic
    - Have them have a VR system at home to do it
    - Challenges:
        - How many clinic and patients have VR
        - Might be mostly younger audience who have this tool
- Probably as of right now, only a few clinics can afford this. And they'll probably do it more during the sessions.
- **Data to track**
    - Test range motions (a big motivator as well)
        - It's really exciting for them to see their movement and progress
        - "You gained 3 degrees more!"
    - Patients can even check themselves. Measure the distance of their movements.

            - Angles
            - Distance
    - **What kind of visualizations do you prefer for the data?**
        - Just graphs of measurements
        - Not a big graph guy
    - **Do you use any tools that spit out any graphs for you?**
        - Not really. We just use some tools which spit out a number.
        - The only graph I typically look at is the ones that spit out the numbers
            - "You scored this much since last visit"

PT5. Dr Kadlecek - notes by Rutul

- Shoulder press, lift hand above, lift hand on the side, lift hand towards the front, bend the hand backwards near the neck area, internal external rotations
- Reps - 3 set of 10 - 15 repetitions depending on patient goals - make sure not aggravating them back off with weight or repetition if that happens
- 45 mins to 1 hour sessions with 6 - 8 exercises and rest periods
- Not used digital games but does online coaching
    - Finds patient's goal
    - Deliver exercises and help through app
    - App has video conferencing and he does it sometimes (30 percent of the time - higher pay plan)
    - Build online course on separate platform kajabi also which some clients use
    - App is called trainerize
- Telehealth with zoom and docky.me (HIPAA compliant) - patients use it for fitness purposes also and not just physical therapy
- Would meet with patients - 1 to 2 times a week
- Take home exercises - depends on patient's severity and goals : keep it simple
    - Upper body
        - Shoulder press
        - Lateral raise (raise hand on the side)
        - Bent over row
    - Lower body
        - Squats
        - Lunges
        - Split squats
- Tracking progress
    - First visit set goals and expectations - Fill a form and define 3 goals that get down to the core issues they are facing and over time track reps and sets
    - Compare that with what they can do after 2 months or more depending on how they work with him
    - Objective outcome - PSFS = functional outcome measures : based on what client deems important - create and break it into ordinal scale out of 10 and they can keep track of that
- Motivating patients:

    - Starts at the beginning, setting clear expectations of how long it is going to take and what kind of effort they need to put in
    - Encouragement along the way as it is a long frustrating journey which is normal
    - Main issues is the expectations are higher than what they achieve to get
    - The patients are asked about a small win they got after a certain week to show them progress
    - Bought - force frame equipment by Valve connects with iPad and shows the force in newtons - can test muscle strength at multiple joint angles
    - Prefers bar charts and try to find 2 / 3 functional measurable goals - e.g. someone who can golf first can do 5 holes then 9 holes then 18 holes and so on. Can they do more and are they enjoying it
    - Try to measure quality of life objectively on PSFS
    - Age range of patients - 40 to 65 : see more musculoskeletal patients than stroke patients
- Post survey
- Resemblance of gestures to actual exercises
    - Would be useful in retraining for people who had stroke because their ability levels are lower - sitting in chair and doing these will be useful
    - It probably wont help his fitness users
- Selecting a spell - if someone has stroke selecting the option might be difficult
    - Make the buttons bigger so its easier to collide with them
- Gesture creation process - it made sense : curious to know if there was a way to measure the accuracy of the line that the patient draws
- Metrics interested :
    - how much deviation from straight line
    - how much time they took to complete it
- Depending on the patient's ability they will be able to do the tracing spell part.
- How do the patients find this ? - is something he wants to know
- Size of shapes / gestures - vary on patient (some will start with large and some with small)
- He do sees this as a take home exercise - might be hard to implement for older populations but anyone under 70 could be open to using this - in the next two decades this can become viable
- Number of times in a week the patient would use this at home : Daily for range of motions | 2 - 3 times a week for strength exercises
- 10 - 30 mins of gameplay sessions
- Can motivate a certain person who likes this style of game - ideal to have a suite of games
- Improvement on the pace of recovery not sure - maybe make them more consistent and compliant maybe
- He owns a business since 2 years - strength training | musculoskeletal focused less on stroke patients

PT6.Dr Thomas - notes by Sherry

Pre Survey

- Works with stroke patients

- Exercises they assign include function of shoulder - reaching tasks break down into components and work on them e.g. if person need to reach for a coffee mug on counter top, she observes their movements and then break it down into different components such as strengthening the shoulder, forward flexion of the shoulder, extension of the elbow and opening the hand,
- She will do different activities to work on each of the components and then try to the whole function of reaching out to grab the coffee mug again to see how its improved
- Standardized tests - measure range of motion using measuring tool, measure strength using strength mesasurements - according to her the best test for a stroke patient would be to test the function e.g. lifting a plastic cup vs lifting a ceramic mug
- Session last for 1 hour - pick one function to test and then choose activities (first 5 mins opening assessment what functions will we look at, last five minutes closing assessment, 10 minutes of breakdown of motions and activities - 3-5 specific motions in one session)
- Age range of patients : 60+
- In a week they come 2 times for sessions
- Take home exercises: 2 or 3 activities / movements to focus on after sessions for days when they don't meet - use functional measures to keep track of progress. Raising arm to feed themselves and reaching for something in the drawer, cupboard and countertop - give them in form of videos so they can replay and do along with them. Also gives pictures (custom made)
- Does not use graphs / visualizations
- People might do better when its focused on isolated parts of the arm but when they are combined to do an activity like reaching out or combing hair its hard for them
- Post stroke - go to hospital and then discharged for home ./ nursing facility for a couple of weeks. Then at home therapy sessions and then outpatient sessions for 2 months. (often duration of therapy is determined by the length of their insurance coverage)
- She goes to people home and work with them when their insurance stops covering
- Medicare has limitations and complicated to navigated - its not enough for stroke patients
- Motivating patients - people stop when they dont have coverage / dont see progress enough - being able to see the changes is motivating
- During the pandemic - she has been using telehealth - with virtual sessions but not with stroke patients - do one on one home visits for stroke patients
- Telehealth - back pain patients / clients that general strength / balance - use video conferencing and do as I do manual mimicking
- Used some music blog + sensor on figures and tap on ipad - patient purchased on their own - not used any other apps / games - she would be interested in using it in future
- Exercises include simple strength measurements.
    - Test if they can hold up a synaphome cup, and then a ceramic cup. If they can do the first one and not the second one, Dr. Thomas can measure based on that
- **How long is the session with your patient?**
    - About an hour
- **Rough estimate for each session?**
    - Not really, but usually the first 5 minutes will be a function to look at. Then, the last 5 minutes will be spent revisiting the same functions we looked at in the beginning.
    - In the middle, it's usually 3-5 specific motions

- Whether it's reaching, grasping… We pick one function to focus on. Then we choose some activity to promote it.
- **Typical Age Range**
    - Over 60
- **How many times do you typically have them come see you in a week**
    - Twice
- **Do you have take home exercises?**
    - Yes... Usually I give them 2 or 3 things, activity or movement to focus on after each session. So they have 2 or 3 things to focus on for the days I don't see them.
- **How do you keep track of progress they make at home?**
    - As many functional measures as we can come up with. Any functional thing we can measure...
    - "How far can they get the cup to the mouth? How well can they reach for something in a drawer, counter and in the cover."
- **Do you use any kind of data or visualization to keep track of their progress?**
    - No, not typically
- **What are some common strokes issues in stroke patients?**
    - A Lot of times people can isolate things well... (hand opening... Isolate the movement of the elbow) but you ask them to put it together, it doesn't work so well...
    - The arm is a big factor with transferring too... Getting up and down is an issue. Up and down with stairs too, because they only have one hand and it becomes challenging sometimes.
    - More reaching, being able to perform reaching tasks. Because that requires the whole system to work... The shoulder, the wrist and hand…
- **Is there a specific range of time after they have been stabilized? What is the time period they actually come to see you?**
    - Average 2 months. Typically a post stroke patient might go to the hospital... Then they typically get discharged to a rehab center or home... They might have home therapy come to the house for a couple of weeks.
- **Is there a certain time in the insurance for the amount of time you repeat the therapy session?**
    - Yes, common with that age group, they might have medi-care which also has a specific type of restriction... But from the Physical therapy perspective, it's NOT enough.
- **How long typically is the range of time is that they have to continue until they feel fully recovered.**
    - It depends on how much work the patient is willing to put in.
    - They can make some gains again if they start readdressing everything…
    - The exercises and activities they are given have to be changed periodically to address the new deficit.
- **How do you keep your patients motivated?**
    - It's tough. When the progress gets smaller, it becomes harder to stay motivated.
    - Being able to see the change and function is what motivates the patients.
- **How do you work with them during the pandemic?**

    - I have been using Telehealth with sessions but not specific with stroke patients.. I was doing one on one on their home visits.
        - Back pain patients, or a client that have general (or wants to improve balance and coordination.) It's more video... do as I do. We're going to do this balance movement together... They're watching and mimicking me. And I'm describing how to improve upon their movement.
- **Do you provide them in some sort of written format or handout?**
    - Lately I have been using video. I will either myself do the movement or video them doing the movement... So they can replay or play along while they're playing. Still using pictures and video for the last year…
    - The videos are all custom made
- **Have you used any digital games for therapy sessions?**
    - Not consistently... One client has some products. They call it a music glove and it has sensors on the fingers and it plays a song, and she has to tap in time with the game. That's something the patient purchased on their own.
- **Would you be interested in using softwares and games?**
    - Yes, definitely

During VR Game

- PT thought the finger isolation while holding the controller might be a bit difficult
- Liked that the game allows you to make a criss cross movement across your body.
    - Thinks it'll help with midline recovery.
- "Yeah, i think that's fantastic... Cause you can do as small and big as you want to make the patient do…"

Post Survey

- "I think there's a lot that can be done with it… I think my patient's going to want to try it."
- Probably will have them do 10 minutes and then a few minutes everyday
- "If their main complaint is that I can't drink from a cup… How do we measure those? I don't know…"
- "I think there's a lot that can be done with it, I think my patients are going to want to try it."
- **Things for the game to measure**
    - How long they're actually moving
    - How accurate their movements are
    - Tolerance to time
    - How many repetitions they're able to do
- **Types of graphs you like to see?**
    - Bar graphs, line graphs
    - But it should still be patient focused

PT7. PhD Michael Powell - notes by Kassandra

- Experience with physical therapy himself
- He did grip strength, band weight, presses, a lot of hand work
- Went to therapy for about 7-8 weeks to one week
- Band exercises at home, grip strength did at least 10-15 times a day (not over do it)
- Keep track: contacted with therapist to see if he was overdoing it or not
- Post survey:
    - Similar movements as when he did rehab
    - Motivation: will patients get bored of doing the same thing
    - When he worked at a rehabilitation center:
        - shoulder rotation, circular movements, arm movements while using weights
        - Started off easy to harder movements
        - Data collection: motion data, heart rate, smoothness, used copy track, EKG
        - repeat all the exercises, 8 weeks an hour a day
        - Progressed based on the person's strength
        - PT data record: strength, range motion
        - Looking at the quality of the movement

In the Game/ post survey

- Is the current game experience consistent with their therapeutic practice?
    - Yes, interesting as you can creating your movements.
- What do you think about the gesture tracing mechanic ? In what ways is it consistent with therapeutic practice? In what ways is it inconsistent? Is there something missing that should be added or modified?
    - Yes pretty similar only difference is as he used weights and resistance
- How big do you think the gestures should be ?
    -
- What do you think about the gesture creation system? Did you find it clear and understandable to use as a physical therapist?
    - Didn’t have anything to change for creating the gesture system found it understandable
- Is there a particular motion or motion type that is missing?
    -
- Do you think this game would motivate patients to perform these repeated motions more often ?
    - Yes it could, he's interested cause its new, wants to explore it
- How do you think other physical therapists might use this game? How might it supplement traditional therapy?
    - Yes it could, he's interested cause its new, wants to explore it
- How do you think this game might impact the pace of recovery for patients?
    -
- How often and for how long would you have the patients play this game for ?
    -
- What are some of the things you would look at to track a patient's progress when they use this game ? and what kind of graphs or other visualizations do you prefer ?

PT8. Dr Pancoast - notes by Sherry

Pre Survey

- Most of my people are neurological impaired. Stroke injury, spinal cord, multiple scoliosis, amputees, etc.
- **What are some exercises in respect to shoulders, wrist and arm?**
    - Proprioceptive Neuromuscular Facilitation (PNF)
        - Involves diagonal movement of shoulder, leg and arm.
    - Weight bearing exercises on their forearm and shoulders
        - Do it while they're lying down or standing
    - Eyes, wide and T. To work on the stability of scapulas themselves
    - (OT tends to work more on the fine motor stuff with the hand and wrist etc.)
    - Sabo (device that a person wears on their hands, and it's designed for someone's hand is flux. The device will help them extend their fingers)
- **How many times do you have them do the exercises?**
    - 2 to 3 sets of 10s. Depending on how impaired the person is.
- **How long would a recent stroke patient sessions be?**
    - Depending on their level of impairment, I typically have people in 2-3 times a week. Occasionally OTs might have 4 times a week.
    - 45 minute sessions with occasional ½ hour sessions.
    - For double sessions, the person will get 1.5 hours.
- **How's their motivations and how do you keep them motivated?**
    - When someone has hand or arm dysfunction, they are very motivated to get their hand back → it provides a large amount of frustration for them.
    - Leg normally recovers faster than arm
    - Challenge part:
        - When progress is slow
        - Frustration on how their brain and arm is recovering
- **Age range**
    - It's getting younger and younger for stroke patients
    - Average across the clinic is between 50 to 70s (baby boomer age)
    - Youngest around 5 in the clinic.
    - The oldest Dr. Pancoast had was 100. And the youngest is around 13.
    - A lot of teenagers have a different kind of stroke which causes it to burst. AVM.
- **How to keep track of their progress**
    - CPG. Core set of object measures
        - Most of the measures are mobility based
            - Walking speed, endurance, balance, self report etc.
    - Evaluation at around every 10 visits
    - OT have objective measures for the arm
        - Upper Extremities functional index
        - Quick DASH (disability of arm shoulder and hand)
            - Self report of impairment level with regards to arm
        - 9-hole peg test

        - Blocks and box test
        - Strength measures
            - Grip strength, manual muscle strength
        - Range of motion
    - Use the information to see if the data is statistically significant
    - Haven't done a Fugyl myers test in a long time… cause it's designed for a lab not really in real life. It just takes too long to do.
- **Would you be willing to share with us some of the sample scores?**
    - I can direct you towards an online page
    - Shirley Ryan Ability lab
    - Rehabmeasures (sralab.org)
- **Any games or digital tools you use for the sessions?**
    - Wii occasionally
    - A fancy leg press from Europe
        - Avatar based things. You can choose a game.
        - You can move the ring, by pressing the leg press.
    - Driving simulators
        - Sit on driver seat
        - Huge monitor in front of you
        - And windows around you
        - Gives you a map and have you drive around
    - Dinovision
        - Big wall with plastic cats on them
        - If you look at it, it'll light up and you have to press the plastic that's on top of it
    - Bionest (ITS)
        - You have to tap a screen. Does numbers and letters for people to touch.
- **What did you do initially during the early pandemic?**
    - We went exclusively telehealth around the 19th. A few days after lockdown.
    - We serve a lot of people in the lower class, so a lot of patients don't have good digital resources. A lot of patients couldn't do telehealth, bc they don't have a phone, internet or device with a camera.
    - 2-3 patients which had to come in because it didn't feel comfortable doing it through telehealth
    - Did exclusively telehealth from middle of march to end of may
    - Medicaid didn't pay much for telehealth, so it's really restricted too
- **What kind of apps did you use for telehealth?**
    - Contracted with Bluestream. (only allows 3 ppl)
        - Has screen sharing
        - I can show them diagrams
    - We can't use zoom, google meet, skype etc. because it's not secure
    - Web PT program
        - They have students create home video exercises
            - I can change the number of sets in this website
- **Home Exercises**

    - Web PT. Select some videos, modify the sets, and information. Can create a pdf and written version or be sent with a link through email.
    - Web PT isn't all inclusive. I have some pictures of positions taken from colleagues. Also have stick figures drawings for people.
    - With regards to the arm, there's an exercise that's based on the PNF. A person lies on their side, and they can pull their arm forward and back. Make leg and arm overflow. They might get more activation in their scapulas.
    - Weight bearing.
    - Stroke patients. A lot of them have painful arms, so it's painful for them to sleep. Do some sleeping positions with them.
- **How often ?**
    - Every other day. Every day, they get to be sore
- **How to keep track of their progress**
    - Usually just ask them and believe
    - Web PT also provides a way to let PT see if they have used the link
    - Sometimes I'll people what exercises they're still doing
        - They might demonstrate if they have been doing them
        - If they can't, it tells me that they might not be doing them

During the VR Game

- Thinks the controller might be a bit challenging for stroke patients, because oftentimes they cannot separate their fingers. Maybe it'll be good for people with less impairment or already made some progress.
- Like the concept with interactions with things
- Can you save the spells in some sort of exercise program, so you don't have to set up the exercises every time with the patient? (similar to the library of spells suggested by Dr. Golben) **
- ***Change the contrast in colors?***
    - "I can see the yellow and white together, but for strokes a lot of times the visual impairments and visual challenge"
- **Feedbacks:**
    - Changing the amount of animals spawning?
    - "Move the wand to the horse"
        - Cause for stroke patients, they might lose some visuals after a certain amount of time. So they might not see the whole thing.
        - So it'll be important to see the cues. It will help the therapist understand how to actually cue them.
    - A change in environment?

Post Survey

- An old VR they tried
    - The design has a camera that recognizes your whole body. Made a lot of sense on paper, but you had to have a certain amount of space and limit the amount of ppl in the background.
        - Appreciated Spellcasters didn't have to take up too much space.
- The gym square space is large, but it's still like a circus cause there's too many patients and people.

- **What do you think of the tracing mechanic?**
    - "I think it's interesting… I'll be curious to see how it'll work for some of the bigger movements like using your whole arm."
    - "I think the majority of people will be interested in this, just because it's something different"
- "You can make it a strength exercise by adding a weight to their arm. But most patients need control rather than strength. So I like how it helps with a very finite movement. You have to do it a certain way rather than the benefit."
- Their hemipedra might make the patients have more trouble reaching
- We only have 45 minutes with the patient, so they can't really spend 15 minutes creating the exercises
- **Variables to implement**
    - Being able to change direction
    - Speed component (biofeedback to force people's too quick with emotion to slow down and someone who is going too slow to speed up)
- I think it's great to take home exercise, but the challenge is the technology.
    - Most patients are using flip phones
    - Literacy issue
- **If they were to use this kind of system, how long would you have them use it and how frequent?**
    - 15 to 20 minutes at a time
    - Once or twice a week. Probably won't do it every session
    - 2 - 3 times a week as a take home exercise
- **Variables interested in monitoring and keeping track of Patient's behavior**
    - Number of repetitions they're able to perform
    - Number of repetitions they successfully performed
    - How many successful vs failed attempts
        - Give insight about the quality of the movement
    - Just a chart would be fine

PT9. Sarah - notes by Rutul & Kasssandra

Pre survey (this might be incomplete so keep adding more details)

- Occupational therapist
- In a PhD program doing VR research for rehab (cognitive and functional) - have experience with Xbox kinect induced t
- Worked with stroke patients in acute care centers and nursing facilities.
- Range of motion with shoulder, elbow and wrist, finger dexterity, strengthening exercises, functional tasks (table top, buttoning, zippering, reaching out)
- Difficult for patients to grasp with the affected side and finger dexterity
- Exercise they assign - Theraband exercises for strength, active range of motion, passive range of motion or active assisted range of motion, fine motor tasks practise buttons, put rings in poles, reaching out to grab an object
- Age range of patients - 48 - 80

- Repetition of exercises - depending on their strength and needs - 10 reps take break 10 reps (20 reps a day) a bit of trial and error
- Have illustration of exercises in a pdf handout
- Exercises are functional and have a purpose e.g. cooking / dressing - related to daily activities
- Take home exercises - repetitive exercises like therabands to help improve strength and range of motion. Stroke patient may need primer with range of motion before moving forward with strength exercises because of their rigidity / stiffness.
- Constraint induced therapy (use affected arm to do activities e.g. turn water faucet on)
- Outpatient sessions - 1 hour or 1 ½ hour sessions once a week
- Common struggles - pain, spasticity, sensation (someone may not be able to touch something cold or hot)
- Motivation - some people may not listen and some might be interested more - therapist repo and relationship with the patient is valuable to keep them motivated. The interaction is positive it will be very helpful and motivating.

In game

- "I like the fireworks, it's just like when we were on campus and did fireworks"
- "I like how you are able to pet the animals"

Post Survey

- "On first play, something that would like to be addressed is the visual background since their are visual impaired patients"
- "When first doing the task, I didn't noticed the big ball until it was mentioned, would like a different color ball for those who have difficult cognitive visual task"
- "Worried if the patients are going to know where in space they are supposed to be for one point or another - liked that it is at the tip of the cue"
- "The wand seems a bit long and felt like i was putting my arms way back"
- "Have a more directive target since it was hard to tell"
- "Be careful with colors as their are colorblind people"
- "Actions are good and how you can take advantage on the 3D environment"
- Loved how their are few interactions with the controller
- **Is there a particular motion that is not in the game that you would like to mention?**
    - More continuous patterns vs stop guided patterns such as wrist rotation, figure tracking if possible, incorporate trunk posture/ positioning and weight shifting that makes them look around in a 180 degrees angle
    - Explain to the patients why they are doing the movement
    - Instead of arm raising do shoulder/ arm inflection
- **Do you think there is anything that is missing in the creative process?**
    - Incorporate sets
    - The interface works really well would like to have a list of spells
    - Would like to have a randomized feature to do the sets so it's different every single time
- **How long would you ask the patients to do the exercise/game?**
    - Depends on the patients
        - Spend 20 min do the presets
- **What types of graphs would you like to see?**
    - Layer overview so gets more into detail each graph

    - x -axis to be time and y to be reps, range of motion
    - Likes line graphs better than bar

PT10. Dr Laskey- notes by Rutul

Pre survey

- Physical therapist work in regional hospital in New york
- Sees stroke patients and teaching at a school of Physical therapy
- They have both PT and OT at the hospital
- PT work on gross motor - general cardiovascular exercises, reaching to get an object, tracking object, throwing balls. Stacking cones, strength exercises with weights, resistive exercises with theraband exercises,
- OT work on fine motor - peg testing, cooking, manipulating utensils, writing
- Sessions - 45 mins (sometimes 30 mins or 60 mins depend on patient condition) - break sessions into 15 mins (upper extremity, lower extremity, gate and balance)
- If patient is coming only for upper extemity - 15 mins range of motion and stretching, 15 mins of strengthening, 15 mins postural control (motor control)
- Used board games for reaching - trouble board game and dark board (target), bean bag tosses.
- Motivate patients based on their goals and needs. Develop short term wins - e.g. 3 reps -> after 2 week -> 6/7 reps of bean bag toss
- Cant dress themselves - make functional tasks (do activities that will help them dress them in parts)
- Tests - depends on their impairments - DASH and QUICK DASH for upper extremity, BERG test (for reaching, balance and amputation), Dynamic GATE index (DGI), functional GATE assessment (FGA) (go to orthotoolkit.com) - LEFS, SPEDI
- She does one of these in their first visit (5 mins / 10 mins) and recheck after 4 weeks or 8 visits
- She conducts 2 / 3 sessions per week - if strength exercises need to be done in alternate days to allow for some rest)
- Stretching exercises, strengthening exercises, neuromuscular exercises - ensure all that are safe and do not require supervision. Sometimes patients might not be in a condition to be able to make their own decisions so keeping it simple is important - neuromuscular (several times a day), strengthening 3 /4 times a week (depends on purpose)
- Telehealth / pandemic - doxy.me for video conferencing tele visits, did not do evaluations for first visits. Now all are back to in person. Tool - EMR software, AGP2GO to set up exercises and get PDF. also have video form of exercises for reference

IN GAME

- Concern about people who might have grip strength issues, elbow and shoulder strength : Jared suggested adding trackers as a solution
- When Patients can't grip and hold things - they use some weights
- Younger patients would enjoy and have fun using spellcasters for therapy

POST SURVEY

- Missing motions - supination, e.g. opening door nobs,
- Getting a summary of spells done with reps will be nice to have to see how the whole session went

- Would be interested to see this in a 2d format (without VR)
- Game experience is consistent and a lot of what they do with patients is reflected in the game e.g. reaching and extending / stretching
- Perform this under supervision - if patients were do it at home it may be challenging without supervision
- Frequency of usage -> once a week not use it every visit but good for younger patients (15 mins at a time)
- Both in VR game it will be great - cost is a concern and how it will be covered by insurance will need to be seen
- Metrics - successful attempts vs total attempts. When the accuracy is greater (e.g. beginning of the exercise or the end to see whether it is about lacking practise or is it fatigue), interested to see how closely they stay to that line and it would be nice to be able to change / customize the width of the safe zone area. Are they drawing straight line or is it wobbly (smooth)- interested in a visual representation of their attempts and velocity (it would be cool to be able to customize velocity too) - tracking time in game will also be nice
- She can see this as an attractive option for many patients and its very imaginative and can see lot of PTs will be excited to use this with their patients (53 mins)
- Figma:
    - Should have a baseline (initial visit / first assessment of the patient)
    - For range she would be interested in setting a baseline for range and goal what they can achieve depending patient age
    - E.g. first assessment - shoulder flexion range of motions is 40 degrees (goal is 140)
    - Email is strict - sending anything external has time limit (expires in x days) : they cant use gmail they have use something that is HIPAA compliant
    - Ransomware is a big concern they had recent attacks
    - So notes sent into the game will be better
    - Interface is easy to understand. Double check the terminology - use specific terms in stroke physical therapy
    - She prefers bar graphs - easier to interpret for patients too
    - Adding Standardize outcome measures will be interesting (a relationship between these and the game will be interesting) - is this investment going to be worthwhile because we already have a system in place so how you game will work with that is interesting question.
    - She would be interested in a library or pre programed list of spells
    - Patient view - keep it simple in terms of graphs and make sure buttons are big due to stroke (accessibility) and visual impairments
    - Interval on the axis for graphs - weekly is better as they have to update insurance weekly. By sessions could also work.
    - Speed of the movement is interesting (how many time did it take a patient to complete 4 reps after 4 weeks compared to at the beginning) - improvement in terms of speed to complete
    - Using other / strong hand - Mirror box therapy (hide affected hand in a box) and practise with dominant hand - it helps improve the affected hand - bilateral work is important for neural work

- Active range of motions (someone might be limited to 10 degrees of wrist motion - after few sessions they might be at 30 degrees that is how they track progress) and dynamometers (grip strength / resistance)

PT11. Dr Michaela Sandock - notes by Sherry

Pre survey

- "I been working as a therapist for a year and a half now, but I definitely worked with a good amount of stroke rehab patients"

------since Michaela knows a bit about the game already, many of the pre surveys were skipped-----

In Game

- "I love the little affirmations that you added, I think that's really nice… like kind of at the end where they feel like they accomplished the task"
- "I like the fireworks, and confettis, that's really fun.. I think the book looks good. I feel like it's readable and I can understand what's going on.
- "I like the addition of the external rotations and other rotation ones."

Post Survey

- **Was there anything you would add or any suggestions in terms of shapes, spells?**
  - "I feel like you got everything covered...crossing the midline, shoulder rotations, extensions"
- **Was there anything missing in terms of how you assign patients a set of exercises?**
  - "I don't think so, I feel like it make sense that the therapist will go into the game first, like they would set the amount of reps...and then when the patient goes in and plays the game… Do they see the whole book?"
  - Rutul: "At the moment we have different spells for each page...
- **Do you have any feedback on the accessibility features we incorporated this time around?**
  - "I feel like everything makes sense… I like that you had the directions written… Like the fairy had the little dialogue, but she's speaking it too."
  - "I feel like the only thing that might be beneficial is that if there's a way that the therapist could give specific cues for certain tasks. Like add in little notes or something… like when they went to add a spell… They can add in 'Use your shoulders when completing this spell' or 'Use your wrist when completing this spell'".

App Playtest

- "So far, it's very intuitive, and i'm not very verse in technology"
- Thinks the gesture graphs would make more sense if it's side by side rather than stacked
- "I think it would be cool for the therapist to cue the patient while they're completing the game"
- Never seen a spider graph before
  - "I don't really understand this chart"
- ----- *observation*-------
  - Rutul was the one who pointed out about the *Back to Overview* button. She had her cursor towards the navigation menu after she finished all the tabs
  - (Maybe if we ask them to find it themselves next time, we would get a better understanding of the visibility of information in the app)
  - Got confused with the accuracy and gesture page, since it seems to be leading to the same thing

    - "Maybe getting rid of the gesture one would make more sense to me"
- ADP.com to see exercises for therapy
- **Is there anything you would like to organize differently or you want to see added or removed…?**
    - "Just the little comments I made about the graphs… like a better layout this way or that..There's just one that's confusing to me, just because I never seen a graph like that before so it's not as intuitive to me…Otherwise it's very user friendly and clear. The 'add patient' button looks just like something she would use"
    - *(Referring to the Patient Portal)* "I feel like from a therapy standpoint, it would be helpful to know what diagnosis this patient has… like this patient have left hemiparesis or that they have like a visual impairment or a hearing impairment."
- **Report you like to see with Insurance?**
    - "In an outpatient scenario, I don't think it would be that difficult to get around, I feel like you don't even have to say you're utilizing a game. You just can say that you're working on upper extremity mobility and you're doing repetitions of like shoulder flexion and rotation and abduction. And you're increasing the range."
    - "In an inpatient setting… If we want to use this game together in the client during their therapy session… Yeah, I would try to use language to explain what we were doing from a therapy, functional and an exercise standpoint versus writing in my notes that we're playing a VR Game…"
    - "We have codes that we build… I have an exercise code, a walking code, a neuromuscular code. There's not really a code I would fill with VR, so I as a therapist will just have to find a way to fill for this under exercise or under muscular re-education and just explain what we're doing in words other than just saying that we played a VR Game."
    - "I don't think I see the insurance having a problem with doing that, as long as you're continuing to reach the goals you set for the patient."
    - "I think if insurance companies ever wanted to look into it… I feel like every one of these like showing a timeline, and showing measurable progress and showing prove that the game is effective."

12. OT Alex-Jo (Not complete - only first 40 mins transcribed by Otter)

Unknown Speaker 0:00
No, it's

Unknown Speaker 0:01
so good to see you just need to. It's almost I think it's actually almost been 10 years. Yeah.

Unknown Speaker 0:10
It does not feel like that.

Unknown Speaker 0:12

No, it does not.

Unknown Speaker 0:15
Yeah, it feels like yesterday we were in New York City.

Unknown Speaker 0:18
I know. I definitely reminisce on show choir, like still show choir nerd keep down.

Unknown Speaker 0:25
Always. So congrats on your new licenses. I remember you getting, yep. license to practice. That's so cool.

Unknown Speaker 0:37
Thank you. I'm excited to be a part of all of your stuff, too. I seen you on Facebook, sharing all your accomplishments and all of your work. So I'm very excited to help out. Awesome. Yeah,

Unknown Speaker 0:49
we're super glad you're here. This is a new, a newer project that we're working on. I think most of the stuff I post is about the spoken game for the speech therapy, but this one is for stroke survivors and physical rehabilitation. So we're excited to show it to you.

Unknown Speaker 1:11
All right.

Unknown Speaker 1:11
I think we have a few more people coming in, they'll probably show up around five o'clock. Yeah.

Unknown Speaker 1:19
So yes, while we wait for them, why don't you give us a bit of background of yourself and how, you know, you work with patients?

Unknown Speaker 1:29
Sure, um, I've been a student up till this point, I haven't actually even started my true career yet. But I have part of my schooling, is my last six months, I do different rotations. So I've done one in the mental health rehab. And then my second one was the physical health rehab. And that second location, I was at a outpatient rehab therapy. And so I saw a mix of Orthopedic patients, pediatric patients and a little bit of neuro. So I was telling Jerry, I haven't seen as much neuro as much stroke. Um, so I may be seen, like four stroke clients. And, yeah, it's, um, isn't as acute as an injury, but it's getting them back to doing, you know, again, they're moving back moving back to everyday life things. So,

Unknown Speaker 2:28
you mentioned you worked with a couple of stroke patients, could you describe a bit more? How you work with them? Like, what sort of exercises Have you typically assigned them. And just so you know, we are basically with this game, we're kind of exploring the upper arm extremity. So we're looking at

shoulders, wrist, elbow, and maybe the trunk part, and the neck rotation goes along with it. So in those areas, what are sort of some of the exercises that you've kind of worked with patients?

Unknown Speaker 3:05
Sure, oh, it is all the upper upper arms. So that is our specialty. And, um, I have to say it was more rote exercise that I wish was wish it was more, um, simulations of white things. So a lot of what I've seen was, it's called the BT II and it is a machine that you attach different tools to. So it does like different types of movements, like this type of movement, or like, like I said, like more exercise like pushing, pulling, rotating, like driving car, things like that. Um, and then we have, just like things we've created for like the table, they get range of motion thing on wheels to have their arm on, to roll it around, come back and forth. And this like arc that sits on the table where you push things through the arc, whether it be assisted with other hand slowly moved towards using your arm fully. Um, the more different thing that I saw with one mentor, she was helping him to write, to print and to do cursive. So he was farther along. Having, you know, setting up shelves and having them put things on shelves, taking them down from the shelf, at the end, they did basketball, passing basketball, back and forth. So having that hand eye coordination again. So that is basically what I saw, like all of it, and I've seen

Unknown Speaker 4:55
Okay, and could you describe you mentioned some sort of a tool Can you describe a tool,

Unknown Speaker 5:03
um, it's called the PT II. And I can't remember the full name for it. But, um, it basically looks like, it's like a big pole, and has this big, like round thing was a tiny hole. So there's rods that can go in. So each tool has this rod that you'd plug in, and like one was like a steering wheel. So they would just either like turn one way or like, go back for. And we typically used a strap that connected to his or her hand. So they could close it all the way onto whatever tool they needed. So if it was like, one of these, it was harder to keep the hand closed, as they came up, they use a strap as well.

Unknown Speaker 5:58
And do you typically do like a combination of movements and activities? In general with patients? Or do you kind of isolate and also do like solo purposes, like maybe just extending the arm forward?

Unknown Speaker 6:15
Or,

Unknown Speaker 6:16
you know, is it are the activities kind of all combined with multiple motions?

Unknown Speaker 6:25
In terms of isolated motions, we do like manual therapy where my memories coming back now we did mirror therapy, where we you know, just move, extend and flex the fingers or the rest and things like that. So it did do some isolated manual therapies and massage and press and hold Okay, for hold as best as they could and, and then I guess I would say a mix of isolated movement, and then the combined movement all together. And

Unknown Speaker 7:04
how many times would the patient be repeating these exercises and how many sets

Unknown Speaker 7:12
um, with like placing hold and things like the isolated, we probably do, like five to 10 reps. And we probably do like, not too many sets, like 123 sets, whatever the person could tolerate. And then at home, I want to say that it twice a day, 10 reps if they're doing those isolated things. Okay.

Unknown Speaker 7:41
And

Unknown Speaker 7:43
with the home exercises, what are some of the typical ones? And like, how frequently would they come for outpatient visits?

Unknown Speaker 7:55
When I was there, um, it's tough because I didn't see them too much. So I don't want to give an exact answer for how much they came in. Because I was kind of with my ot supervisor was kind of like when they needed her type of thing. So I'm not quite sure how often that home. Your question was, if you repeat that how much they did at home.

Unknown Speaker 8:22
So yeah, you mentioned they would do a certain type of exercise, maybe twice a day. So my question, what are those some of the examples of those exercises and like repetition counts, like how many times you would repeat that certain specific motion? for exercise?

Unknown Speaker 8:39
Okay, thank you. Um, there's this specific one that I remember. And it's called diagonals. So it was like, kind of like the motion like you were buckling like this, or like you're pulling a sword out, like this. And that's one that they did at home.

Unknown Speaker 9:01
And how often would they do that?

Unknown Speaker 9:04
I'm

Unknown Speaker 9:07
definitely at least twice a day. I know for sure.

Unknown Speaker 9:14
Any other exercises that you can think of? At the moment?

Unknown Speaker 9:20
Um,

Unknown Speaker 9:22
I think

Unknown Speaker 9:24
I can't think of any at the moment. I'm sorry.

Unknown Speaker 9:28
No worries. I

Unknown Speaker 9:28
like that. I'm not too familiar. But I also know that it's not an exercise, but they did like wear swings. So if they had any, like subluxation of their joint, they would have a sling at all times.

Unknown Speaker 9:47
Do you guys use any sort of standardized tests to evaluate the progress the progress the patient has made and like the initial like, start As with like, what, where the patient is can we act?

Unknown Speaker 10:06
Um, I didn't see many of ours by No, we did, like range of motion, like always measuring. That's not standardized, but like angles of joints and things. And at one point, we did like sensation testing that was in the Val that I did get to see. It's called Sims Weinstein. And it's when you would pick different points on the hand, and the patient would say, if they felt it, or if they didn't, or not the ones like two point discrimination if they felt two or one point. Those are more more, I saw that one sensation about for sure. Okay.

Unknown Speaker 10:54
And

Unknown Speaker 10:57
how often did did that sensation test was taken, like, what was interval between like, maybe if you do it today, how frequently you will do it again next time.

Unknown Speaker 11:11
Definitely not too frequently, frequently. See, like, like I keep, say, like, I didn't see it much. But I know that with nerves, they don't grow back fast at all. So it would definitely be a while between the first of all, and then reevaluate.

Unknown Speaker 11:34
I'm sorry, I

Unknown Speaker 11:35

can't get too much more info.

Unknown Speaker 11:38
No worries, this is great. This is great. So when you saw those questions, was there a lack of motivation? Or like, Can you describe it know how you would keep them motivated throughout this journey?

Unknown Speaker 11:54
This one guy in particular, he was more, he wanted to talk more than you wanted to do the exercises. So I would say like, mental health was a barrier still in the physical rehab setting. And, you know, we just like, the best thing is listening to him, and, you know, just talking to him. Um, but I think, you know, just preparing someone with the education of how long it takes to rehabilitate after a stroke could be helpful in terms of motivation, because I think just seeing improvement, like, you know, any type of improvement and just knowing like, not expecting too much improvement at the beginning, you know, like, I think that is a motivators, like, Okay, I'm making this improvement, like, if I'm seeing more of an angle on my joint, just always having the objective findings and letting them know, versus like, you know, it could be surprising not thinking you're not making any improvements, or really a couple degrees is amazing.

Unknown Speaker 13:16
You ever see or make any sort of goals for the patients? or How did like you mentioned objectivity. And so I was just wondering, what kind of goals you would set, and how frequently you would cross check with those goals.

Unknown Speaker 13:35
Um, the, the degree angles of the joints was a big one. And we, I would take that, if not, every time I saw them, but at least like a true like, a valid their joint angles, like every four sections, just in general, but, um, otherwise, I would say, um, more range of motion. And then for like, things like the BT II, where it would measure how much effort you're putting in, like the amount of force that we would get feedback from every time. Um, and in terms of like, the arc thing, like, are you assisting? How much are you assisting your arm to get over that arc? And how many tools are getting across that are could be different objective findings.

Unknown Speaker 14:42
And did you ever use any set of digital games or games per se, as an intervention, or the rehab?

Unknown Speaker 14:54
No, I have not. Okay.

Unknown Speaker 14:59
Do see any? Have you seen other pts? And OTS use it like do you see the use of it? In the rehab setting?

Unknown Speaker 15:09
No, I've only seen it at conferences. Like it's just so new, I think. And like it was like a while like thing? Like it wasn't? I don't see it too much. I don't ever see it. I haven't ever seen it. Only at the conference.

Unknown Speaker 15:30
What about like, things? Have you seen physical therapists reappropriate games for their own use? Like the Way sports or something like that?

Unknown Speaker 15:40
I'm in my department, I do not know. Um,

Unknown Speaker 15:51
I know, you probably said that. You worked with these patients pretty A while ago. But do you know anyone or or heard about anything about how they are handling these sessions nowadays with the remote setting with before the COVID situations? Like, are there any telehealth solutions available?

Unknown Speaker 16:18
Um, for the stroke clients, really everyone kept coming in. There wasn't really telehealth solutions. It was what I saw on that outpatient setting was they did it for the kids, a lot the pediatric clients who had at home but everyone else had like tried to come in.

Unknown Speaker 16:43
And just regarding the session, say you said like, how many times during like a given week, would you say a patient would come in? And like how long would one of those sessions be?

Unknown Speaker 17:00
So they had ot dedicated to neuro and stroke. So they were coming in every day. For Well, you'd see clients every day. And when a client came in, I believe it was like an hour session.

Unknown Speaker 17:19
Is there a specific bifurcation of time? Would you say that one hour, like 15 minutes for this activity? Or how do you would, you know, decide and divide the time?

Unknown Speaker 17:34
I think, from what I remember, less time was given to manual, if we could like any type of massage, or things like that, and more time will be given towards exercises.

Unknown Speaker 17:53
And typically, how many exercises would you say would be possible to cover in one hour?

Unknown Speaker 17:59
Um,

Unknown Speaker 18:02
because I assume there will also be some pauses and breaks in between.

Unknown Speaker 18:07
Right? Um, I would say like three different things. Plus manual. Two or three. Yeah.

Unknown Speaker 18:18
So about 10 minutes. 10 to 15 minutes.

Unknown Speaker 18:23
Yeah,

Unknown Speaker 18:24
yeah.

Unknown Speaker 18:26
I'm

Unknown Speaker 18:29
Jared DeLonge. Cassandra, do you guys have any questions before we did dive into the game?

Unknown Speaker 18:38
No, I think I'm just excited for our show this year.

Unknown Speaker 18:44
No questions

Unknown Speaker 18:44
as well. Cool. So I will set up the game and then screenshare me Are you able to see him here,

Unknown Speaker 20:16
also.

Unknown Speaker 20:19
So this is spellcasters. So this is like a your game where patients can do exercises and spells, magical spells. And I'll just go through one of the tutorials to show you how the missions can actually create these customized scalable exercises. And also use the existing ones that when you ship the game, you know, performative instead of motions, depending on the patient.

Unknown Speaker 20:51
So,

Unknown Speaker 20:53
there are two tutorials first, imagine, which shows you all the steps. And the very would can't lie to you as to how to do these step by step process, like break it down, so that you understand like how to go about making an exercise in the game

Unknown Speaker 21:10
in spellcasters,

Unknown Speaker 21:12
you can create and then the similar tutorial will be for the patient is to set the part where the creation part is not included. It's only doing these exercises, that's and the main way to interact with the game is the one. And so right now, while I'm seated, so this game can work either seated or standing, depending how you want to

Unknown Speaker 21:38
like to know,

Unknown Speaker 21:39
whichever arm has to wanders one way to interact with the spellbook in the gesture creation, spell, pacing, which is how you play this game. And so in order to, let's say, a patient might need to do this on their left hand, you could use this swap hands feature. So it transfers the one or the other arm as you don't necessary. controllers, virtually just like translates transfers back, and then you can always name the exercises

Unknown Speaker 22:16
like cameo precice. Great.

Unknown Speaker 22:22
Okay. Yeah, and then this is the process of creating an exercise, so you will first click on Advil. And then so you would place yours and the way in which in the same direction to patient and, and then if you're in a closed one, you can always touch the very first one, I did look at the last. So that would create like a closed shape. But now let's just do a horizontal. And then as you create these, you can assign awards for the patient. So in this example, we could do a tree. Then here, you can mention the repetition like so I could say, three, and then on the book, it will show you like a image spell we just created, been saved with How many times have you had to do it. And it keeps track of like how the patient's doing as you're doing these, whether they're completing it successfully, or they turn off. And then this is for both hands. So you could just basically swap the hands and do that for both questions with regards to the creation. No. Cool. So now as a patient, you said this process was just buckling issues. Now it's, we were showing this to the clinicians, so that they can get a feel of like, how can he do this? Because the way you create the spouses kind of really important it determines how the patient would do it. Having a feel and you know, putting yourself in the shoes of the patients is also kind of like important. So here is like I'm holding sugar Bradman to just like this. And then this is how I just did it successfully will count as complete job. And I can basically shoot and then respond. This is the idea where you would do these kinds of roles and then you will reward the patient by enabling them to cast a specific spell, and then it will be tracked. And so I could basically fail if not completed and we counted failed.

Unknown Speaker 25:00
That's a great spot. Okay? Now,

Unknown Speaker 25:04

you're asked to do this three times. And the thing is complete a set, like the one that you assigned, like I said, you get these kind of like rewards as well, where you get a confetti.

Unknown Speaker 25:18
Now, let's

Unknown Speaker 25:20
say, the sisterhood, how, you know, the patient's has kind of achieved like a milestone, and just like to reward them, because they were able to complete a set. So the game has this kind of various ways to give patients feedback and rewards, just to keep that loud, let's

Unknown Speaker 25:41
try another.

Unknown Speaker 25:43
And so you know, you could do another spell, which is

Unknown Speaker 25:47
no line.

Unknown Speaker 25:50
Let's trace this spell to remove

Unknown Speaker 25:52
anything to do this to look away, erase the item that you spawned earlier. And then we also have animals. And so we could create different food items and like, other items for them to play with. So here, I'm going to spawn involved for the dog. And in this game, since it'll be our rotation to move

Unknown Speaker 26:17
before we can

Unknown Speaker 26:19
move, and then I can shoot the

Unknown Speaker 26:24
nation close to time.

Unknown Speaker 26:44
So you were amazing. I think this is the end of this tutorial. You could basically interact with the animals by spawning, you know, objects for them to play with, or feeding them. Any questions so far?

Unknown Speaker 27:03
No, this is very cool.

Unknown Speaker 27:07
And so once you go through the tutorial, and you understand how to basically do all the interactions in a game, you provide you with two different like levels, each of the different in the sense that the stage one gives you more basic spells and like basic, it's not kind of overwhelming. So it's, it's just like you can do gardening stuff. Book, you have to know line that you can use for you know, erasing any item

Unknown Speaker 27:42
can help you make this place more

Unknown Speaker 27:44
and

Unknown Speaker 27:46
in categories for each, depending on the shape we also mentioned. So there's the horizontal line he also saw earlier. We also have a vertical line.

Unknown Speaker 28:02
Those

Unknown Speaker 28:06
diamond

Unknown Speaker 28:08
That was amazing.

Unknown Speaker 28:14
Square.

Unknown Speaker 28:17
That was amazing.

Unknown Speaker 28:21
Then you also hear this kind of affirmations.

Unknown Speaker 28:26
That was great

Unknown Speaker 28:28
from the ferry each time you attempt it. So if I were to do this, unsuccessfully, you know, either I could read midway Oh, here. That was close. You can I'm not sure if you're able to hear the sound of okay. Yep. Yeah. So, you get this kind of random formation that just said it was close, you could try it again or you know, something that would motivate them to keep on doing these. And then you also have like a like, sideways arrow. Then also you have to pass your fireworks.

Unknown Speaker 29:25
Well done.

Unknown Speaker 29:28
So, these are like different set of pre existing exercises that we ship. And you can always go ahead and create a shape. Say I tried a closed shape, which is a triangle, then you have these now in terms of award data

Unknown Speaker 29:56
and then

Unknown Speaker 29:58
you could just Any questions or anything, anything particular you want me to try?

Unknown Speaker 30:15
I was wondering, when you go on the circles Do you have to press a button for it to click.

Unknown Speaker 30:23
So when I want to start tracing, I do have to press and hold the trigger. But as long as the tip of the wand is touching the sphere, it does, it automatically detects it. And you know, you don't have to do anything. So all you have to do is use a trigger, and then continue just moving your arms in a specific way, so that you could complete the shape.

Unknown Speaker 30:50
Okay, that was, I I'm sorry to explain that earlier. Sometimes it breaks up on my end, but what the hold is that with the affected hand or the unaffected hand,

Unknown Speaker 31:04
so the idea is, when you use the affected hand, so that you would kind of engage the hand to these can different motions, the size of the shape can be adjusted, and like you could create, like a small triangle to, you know, maybe have a smaller range of motion. Compared to like a bigger one. You know, you can use different parts of the arm. And you could customize depending on what you need. Patient

Unknown Speaker 31:42
on the show. Are you are you concerned with the stroke survivors ability to hold down the trigger? Is that?

Unknown Speaker 31:50
Yeah.

Unknown Speaker 31:57
Yeah, so at the moment, what we've tried to do was with the controller, we've kept the use of all the parents to be very minimal, in the sense that most of the actions are like, press and release. But when it

comes to tracing, that's when you kind of have to hold on to the trigger. If I understand it, my build this, the idea is, we would expect the patient to have some level of stability when they start using this system.

Unknown Speaker 32:32
Okay,

Unknown Speaker 32:34
cool, what we could do is, like, make it a simpler if we like, and this could be a setting of if the triggers difficult, we can map it to a different button. And it could be, you know, you toggle it on and toggle it off. So you're going to like tracing mode.

Unknown Speaker 32:51
Yeah, so we can definitely switch around the buttons suddenly out said the moment does is how it looks in the icon and using the controllers that are there. Right now I'm using this one. I'm holding this one. But it could also there could be a way we could implement it so that you could switch around and decide which one you want it to map to. So if the backside is kind of difficult, you could always like just use, you know, one of these other buttons.

Unknown Speaker 33:22
Okay, yeah, that's the first thought that comes into my head just because it's the type of thing where you can't have your, your stability comes from like your proximal body, then distal. So if they're having trouble with their shoulder and elbow them, they're definitely not going to be able to use their fingers. So that's why I was just curious.

Unknown Speaker 33:50
Yeah, thank you for bringing

Unknown Speaker 33:54
in that kind of feedback is very helpful.

Unknown Speaker 33:56
Yeah. So this was the second one, this was kind of filled with animals and like, you could always do the other expunge it earlier. And so this is we kept it registered at the checkout machine using this, they can decide what they want to call them work on. No, so you know, having so many things happening.

Unknown Speaker 34:24
For your patients,

Unknown Speaker 34:26
you know, to do this, I can have

Unknown Speaker 34:28
some fun,

Unknown Speaker 34:28
I guess, you know, just having a more clean design level might be more breathy someone who's starting to use us. And so once they made sufficient progress, they could pop into this level and do or other interactions. So in the book now, apart from the ones that we just saw here we have the book Did you spawn and

Unknown Speaker 35:10
that was great.

Unknown Speaker 35:18
Then we have rectangles.

Unknown Speaker 35:31
That was close, try again,

Unknown Speaker 35:35
to the penny with

Unknown Speaker 35:36
that was amazing

Unknown Speaker 35:38
need to carry? right we have

Unknown Speaker 35:56
well done, the sound was

Unknown Speaker 36:09
great.

Unknown Speaker 36:10
The deer and the horse are ones that would eat the grass, the leaves sometimes don't want to teleport, and what you can do is just kind of like, felled someone

Unknown Speaker 36:36
that was great,

Unknown Speaker 36:40
then you could do that for different animals.

Unknown Speaker 36:45
So

Unknown Speaker 36:47

this one for like, cross bedtime, like a combination of motions.

Unknown Speaker 36:59
That was amazing. So we have

Unknown Speaker 37:06
different motions, and you could either you know, once the animals comes close to you, and pet them with your hands. So you could do that with any hand. Do this with the left hand doesn't necessarily have to do the pain self with when one has the one. But you could.

Unknown Speaker 37:48
That was amazing.

Unknown Speaker 37:54
And so is this just different motions. So this is arcs. You know, this going to different shapes. And then also, I know on the screen, you might not be able to see this, but this is actually a gift forward motion that I'm trying to create. And then you you know, assign a more variety of rewards, I could just do like a form of motion.

Unknown Speaker 38:40
So are we saying that it's also like, can be depth so you can work on some of those, like other motions you're talking about as well as rotation. And you'll also notice in the spell book, he there's categories that the preset spells have. So now there's one specifically good for rotation, some specifically good for flexing and things like that.

Unknown Speaker 39:06
Nice.

Unknown Speaker 39:08
That makes me think because I'm jumping back to when you asked like stuff they did at home. And something that I forgot about was we do a lot of weight bearing to gain that stability in the proximal joints first. So that would be cool. If like they could switch it to the other hand and kind of like wait there to get to that step. Lean forward is reached towards

Unknown Speaker 39:36
right? I'm not sure what you mean by use the other hand to mean like the use that like holding the controller as a way to do weight bearing exercise.

Unknown Speaker 39:50
I was just thinking like, if you for that type of spell, like I know you had it in the affected hand at that time. But then if you had an unaffected hand, if they could somehow lean on a surface to lean forward, for that affected arm to gain that weight bearing while casting that depth spell, that would be cool.

- What do you think about the gesture tracing mechanic ? In what ways is it consistent with therapeutic practice? In what ways is it inconsistent? Is there something missing that should be added or modified?
    - Wrist rotations and be able to hold to the spot
- How big do you think the gestures should be ?
- What do you think about the gesture creation system? Did you find it clear and understandable to use as a physical therapist?
    - No you created so much
- Is there a particular motion or motion type that is missing?
    - No you got all the motions
- Do you think this game would motivate patients to perform these repeated motions more often ?
    - Yes as it seems very fun
- How do you think other physical therapists might use this game? How might it supplement traditional therapy?
- How do you think this game might impact the pace of recovery for patients?
    - Totally everything's better when you are having fun
- How often and for how long would you have the patients play this game for ?
    - Twice a week, at least 30 mins
- What are some of the things you would look at to track a patient's progress when they use this game ? and what kind of graphs or other visualizations do you prefer ?
    - Times being played (duration)
    - accuracy

Playtest

- What is your initial reaction to this? (why/why/why/why/why)
    - Doesn't know what the online means
    - Wanted a back button
    - Liked the visual
    - Liked the spell library
    - Very organized not crowded
    - Liked the overview and the detail
- Could you see yourself using a tool like this to manage and track your patients?
    - Yes
- How would you improve this to be more useful to you?
- Are the reporting, graphing, and tracking features appropriate?
    - Couldn't tell that the full report page was clickable
    - Bar graph was a bit too small to read
    - Thought the triangle picture was meant for duration

13. OT Dr. Gragnani - Notes by Kassandra

Pre survey

- What types of shoulder, arm and wrist exercises do you have your stroke patients do during your sessions ?
    - Electrical stimulation

    - Range of motion lying down (reaching something)
    - Opening bottles, screws, cutting food
- How many times do you typically have them repeat a motion ? Are they done in “sets”?
    - 5 activities, shoulders arms
- How many sessions during a week would you have with a patient who has recently suffered from a stroke ?
    - Daily
    - 2-3 weeks , 10 sessions total
- How long do one of your sessions typically last for ?
    - 45 mins
    - Before covid one hour
- Do you use any digital games for your therapy sessions ?
    - Yes VR games
    - Neofect (link was sent you)
- What is the age range of the patients that you work with ?
    - Late 20s and up
    - average 50-70
- What are some of the common struggles of the patients you have seen ?
- What is their motivation like during your sessions ? How do you keep them motivated ?
    - Recognizing that most recovery happens with in a year if they end up plateauing that physical therapy is not for you and you just need to work on it yourself
- What is the typical total treatment period for a patient recovering from stroke, specifically on upper extremity therapy?
- What sort of weekly take - home exercises do you give the patients and how many times do they have to do them?
    - Sliding a piece a paper, pick a penny up
    - Sitting up, side
    - Incorporate with their daily life
    - Do once a day or every other day
    - 2-3 sets of 15
- How do you track and show them their progress?
    - Free texting about functional status such as brushing teeth, hair, where they are at
- How have you worked with patients during the pandemic over zoom ? do you use any telehealth apps to help assist being remote ?
    - Blue stream
    - Share screen and email
    - Drive focus

In the Game/ post survey

- Is the current game experience consistent with their therapeutic practice?
    - Is patient specific
    - Would show progress in patients
- What do you think about the gesture tracing mechanic ? In what ways is it consistent with therapeutic practice? In what ways is it inconsistent? Is there something missing that should be added or modified?

    - It is very versatile maybe even harder but better
- How big do you think the gestures should be ?
- What do you think about the gesture creation system? Did you find it clear and understandable to use as a physical therapist?
    - Maybe a verbal que
    - Add height adjustments
- Is there a particular motion or motion type that is missing?
    - Slash forwards and outwards in terms of depth
- Do you think this game would motivate patients to perform these repeated motions more often ?
    - Yes since it is like playing a game they would get excited
- How do you think other physical therapists might use this game? How might it supplement traditional therapy?
    - More is better it could help the patient
- How do you think this game might impact the pace of recovery for patients?
- How often and for how long would you have the patients play this game for ?
    - Daily or every other day and 10 - 15mins
- What are some of the things you would look at to track a patient's progress when they use this game ? and what kind of graphs or other visualizations do you prefer ?
    - See how long they are on the game

Playtest

- What is your initial reaction to this? (why/why/why/why/why)
    - Likes the visuals they look nice
    - Great supplement, accessible, nice great trackable data
- Could you see yourself using a tool like this to manage and track your patients?
    - Yes since i myself already send the patients data but would be easier if they had the app
- How would you improve this to be more useful to you?
    - Find a way to use on a website
- Are the reporting, graphing, and tracking features appropriate?
    - Likes the bar graph more
    - Triangle: have a picture with an overlay of it to make it clear
    - Wouldn't look like the velocity as much
    - Add time per session

13. OT Dr. Gragnani - Zoom captions

00:00:00.000 --> 00:00:00.000
Yeah, I've heard of great things from Pentecost and yeah just a pleasure to finally meet you.

00:00:00.000 --> 00:00:01.000
You mind. Before we begin, if I record this meeting for internal use oh yeah absolutely no problem.

00:00:01.000 --> 00:00:06.000
Right.

00:00:06.000 --> 00:00:10.000

So, let me run by you.

00:00:10.000 --> 00:00:13.000
The process I will be going through today.

00:00:13.000 --> 00:00:26.000
So first of all, I'd like to get to know a bit about your background and how you work with patients and like, you know what kind of population you work with and that sort of a thing.

00:00:26.000 --> 00:00:38.000
And then I will screen share and show you the game that we have made, and just describe a bit about what's happening in the game and you know if you have any questions I'm happy to answer those.

00:00:38.000 --> 00:00:57.000
And then I'll stop playing the game and then ask you a couple questions to see, and evaluate whether what we have depicted in the game is kind of translating and consistent with your practice or not and what things we can improve upon.

00:00:57.000 --> 00:01:17.000
And we also have a companion app that we, we have made so it's kind of more like a design that we have come up with. For now we haven't got an implementation done yet but we'll be able to share with you like a web app that you'll be able to kind of fiddle

00:01:17.000 --> 00:01:20.000
with, and give us some feedback on that.

00:01:20.000 --> 00:01:23.000
Okay, great. That sounds wonderful. Cool.

00:01:23.000 --> 00:01:40.000
I do have a couple more people that will hop into the meeting, but they should be here in a couple minutes so let's just give a one or two more minutes for everybody else to join before I begin, sure sounds good.

00:01:40.000 --> 00:01:53.000
In the meantime, could you introduce yourself. Maybe I'm sure so I'm camera nanny I'm an occupational therapist so a little different than what Bonnie pan coast does.

00:01:53.000 --> 00:01:56.000
I don't know if you guys have interviewed any occupational therapist yet.

00:01:56.000 --> 00:02:05.000
We have okay yeah so similar goals just different lenses in which to achieve the goals.

00:02:05.000 --> 00:02:12.000

So I've been practicing for about five years, primarily working with the neuro population.

00:02:12.000 --> 00:02:26.000
I first started my career working in inpatient rehabilitation so more acuity to the patients diagnosis and recovery stage, mostly with brain injury patients some stroke patients.

00:02:26.000 --> 00:02:32.000
And then within the past year, year and a half I migrated to the outpatient network which is where I met Bonnie.

00:02:32.000 --> 00:02:50.000
I'm in there I kind of see a variety of things I treat primarily neuro. I also work with patients through driving rehabilitation to get back to driving and that's a myriad of diagnoses that can be older drivers spinal cord stroke and brain injury, but

00:02:50.000 --> 00:02:54.000
my main background is in neuro neurological recovery.

00:02:54.000 --> 00:03:06.000
See, and you mentioned you work with stroke patients could you describe the population you work with in terms of age, and other demographic inflammations.

00:03:06.000 --> 00:03:15.000
Sure, I would say, stroke patients I treated ages ranging anywhere from late 20s to.

00:03:15.000 --> 00:03:19.000
I had 103 year old one so.

00:03:19.000 --> 00:03:28.000
So it was a wide variety I would say the average is probably between 50 and 70 was probably the average of what I was seeing.

00:03:28.000 --> 00:03:33.000
I wouldn't say it was heavily female versus male.

00:03:33.000 --> 00:03:50.000
Yeah, and most of those were non TPA treated stroke so not given a drug to improve their recovery while they were in the acute care hospital. So, you know, significant deficits we're seeing.

00:03:50.000 --> 00:03:57.000
Okay. And how many sessions, did you typically have with each patient I'd say in a given week.

00:03:57.000 --> 00:04:02.000
Sure. So when I worked at inpatient rehabilitation we treated our patients daily.

00:04:02.000 --> 00:04:10.000
And I would say the average length of stay was probably about two to three weeks so anywhere from 10 to 15 sessions.

00:04:10.000 --> 00:04:13.000
In total, and five per week.

00:04:13.000 --> 00:04:21.000
Okay. And after they have some level stability Do they still come and see you.

00:04:21.000 --> 00:04:35.000
Yeah, so that's when they kind of come to outpatient and so that's kind of the team I'm on now.

00:04:35.000 --> 00:04:38.000
from the hospital with stroke diagnoses.

00:04:38.000 --> 00:04:57.000
And how long would one of these sessions be right now under Kobe guidelines because we're kind of having to do cleaning and, kind of, you know, shift the schedule so we're not all treating at once we're doing 45 minute sessions but prior to that they

00:04:57.000 --> 00:05:14.000
Okay. And how are these sessions, divided in terms of like you said 45 minutes but could you describe a bit how you break it down into different activities and how many activities, would you end up doing in total, in a given session.

00:05:14.000 --> 00:05:24.000
Sure. I'm so very patient dependent but if you know for the purpose I feel like if your study looking more at the patients that need motor recovery or things like that.

00:05:24.000 --> 00:05:32.000
I'm usually I'll start the session with some sort of prep activity like either stretching, a heat modality.

00:05:32.000 --> 00:05:46.000
Maybe something, working on the bigger muscle groups like shoulder scapula, something like that. And then as the session progress, move to more fine motor activities or tabletop based activities.

00:05:46.000 --> 00:05:55.000
Things that are more challenging and working on, just like fine tuning skills. I'd say on average I probably do between.

00:05:55.000 --> 00:05:59.000
I'd say around five activities per session.

00:05:59.000 --> 00:06:03.000
So that will be about,

00:06:03.000 --> 00:06:07.000
about eight minutes or so per, per activity.

00:06:07.000 --> 00:06:15.000
I would say most likely Yeah, I'd say on average, there's some people were we stick with like two things and that's what we're doing.

00:06:15.000 --> 00:06:19.000
But on the high I'd say, most likely around four to five.

00:06:19.000 --> 00:06:36.000
Okay, and what sort of Could you describe a bit in more detail, like, in particular to upper extremity. What sort of exercises do you typically do for shoulder, elbow, wrist, and like, you know, mainly arm itself.

00:06:36.000 --> 00:06:47.000
So, um, I use a Eastern electronics electrical stimulation quite a bit, um, unless there's some reason I wouldn't be allowed to for a medical reason I use that quite a bit.

00:06:47.000 --> 00:07:05.000
I use I'm doing like activist assisted range of motion laying down with some sort of target to reach for or some sort of motivating object or my actually myself guiding the arm through the range of motion if the person's on able to do that.

00:07:05.000 --> 00:07:20.000
I'm very fortunate where I work, we actually do have a couple of not immersive virtual reality devices but virtual reality devices that actually can allow the arm to be supported in space, and then engage in the game so I really do enjoy those.

00:07:20.000 --> 00:07:27.000
Um, I am have another one that works more on fine motor activities where it's not as supportive.

00:07:27.000 --> 00:07:38.000
Virtual Reality device it's just an exoskeleton and the person gives feedback to the game to engage within their available range of motion so I use that a bit.

00:07:38.000 --> 00:07:48.000
I also use things like I'm working on functional activities like folding clothes. Opening bottles.

00:07:48.000 --> 00:07:54.000

You know, taking screws off of screw boards just since I am in ot I've kind of tried to look at it through that lens as well.

00:07:54.000 --> 00:08:03.000
And I also work on things like you know actually trying to like eat again so cutting food feeding oneself, things like that.

00:08:03.000 --> 00:08:17.000
Right. And you mentioned immersive games or immersive suffers. Could you describe a bit more in detail what kind of games or software's, are they.

00:08:17.000 --> 00:08:37.000
Yeah. So what we have is, I believe by its by a company called Neo fact I'm think that's what it is. Yeah by near fact, it's not immersive what it is is it so the first one is like a tall, almost like a myriad of net type of device, and what it does is

00:08:37.000 --> 00:08:55.000
put the affected arm into these two supports one just distal of the elbow and one just proximal the wrist. And by putting them there it kind of supports the arm in space, and then you set the game parameters to the active movement that the patient actually

00:08:55.000 --> 00:08:56.000
has.

00:08:56.000 --> 00:09:08.000
And then you can choose I think it's up to about five games there's like an apple picking one. There's putting out a fire one there's navigating a helicopter through some clouds.

00:09:08.000 --> 00:09:22.000
So it uses what available range of motion you chose as the game parameters and so the patient has to actively move their arm in order to engage, whatever you are during that game.

00:09:22.000 --> 00:09:37.000
Could you would you be willing to share links or other information about those systems. Absolutely, yeah, I've used them quite a bit, especially when I worked in inpatient because it's technically in patients device, but I'm in outpatient since I'm trained

00:09:37.000 --> 00:09:43.000
on the device I go upstairs and use it still. So,

00:09:43.000 --> 00:09:57.000
in terms of when the patients are not physically present with you, do you give them any sort of take home exercise and if so, could you describe the how, like the types of exercise you give them.

00:09:57.000 --> 00:10:09.000
Yeah definitely give them things to do, especially like my background I'm used to seeing patients every day. And now I'm only seeing them a couple times a week so I feel like I need to, you know, definitely supplement those holes.

00:10:09.000 --> 00:10:18.000
So, a lot of things I'm giving I try to balance between the functional and more of your standard exercise based activities just because of what I do.

00:10:18.000 --> 00:10:30.000
So I'll tend to actually start brainstorming a list of functional activities, the person can begin to do at home. If it's just as basic as like sliding a piece of paper off of a tabletop because that's the only movement they have is like a backward and

00:10:30.000 --> 00:10:38.000
forward motion or anything as specific as picking up pennies or trying to lease a shoe.

00:10:38.000 --> 00:10:50.000
So I start to brainstorm that list with them every session. And then other exercises I give or just range of motion and different positions depending on what the patient can tolerate whether that's lying down.

00:10:50.000 --> 00:11:07.000
Sitting on their side, anything like that. I'll also sometimes give if the patient's progressed enough some sort of strengthening exercises with like weights or using household items, but also again really trying to incorporate the function so telling

00:11:07.000 --> 00:11:18.000
them you know try to put things away in the cabinet with their arms so working on that reaching or trying to stack things on a shelf more in that like horizontal plane.

00:11:18.000 --> 00:11:28.000
And how often would you say in a given week would they be doing these and like, what kind of repetition sets. Would that be.

00:11:28.000 --> 00:11:34.000
So I typically recommend that they do it at least once a day I say once a day is great.

00:11:34.000 --> 00:11:39.000
If they could do it more that'd be wonderful but you know I know I recognize it's impossible.

00:11:39.000 --> 00:11:54.000
I say every other days you know i It's okay, I you know I don't want them to feel like if they don't do it don't come back and I usually recommend at least for a range of motion exercises I do about two to three sets of 15 so we're getting in almost close

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to 15 repetitions.

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Um, I feel like it has to be one manageable so that I'm not compromising the quality of the exercise when I'm not present, and then to at least enough where it is beneficial, so it's a little bit of a balance.

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And do you typically have anyone with them at that time like a family member or caretaker that can actually assist them or report back to you about the progress.

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Yeah, there's definitely a cognitive component involved where I feel like the patient can't reliably you know maintain safety, our integrity of the arm.

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I always try to bring in the caregiver it's been a little more difficult with Kobe recently just because of you know the amount of people in the gym and things like that but I always try to do that or at least send them home with an actual handout that

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very specifically describes everything I'm recommending.

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And so that way is the caregiver isn't present that day or they're just picking them up they at least can see this hey this is what I got during therapy and this is what I need to work on at home, and kind of be guided that way.

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And I always do try to get feedback from caregivers, we do something and outpatient therapy called progress notes that kind of updates the insurance and also the therapist that gives them feedback on the therapy so far.

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Every 10 visits or so every month.

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And I always like it if the caregiver is present for that if there's a cognitive, you know, deficit involved because it gives me more reliable information.

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Continue describe a bit more about the progress notes like how detailed or what kind of details, would you may be asked what sort of questions would you ask and how on it for sure so for an occupational therapy progress now like the most standard of it.

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There's a big section in the front of it that just has a lot of free texting about functional status and so on the initial evaluation I'll ask the patient a lot about.

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I kind of just get started with morning routine so I go through eating breakfast, taking a shower dressing brushing your teeth combing your hair and I see how they're doing with all of those things.

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And if it is a motor component involved for because of how many pieces I'll say are you doing it with your left hand or right hand, are you incorporating your unaffected hand to kind of see where we're at as far as that's concerned.

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And if they can't tell me, like, you know, try to get a percentage like would you say you do it half the time or quarter of the time so I can at least make it quantifiable.

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And then I kind of migrate to looking at those bigger activities of the day like grocery shopping or household chores meal prep.

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Putting laundry away things like that.

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After I asked them, those types of things. I kind of progressed more objective measures so I'm measuring things like range of motion, any muscle tone or spasticity or hypo tenacity, President in the arm.

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I'm looking at the structural components of the shoulders so as the scapula the same as it was when I last saw them. Is there any supplementation.

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I'm also looking at strength so if the range of motions improved enough where I can actually do and against gravity manual muscle test I'll do that. And if they have enough movement where there's finger movement I will do some sort of coordination formal

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coordination test. So those are the big areas that I hit. And then we kind of progressed to finally reflecting on their goals so the original goals we set it evaluation.

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And could you share and describe some of the standardized tests that you do.

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Sure, um, some of the standardized tests that I do specifically related to the arm is called ones called the action research on test that is broken up into four subgroups.

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Each looking at, I think its grip. Grasp pinch and then gross motor.

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And it's ranges on a scale of zero to three zero being that there's no movement present and then three being that the movement is normal, and you're comparing the affected side to the unaffected side.

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So that's what I use frequently it is difficult if the person has no movement, because they're just are very little movement because the score is not very reflective of what they have, because the tasks are kind of challenging more subjective measures

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that we do use are like something called a quick dash which kind of looks at the person's feelings on their ability to do different things during the day as well as pain level.

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There's something called the upper extremity functional index which is the same it looks at the person's, you know reflection on their ability to do things during the day and it's a score out of 80.

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And then some other assessments I do that are more objective is the nine hole peg test, which is having to put nine pegs into a box and then take them all out.

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And then I just do standard manual muscle testing and Goni on a tree.

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And how often would you say to do the test.

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I would say at least multiple times a day.

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Okay, but let's say if the person is coming twice a week. Okay.

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How many sessions, would you like in keeping, like an ankle between.

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Sure, I know you're saying now. Um, so, for each patient I would do it on evaluation and then I would wait about eight to nine, nine sessions. So on the 10th is that I would do it again.

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Okay.

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You mentioned earlier about some, like a sheet that you provide for Taiko, and also like you have a different set of exercises that you do and like outpatient sessions.

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Could you share those with us. After the meeting, so that we can get a more insights about the different exercises they cover. Sure, I can definitely send you guys some examples of some of the things I've given patients in the past.

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Absolutely, it's no problem. I have on self created some from when I worked in inpatient, we didn't have access to a program that develops home exercise programs for us so I pretty much just had to make it on my own.

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So I have ones like that and then I have ones that are more formal where I'll just remove patient information and show you kind of what that would look like.

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That will be very useful. Thank you. No problem.

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And do you typically have those in like a textual Format Picture format or video format. I have both on there, so I have disappears and text and then in our outpatient program and actually if the person is signed up with through their email, it will send

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them a link. And then if they click the link, it actually will show them the videos and pictures and text in real time in the same program that I developed it in.

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What would you say, like, because a stroke we have could go on for long, depending on the deficiencies,

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how motivated are your patients and like how do you keep them motivated at a point where progress becomes really slow and miniscule.

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Yeah. I say this is a skill that I'm having to learn, because I, you know, working and impatient for so long I, I was at the beginning of the rehabilitative stage so I was, you know, always passing the buck to the next person.

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I am now the next person, so I'm still learning that and it's definitely an art, but, um, I think the biggest thing is you know, recognizing what the research says that the most recovery for stroke happens in a year I'm always very upfront.

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You know, doesn't mean no recovery happens after that, it just means that's the most and so you know if we're starting to reach a plateau or anything like that, that just means that coming to therapy maybe isn't the answer, it's just time for working

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on things on your own.

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And and working on them on your own doesn't mean you're never coming back, it just means we need to see you do some stuff to see if anything changes with what we given you, and then come back to reevaluate.

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I think kind of frame it's all about framing, I just had a gentleman recently who was the like one of the most dedicated patients that we were just us about just just over one year post stroke and we were just not getting very far anymore with the arm

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in the distal areas and that's what I told him and he I think he appreciated the honesty and he's plans to come back with the end of the summer. So, you know, then you'll just get those folks that kind of come in and out of therapy which there's nothing

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wrong with for kind of a tune up. And that's kind of how we do it.

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You mentioned about some of the digital interventions you use do those provide you any sort of progress reports or like any data that you can like visualize or anything of that sort.

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So, yeah, a lot of the things I do for like fine motor coordination or strength and things like that actually are usually very functional and related to goals that I've set so I just have a special interest in like self-feeding so helping individuals

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I just have a special interest in like self-feeding so helping individuals learn to eat again with affected arms or using adaptive equipment to do so.

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So a lot of times I'll work with patients on using therapy which is just basically like resistive Plato, and using standard fork and knife just like work on cutting again.

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So like pretending to cut food again with that and so the goal I may have set for them may have been that the patient would be able to set up their own plate during a meal with into, like modified independence and so that's a lot of the lot of the goals

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I'm working on or like that, they're very functional.

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Other examples would be like working on opening medication bottles because most of my patients are on medications.

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So working on those types of things within without adaptive equipment if needed.

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picking up pennies is a big one that I do.

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Another one would be.

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So I also make goals for like managing things in their wallet, or sometimes even patients come with handwriting goals which are, you know, that's really far down the stroke recovery line but, you know, it's a big complaint I get that patients are like

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my handwriting so different.

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Just what I know about handwriting.

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That can come because they are weak everywhere else. And so, you know, we kind of work on all of those things. You mentioned earlier, that you use.

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I forgot the name of the test but you said that we use the other unaffected arm like as a baseline, and see whether how far the affected arm is, is that something that you do frequently in like, do you see any benefits of doing that.

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So yeah when I worked in inpatient that was actually an evaluation requirement was that assessment, it's called the action research arm test or a rat for short.

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Um, if you were admitted to her neuro floor, you were on the third day of evaluation, it was required that the occupational therapists completed that evaluation.

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And the reason for that was that data that actually sent to our research department, and it was either it flag them to be talked to about being part of a study or something like that if their score was a certain number.

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So I do find it useful for that, those types of things.

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Like I said, The only caveat with it is because of the way it's scored. Like I said, zero is no movement. One is that they tried, but they weren't successful to is that they did it but it didn't look quite the same as on the other side and three is.

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It's normal. So because there's kind of those wide ranges, I feel like you lose a little bit of the quality of movement in those scores. But, um, I think for, for what our hospital uses it for it's very useful.

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And how has your practice kind of changed over time because of the impact of the pandemic of you using so totally Health Solutions, or video conferencing tools.

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Yeah, actually when I first switched to outpatient was literally one week before the world shut down.

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So I was learning a whole new role as an OT and also our clinics switched to only telehealth so it was a very big learning curve.

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Um, I would say now we're not using it really at all it's very few therapists that are using it with folks but a year ago this time it was all I was doing, and it was all I was doing for about two and a half months or so maybe even three.

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Um, I think that there's definitely a benefit but the you know some things that come with stroke are the things like cognitive deficits or language deficits and that can make just the navigation on the computer just kind of one step from you removed and

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a little more challenging. And also just because of the population I serve in DC there wasn't always the availability of technology or caregiver to be present, which I think ultimately was the greater issue.

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When you did you use any sort of those telehealth solutions. Could you describe what they're like, maybe specify some names or like any other details.

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Yeah, we used an interface called Blue stream. It was basically, you'd send a link to the patient via text or email, they would have to click on it and you would be connected and just like zoom, but I guess blue screen was a more HIPAA compliant, or what

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our hospital thought at the time was more HIPAA compliant.

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Others other tools, other than that we just had the ability to share our screen and email. So we were really just at the, you know, having to kind of think on our feet and be prepared.

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So we didn't have a lot of other telehealth tools at the time, and I you know I don't think anything else has really become developed since then, at least where I work.

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So you don't use any other sort of mobile apps or any sort of games or other applications as part of your therapy.

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Okay now I'm understanding that understanding your question, actually I do use quite a few so you clarified.

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I'm actually a couple like I mentioned in the beginning when I came to outpatient I'm part of the driving rehabilitation program, one at to like us specifically is called Dr focus, what that works on is more of a cognitive and visual impairment level

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it's working on an individual identifying different important information while they're kind of in a simulated car and driving down the road on different challenging courses.

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It's real time so it's real film footage from like how Carolina, South Carolina, I think New York, California is one.

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So it's just they're driving down the road and they have to identify the information I recommend that one a lot. I also recommend two programs called luminous Lumosity and constant therapy.

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Those are also cognition programs.

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Um, and then there is one that I learned about when I worked in inpatient I've never referred anybody to it but it's called next area. And I believe that it works on fine motor skills through the tablet, but I've never actually referred anybody to that

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one.

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Okay.

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Could you would you be willing to share those links and details after this meeting. Yeah, I have a whole handout with all of them on it.

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Thanks.

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I think that's all the questions I had her Do you have any questions before we move on.

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Thank you for all of the information you've shared already.

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I hope it's helpful.

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All right.

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Let me set it up and then.

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So, are you able to see the screen.

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I can see the screen.

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Okay. So our game is called spell casters I'm basically this is like a free.

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Like a world where you can do different things by casting spells, and that site.

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I'll show you how it works, but the idea is we present you with an open world where you can do things. As you wish, we don't have like a binding in terms of like, schools and stuff.

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And it's more like a Harry Potter style likely, you know, you'll have a one in your hand so I'll just hop into like one of the tutorials.

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And so this this tutorial is one for clinicians and one for patients, and in this game, each exercise are defined in terms of the spell.

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And so, a spell could be like a horizontal line.

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And so, depending on how it's created, it will determine the motion that the patient will have to end up doing so.

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These tutorials are typically guided by ferry, I've kind of turned off the sound but I can turn on the sun just for you to hear a bit.

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Each page of the spell book contains a different spell that you can trace and cast.

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If you would like to know more about the controls, hover over the view controls button on the spell book and press the trigger button to select it.

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At any point in time, you can exit.

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We have that kind of audio narration going on I just turned it off because it was a little hard for you to perhaps hear me.

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But the idea that, with, with this game is you'll have this option to, you know, swap the ends. So you can move the one, depending on the which hand the patient needs treatment.

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And basically the one is waiting play the game so you need this to interact with all the objects I could spell book.

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And so, as a physical as a condition you could create exercises in terms of styles by following this process of like, clicking on ads spell.

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And then placing this kind of orbs and like spheres, and then the way you put them would determine the way in which patients will carry them out. So, this was the first one is blood cells start from your go towards there.

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And I could always create like closed shapes. I touched the first one, and the last.

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Again, so for now I'm just going to do a horizontal line and then once you create the desired shape you could select the reward one division to get.

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And this would be something that they will be blue spawn in the scene.

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And this would be something that they will spawn in the scene. And then you'll be able to also mention how many times you want them to repeat this.

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So, on the book on the left side you'll see kind of like a image of the shaping created.

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And, and the asset that you know the reward that the patient would be able to get, and as well as like some information about the reputation counts. And, you know, track how the patient is doing as you're performing them.

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So, now as a patient, I can just like, you know, do this, and cast it.

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And the way this works is that, as long as a tip, the tip of this one's touching to the sample, it automatically detects it and we do have a sense of vibration as you go outside the line but that doesn't punish you in any way.

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So as long as you try to complete it.

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You those counts it, that will be counted as successful.

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But if, let's say, I was doing it and I stopped in between, then that would be counted as incomplete. So as long as you can lead to shape in the right order.

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That's Canada successful.

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And we do have a couple of effects that are happening. So I sound.

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So, as I do this.

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You do get some sounds.

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And after you complete like a set like to sleep repetitions.

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You do get this kind of like confetti and like fireworks.

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That's just a way to show them to tell a patient that it's like a milestone that they reached, you know, because they completed a set of exercise. So, that's the way we can have like incorporate human feedback, patients as they're doing this repetitive

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motions.

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So any questions so far.

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No, no, I'm following.

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So, in the game, have that we have already like Incorporated, and then using this creation tool you can like create anything.

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So you could even, you know later on.

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I'll show you more details, but in terms of the tutorial.

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The.

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You can, like, the idea is you can do some God gardening, so you can create items and then they, you know, place it. And then you also have animals. So, for instance, on involved for the golf to play with.

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And so, in VR you'll have to use teleportation to move.

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And then,

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and then the animal, the dog will go and touch the ball and bring it back to use a kind of playing make fetch with the dog.

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So that's like different interactions that you can do there's more animals and other terms that you can create.

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And the tutorial for the patient is pretty much the same. It's just that the creation part is not there.

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And then we do provide two different levels.

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The first level is doesn't have too many complex shapes, so it's more basic motions.

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And I'm just going to

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skim through the boat so that you get an idea of the different ships that operate it so we have the biggest ones that you're ready to toil.

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We do also have like a photo.

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So, that was amazing and I do like a little movement.

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And then you have like a diamond.

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Each of these are like main tract, and each of us have like a different category so like I'm. These are like predefined like extending arm rotation or racing arm and those kind of categories.

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And so that they can see like what kind of movement, they would be expected to do the kind of reward that would they would get.

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So we will.

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It's one sponsor another type of flower.

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And

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this one.

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That was great to have the ability to spawn fireworks

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eco friendly.

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So, in this level we didn't have anything super complicated, we just keep things more simple there's not a lot, there's not any animals so that initially when you get started with this you don't want to overwhelm the patients, and just getting them to

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use this more, and adapting themselves. And here you as a clinician you can read different exercises so for instance I'm going to try and create like a close shape here, And this sign at this level.

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And so,

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this is like this level just gives you like all the options, and then you can just basic gardening stuff, so you can define how many times they want to do it and say, did they find it once, but I could schedule.

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part time so it's not like once you create them you can't use them again but you can keep editing them as you as you do so you know create these frequently. And we do also have a companion app that we hope to link it with the game so that you can do this

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outside the game as well.

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So you don't necessarily have to come and put the headset on and to do these kind of basic things.

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But, do you have any questions so far.

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I know that was gonna be my question was if does the person have to be like in the game to change it, but we don't have that implementation for the companion app so at the moment yes you have to be in the game but eventually we'll have a solution where

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you can do this. But the idea is like, as long as you have created in, because the game itself is in 3d space so I can talk, I can show you now.

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You could also do like a forward motion by. I know on zoom it might be.

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But this is basically a in depth in terms of depth. So I'm doing a forward motion.

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So, creating these based platform a little difficult.

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As long as you have created in the game and then you know it's stored.

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Definitely do the assignment part and, you know, selling their applications and all of that in the system, and the companion app system.

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So, just creating the spell itself should be something that you would expect would expect them to be, you know, using the game itself. There is an advantage.

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And then the second stage that we have consistently.

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The same garden spells. Plus different up. And so,

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So, we have multiple animals have rabbits out dog, cat.

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Squirrel or, and do.

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And so what we, or you can do with them is, you can either feed them or play with them. So for example, you saw.

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So for example, I could spawn a carrot, with a rabbit.

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So that rabbit is coming.

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And then I can also shoot one.

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But yeah, as long as you know, you could feed them as long as you're within the range.

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So,

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and then you do also have the ability to call them closer to us, they don't necessarily have to, you know, go to them.

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So,

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like different, you can call each of them so this is kind of like an external rotation kind of an exercise.

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So the rabbits are just coming towards me.

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And, and then you can just like you know pet them or, you know, feed them. So I'm just gonna

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create

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character.

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And then

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just.

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So, and then

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I can call, let's say, dear. So this is like one of the most complicated one that ship with the game that kind of tries to cover the crossing that line and like, you know, doing a combination of movements.

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And

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so,

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so you can basically use your hands, and you get a sense of vibration, as you touch them.

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And basically virtually pet these animals into this with any of the hands, not necessarily defined as one.

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And when you create any shape

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you have more options now in terms of reward as well.

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So, And as you do these.

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You also get a sense of.

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Well done.

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affirmation from the very.

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So that way, the patient is, you know, motivated and knows that was amazing.

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And that kind of gets randomized, and even if you don't complete it.

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Let's say.

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So this is a time within which you can I detect it, as no longer than you know content.

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That was close. Try again.

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So, yeah, you'll get different kind of affirmation depending on whether you succeeded or not.

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But, yeah, that's pretty much all we have. Is there a specific thing that you want me to try.

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Um,

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let's try.

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Can you try any, like, um, I guess my question is, is when you create the spells, can the therapist dictate like how high up they have to reach your how high low or is it pretty much a standard like area or does the patient initiate that where it goes

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in the field, like the space.

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So, the way the positioning of the spears is done is dependent on the clinician how they place them. So, where to place them hide and when you had a trace them it will be hot.

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So you keep in mind, and no like once obstacle for you patient and way possible. And when you do them.

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So for instance, I mean you could do this as high as you want or as little as you want, as long as the sensors, kind of, you know, support it.

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And you can do like another. Well done, which I think is pretty useful is that you could create shapes, like for example I'm just trying to create a circle.

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And the idea is, I don't know if you will be able to see it on screen but I'm just trying to do this with my rest.

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So you could do that was amazing motion.

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You want the patient to do you could scale, the shape. So you could do like a small circle and then you would say to the patient that just use your risk.

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To do this, and then they will just do you know risk rotation.

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As if you create like a bigger circle and you probably use you use the arm, or at least the output or.

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So you could define how what motion do they end up doing by, you know, determining how you create the shape and also, and what scale. you got it.

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Any other questions.

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Um, no, that was my main one right away.

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So, another like thing that you could do was like, obviously you can, because there's a 3d world you could basically do as big as you want.

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So, I could just, you know, go from left to right. I know this might be a stretch, but you. Well done, as big as you want.

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It will be aligned in terms of like where you're looking at. So right now I have do have a limitation, because of the space, but if it's, you know, if the system is placed in a more a space that has more, you know, flexibility, it doesn't really require

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too much space in terms of the set at the position where you are and whether the sensor is.

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I kind of just have it on the table right now so that's the advantage of using Oculus where you don't have to have like a big room. And you could set it up again in small room as well.

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But you're basically using all the standard controllers and standard equipment is no additional hardware that we're using, and you're just using, you know, minimal buttons so you just had like Preston ones for tracing we do have you do hold on to the

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triggers.

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When you do that.

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So we try to keep most of the interactions.

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Just you like as minimal as possible, and incorporate we incorporate a different vibe like this vibration on the controllers and you get different feedback through sound and visual system ensure that everybody can make you know no matter their disabilities.

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It will be able to like you know get some acknowledgement of what just happened.

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So, I guess, Do you have anything else you want me to try.

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Um, what you said the most complicated one. You guys have is the spawning of the or the calling of the deer Correct, yes, the infinity symbol. Okay, the most complicated one that we ship with the game.

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So, do you have another one that you would want potentially to have in the game, as an existing one.

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Like, one of the existing ones or what's one I would add is that what you're asking. Yeah. Is there any one that you would add to the existing existing.

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I feel like I mean you guys, you guys actually done a nice job of incorporating a lot of different brands, which is great.

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I feel it's nice that it's a 3d space you can do like forwards and backwards like you know if you were like shifting things on a table or, you know, reaching forward into a cabinet.

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Do you guys have that like a forward diagonal upward.

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Yeah, so we don't have a in the game as predefined but you can always create like a forward one like I just showed you earlier.

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So I could just do this.

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You want to take a rest. So we also have like a timer, which prompts for like the player to take a pause after 10 minutes so that they don't them themselves that.

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And

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in terms of backward also you can, depending on where you like which one you put first is the starting point. So, I'm just doing this in the reverse now, starting from here and kind of going backwards, just depending on how it was great.

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And then, very rarely will start and like how, what kind of motion do we do.

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Okay.

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Anything else.

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No, I think, yeah, no, I've seen a lot. Thank you.

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Yeah.

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There is there anything else you want to show.

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Notice was enough.

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And so, what are your initial impressions of overall of this game.

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Um, I really like that you guys have won the ability of the clinician, or the yeah the clinician to set the parameters so it's like patient specific it's not just always the same like you know if you're doing the horizontal line style, it's, you know,

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going to be five feet from the floor, kind of, and so you can, it's always based on where they you put the spheres so I like that and that kind of can also help show progress you know if the patient's doing it higher lower, etc and also allows for patients

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of all abilities to do it. And I like that it goes, there's simple to complex so that way you know you have people that are just starting to regain more movement and then folks that are like refining movement or, you know, starting to do multiple movements

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at once.

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I'm involved. And the thing that I found when I did a lot of like the virtual reality games, when I worked in impatient was using it almost daily like it's just very engaging more fun.

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Like you have like an 80 year old adults have never played video games in their life and they're like Uber excited to like get on this like virtual reality game it was like the wildest experience ever.

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So I think that this will be nice because then they also like have the component of like petting the deer petting the rabbit and like it gives you like that sensory feedback which a lot of times also happens with stroke folks that have the motor deficits

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there is a sensory deficit as well so there's some sensory feedback there. At least you know if the distal part of the arm isn't moving.

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You can give it some other type of feedback. I'm.

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My only question would be like if someone doesn't have the ability to manipulate the controls how, like the dexterity in their fingers, how would they interact with the game.

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Yeah, so the moment we don't have an alternate solution for that. We do expect the patient to have some level of stability with that would that that they will be able to interact with it.

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In future, we could definitely look into adding more trackers and other in your hardware that would enable you to like detected without, you know too much controls.

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But another thing we could do like right now you're using the trigger to trace. So, the trigger is at the backside of the controller.

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Like here, and here.

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So maybe if this is too hard, we could potentially have a solution where you could change the mapping of the controls so that instead here you could basically use one of the top buttons, because maybe that's more accessible.

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Or, so we could have that kind of a thing that you could potentially do.

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There's also like things in the therapy world called active hands which I don't know if it would work with that controller specifically, but basically like people that don't have like strong or great grasp.

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If you rock put the hand inside of whatever you're trying to grasp, or on to whatever you're trying to grasp you wrap it around, it'll kind of help to maintain that obviously you would still need some level, level of finger dexterity to manipulate the

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trigger the button but, you know, that eliminates one other demand on the patient so just something to think about. I've also used Kobe and rap before like this is a low tech option.

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You mentioned you worked with virtual reality before, what sort of controls, but we were using at that stage.

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So that was more of the cup. So the first one is like a shoulder one so it's like has too long, like, almost like they're like wires that spend and they come down, and then you use like a bell curve she's hearing a bell curve piece here and it locks into

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each one. And then you set the range of motion each time the patient engaged. So you say can you reach your arm as far across your body as you can and if the patient can move here that's where they move and then can you bring it back towards me.

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And if that's how far they go and then that's your end range that's your starting. And so, like the one game I used all the time was, and you are a basket and you're trying to catch apples that fall off the tree.

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And so that is how you interact with the game and just this plane.

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And so basically that doesn't have any controller it's just working on shoulder movement, and it's working in this plane and then the second plane that will work in is up and down, so like if you're a.

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I think it's a hot air balloon or a helicopter and you're trying to get away from all the clouds are like obstacles that pop up so that you can have as many controllers.

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The second one that I've used is also a shoulder one and the person's hand is placed into like a for a forearm support so there's a support here and a support here, and their hand is just like placed onto like some sort of long peg here.

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And then that's when I've used like the active hand or something like that to wrap it around to maintain stability, and then they engage in like an open space, almost like it looks like an air hockey table, but they engage on that and that's how they

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control the game up on the screen above them. And then the third one is like kind of like an exoskeleton like I said this was for folks that have full range of motion but you're really working on like strength rapid coordination.

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And so that one again doesn't have controls, it's just, it uses feedback and all of the joints to engage with the game so I think ours are just a little different in the fact because it's not true VR it's just, it's using virtual reality but it's not

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immersive in any way, it's not quite like Oculus.

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So it's actually depicted on the screen rather than HMD. Yes, yes so it's not it's not true VR it's like, we call it like when we document we say non immersive virtual reality motor, you know, game and split explain the game, because the person is using

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their arm to manipulate the game. It's just not immersive quite like this so I think that's why we don't have to have, you know, triggers and buttons and things because you guys are doing a lot more involved movements because it's a way more immersive

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environment.

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Yeah, I would be willing, I mean I will be interested to see more details about that if you could share, maybe some document that has all that information about the hardware and, you know, the games that you used earlier on.

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That's Yeah, I'm definitely like I'm just even.

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Can you say I you know because I never even oh it's by Tyro motion that's it's by.

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Yeah, they I will send you guys like the links to their device.

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And so you guys can take a look at it and just see kind of what I'm explaining, I think they have some videos of just you know because they want people to buy it on their website.

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So, yeah, I'm coming on to the game.

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Do you think that the first of all what do you think about the tracing Part I, is that map, and is consistent with how patients would do different motions and sizes.

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Yeah, I think that that's fine I think it's actually as some variety.

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You know in in the clinic I say, like we just do very basic like shoulder reflection like shoulder abduction you know shoulder external rotation. This is kind of putting all of those things together at once, which is much more functional and actually

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much more difficult usually for patients because you're having to fire multiple areas of the motor cortex at once, rather than just one.

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So I think it's actually a better thing as far as motor recovery goes, I think it'll be challenging but I think it's ultimately better.

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So I think it is consistent and I like again like the 3d component like it can be forwards, it can be backwards. It doesn't have to be just that horizontal and vertical plane or diagonal.

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Right.

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Was there anything that was missing in terms of the experience that the patient, knew you would add like any other component that you wanna, maybe be able to customize.

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Um, I think you can customize the movements and customize the range of motion or whether seniors are placed.

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I think just having like maybe a list of directions that goes with it. Just to the patient can navigate it easily, especially, I'm not sure like what population, you guys are targeting or who's going to be using it, but I know sometimes technology can

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can be more complicated so just like a very like you know Users Guide spell casters and like very quick easy steps on how to just like access the game.

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I think that would be helpful just especially if they're not as familiar with virtual reality, it would just make it very plain and simple.

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But yeah, we do, we do have a readme file kind of map that we go with. But, in the game as well, because it really depends on how you create the different exercises, who have arrows I don't know if you've seen.

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showed you the direction which you were supposed to go. And also, and as you are doing these, the one that you're supposed to be touching becomes like a bigger sphere, compared to the other ones so it kind of tells you which one you want to go to next.

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So it does give you some guidance in terms of like what direction you will trace access to the south.

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Yeah no i think that i think multiple modes of queuing is important. Definitely. And I think the also you mentioned the verbal feedback from the ferry guide is.

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I think that's helpful to I mean it encourages the patient and also engages them more It feels like it's an active experience rather than just passive.

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And in terms of creating a spell and exercise are run by you again the process that I just went in the game.

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But I just am looking to see if there's anything that you would want to add to that, to, you know, maybe other variables or things that you want to customize.

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As you're creating then maybe there are different kinds of factors that you would want to, you know, be able to control.

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So, the process in the game was you clicked on the ad spell you placed this spheres depending on the motion you want to achieve and the shape that you want to create and then you click on Save, and you choose the reward, and the requisition count.

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Was there anything else I would add to this process.

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I'm repetition.

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You'd have the high.

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Um,

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what it what it can accounts with a patient on the left hand side of the book Correct, Yes. So, killing good accounts. Okay.

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Cuz I know that's important.

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Um,

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no, I don't think there's anything I would change there.

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No i think that i think that's all the customizable things that I look for when I do something, how much I'm doing it.

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Can I make it harder Can I make it easier. And I think the way to do that would be adjusting the height or just doing the type of style.

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That's cast, and then maybe the only thing would be just for folks that have, you know, more significant cognitive deficits having, even though we talked about the arrows in the sphere is getting bigger saying, you know, draw like to the left, draw down,

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having like a verbal cue with it but I don't know how you would do that because every spell is so unique. But other than that, no I think those are all the points that I would really want to customize.

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You mentioned about the high. Was there something you would say, because I said, it will be, right now it's like, depending on how you create them.

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It will be you know at that level.

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So depending on whether you're seated or standing, because they replayed in both ways. And at the moment I was he did but I if I will stand up by the flower aligned accordingly.

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But let's say your height is five 5.5 and a patient is 5.1 so that's a good visit deviation to that. So would you say they as a clinician would it be tedious for you to they always keep that in mind and I created that or should there be a way for you

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to adapt into the high of the patient.

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I think that I would want to be able to do the first time with the patient to be able to gauge what they're looking like, at least in the virtual environment, or like, if that makes sense.

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Somehow to see like what their version of this reaching motion looks like in the virtual world,

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and then kind of being able to go from there because I think that's a good point that, you know, every it is going to be different based on if you're seeing that sitting or standing or your height difference.

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So, I also think maybe if I used it I would have, you know, I'm size nine so I would know okay well if I have the things up here, That's how it feels for me.

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Um, so I think it would have to be maybe try that and if that didn't work always kind of do like the first session with the patient so that I was able to set everything up appropriately.

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And how, how would you mean like what setting would you use this like would you use this in one of your outpatient setting where will you be like won't take home, and if so, how often you would use this.

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I would, I would love this and outpatient.

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I personally.

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I think that I would definitely want to use it at least once a week. If I was seeing a patient twice, three times a week I'd say once to twice a week.

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The thing I found when I use, like those types of games that are more like interactive and things like that is you get a lot more repetitions and just your average rudimentary exercise.

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And especially, you know there is my colleague did a lot of research on our robotic devices that are the virtual reality devices we have.

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And she actually timed a patient that I had, doing an activity on the robotic versus doing it, just like rudimentary style on, like with a skateboard on the tabletop and I think the patient got three times as many repetitions doing this type of activity

01:06:20.000 --> 01:06:27.000
so I think using it frequently would be better because that's what the research and support.

01:06:27.000 --> 01:06:38.000
And like, how often like in terms of like at a stretch how many minutes, would you use this in one of your sessions.

01:06:38.000 --> 01:06:41.000
Um, I think that would definitely depend on the patient.

01:06:41.000 --> 01:06:54.000
I like that you guys have a timer after 10 minutes to kind of say like hey how are you feeling. I'm for my driving rehabilitation we have we do have a driving simulator that is immersive virtual reality.

01:06:54.000 --> 01:07:01.000
And I have had patients like, because it's driving they think if they don't do it like I won't let them drive again which is not true.

01:07:01.000 --> 01:07:08.000
So I have had people like almost gets sick on it because they think they need to like do the whole thing and like get through it.

01:07:08.000 --> 01:07:14.000
I think that that dosing really depends on the patient's tolerance to virtual reality.

01:07:14.000 --> 01:07:20.000
also just their general strength against gravity.

01:07:20.000 --> 01:07:30.000
And so I mean I would think I'd like to use it for at least 10 to 15 minutes at minimum, but, um, I think it's gonna it would be patient specific.

01:07:30.000 --> 01:07:40.000
And would you assign this as a take home, and maybe have them to a certain, like how frequently would have them do at home.

01:07:40.000 --> 01:07:50.000

I think if the patient was able to have a certain cognitive criteria or had a caregiver that was responsible and went through some sort of training or understanding with the game.

01:07:50.000 --> 01:08:00.000
Definitely a take home I would say doing it again like my usual recommendation doing it daily you're doing it every other day, you can't do it daily.

01:08:00.000 --> 01:08:08.000
I just think more is better when we're talking recoveries So, especially with acute when things are an acuity.

01:08:08.000 --> 01:08:15.000
Was there any other emotion that you would add, or any other exercise they were predefined in the game that was missing.

01:08:15.000 --> 01:08:34.000
Um, you guys had a lot of different shapes you had lines, and like I said the only one I would maybe think about was like some sort of if you could like in 3d like forwards and upwards like a slash forwards or a slash outwards just kind of like a, a more

01:08:34.000 --> 01:08:44.000
functional reach movement in like that forward plane, not so much just like up and down.

01:08:44.000 --> 01:08:47.000
You guys did have some.

01:08:47.000 --> 01:08:57.000
I liked that it was, ya know, I think you guys have a lot of good stuff in there was stuff with crossing mid line so getting this side which is often forgotten about.

01:08:57.000 --> 01:09:14.000
So, if anything, just adding like you know, it would be up to the therapist to make sure like if the spheres were again like in an adequate position so the patients having to, you know, horizontally, add ducks and abduct but no i think there, that you

01:09:14.000 --> 01:09:17.000
guys had a lot of great stuff.

01:09:17.000 --> 01:09:27.000
Yeah, we do have diagonal lines but it's not like wood, but it's like with same plane. So, yeah, I didn't want to put those in the game.

01:09:27.000 --> 01:09:32.000
Obviously I showed you that you could create like a forward or backward motion.

01:09:32.000 --> 01:09:46.000
But when you said about the forward motion and like diamonds Do you mean like on the same plane or more like in terms of depth in terms of depth, I think that would be really helpful kind of like, just because I'm thinking of, you know, functional things

01:09:46.000 --> 01:09:57.000
I've told my patients to do and that is a movement I've told them so I think practicing that would be helpful if we, if I could incorporate that sounds good.

01:09:57.000 --> 01:10:03.000
And would you say that, do you believe that if this was used and.

01:10:03.000 --> 01:10:13.000
In, along with the traditional therapy, would that have any impact in the piece of the recovery of a patient.

01:10:13.000 --> 01:10:30.000
I think that I guys are my knowledge and research supports that more is better, you know, you guys you know this is more input to the arm and sliding of that motor cortex more frequently the neural plasticity of the brain is just there's more things being

01:10:30.000 --> 01:10:43.000
introduced for that. So I think if only thing it could support. The only thing that could be negative would possibly be if the person just doesn't tolerate virtual reality but I only think it could help, I don't think it could hurt the only reason I think

01:10:43.000 --> 01:10:52.000
it could hurt is if the therapist doesn't do their job to insurance within adequate parameters for the patient but that's not a clinician not you guys.

01:10:52.000 --> 01:11:04.000
And what are some of the variables apart from range of motion that you would want to kind of track with the game and like what kind of visualizations would you prefer to see those data.

01:11:04.000 --> 01:11:22.000
I definitely want to see like time utilize know like how long we're on it, and even just total time but time per session. I also think I'd want to know repetitions per exercise, and I like how you guys were had labeled or we're starting to label each

01:11:22.000 --> 01:11:37.000
one based on what movement, it was so like if you know it was horizontal line like you know, horizontal abduction or abduction or extending arm or, you guys are starting to do that so you can kind of categorize them and then say okay this person has gotten

01:11:37.000 --> 01:11:50.000
100 repetitions of this today, you know, that's wonderful and, you know, especially an outpatient at the end of the day we are trying to justify her jobs to insurance and so for saying hey we just did hundred reps with your patient and now they're like

01:11:50.000 --> 01:12:02.000
20 degrees better range of motion like Don't you think they should keep coming. It's just anything objective is always helpful. I think that that would be helpful,

01:12:02.000 --> 01:12:06.000
beyond time and repetition kinds of anything else.

01:12:06.000 --> 01:12:26.000
Um, what else maybe track. And how about how about using because you have the ability to swap hands and use both hands would, would you say you would use the other arms data as like a baseline or something that, um, I feel like I want to just personally

01:12:26.000 --> 01:12:41.000
I would just want to use the affected arm as my guides because even just general people have like a normal range of motion on each arm that's a little different, especially if it's a dominant versus non dominant hand so I feel like for me.

01:12:41.000 --> 01:12:47.000
I would just want to be able to kind of look at where are we starting and where are we ending.

01:12:47.000 --> 01:12:54.000
But other people may feel differently about that I feel like that's may just be me.

01:12:54.000 --> 01:12:56.000
Right.

01:12:56.000 --> 01:13:05.000
So yeah, I think that's pretty much all the questions I had, unless you have another any anything else you'd like to add. Before we move on to the next part.

01:13:05.000 --> 01:13:09.000
No, no, No, I'm good.

01:13:09.000 --> 01:13:14.000
So yeah, I'd love to hand it over to Jared, and a huge.

01:13:14.000 --> 01:13:21.000
Thanks for everything you've provided us so far it's been really valuable.

01:13:21.000 --> 01:13:35.000
So what we have is a companion app that sort of goes alongside spell casters that you could use as clinician to monitor patients and track them. Would you be comfortable.

01:13:35.000 --> 01:13:47.000
So I have a link here where you can actually interact with it would you be comfortable sharing your screen and just exploring it a bit. Sure, absolutely awesome so whenever you're ready.

01:13:47.000 --> 01:14:03.000
Go ahead and visit that link and share your screen so we can see where you're doing. And while you set that up. The. What I'd like you to do is sort of just voice your stream of consciousness and think aloud, as you're interacting with this I'd like to

01:14:03.000 --> 01:14:19.000
know like what your initial impressions are. If you have feedback, like, Oh, this is organized kind of funky or I don't know what this is all about anything that comes to mind, that could help us improve the prototype would be extremely beneficial.

01:14:19.000 --> 01:14:36.000
All right, I'm seeing just right away I'm about to share my screen. Do I need to log in or anything like that, you can just click the Login button, and also to instructions with this prototype, it's not a functioning, like full product it's just a thing

01:14:36.000 --> 01:14:44.000
a thing you can click through and experience. So not everything has is usable just yet. Boom.

01:14:44.000 --> 01:14:50.000
It's weird. I've never seen it go outside of the bounds of the box like that.

01:14:50.000 --> 01:14:56.000
Can you try to refresh it and see if that fixes itself.

01:14:56.000 --> 01:15:03.000
So, if you if you need help knowing on what you can click on what's prototype and what's not prototype.

01:15:03.000 --> 01:15:09.000
Just click anywhere and you'll see things like flashing blue, that are clickable.

01:15:09.000 --> 01:15:16.000
And, yeah, so just keep in mind is not completely finished yeah we're just trying to get feedback on what we're what we're thinking.

01:15:16.000 --> 01:15:24.000

Go ahead and hit login. I wonder if the, it'll fix itself with the resolution pen is so strange. I've never seen that happen.

01:15:24.000 --> 01:15:32.000
I can, I can try and open it in another browser would that be helpful. Yeah, that might be really helpful.

01:15:32.000 --> 01:15:39.000
I'm going to stop share just because it's only sharing my Safari and

01:15:39.000 --> 01:15:44.000
we try don't have anything else.

01:15:44.000 --> 01:15:53.000
is Mac is from like literally 2013 so it is slowly wanting to kick me out of all of my storage and.

01:15:53.000 --> 01:16:01.000
Looks like you're using Safari which is what we built it in, so maybe let's do this.

01:16:01.000 --> 01:16:05.000
Let's just try another tab and see if that works.

01:16:05.000 --> 01:16:10.000
For some reason my other.

01:16:10.000 --> 01:16:21.000
I'm sure we do know if there's like a way to change the resolution of it or change the device board or anything like that.

01:16:21.000 --> 01:16:24.000
Okay.

01:16:24.000 --> 01:16:36.000
Yeah, I'm still doing it. I mean I'm happy to interact with it like this I just don't know if that'll impact kind of what's on. No, I mean, I think we'll just deal with what we have.

01:16:36.000 --> 01:16:41.000
I'm flexible I just, I don't want to throw you guys off.

01:16:41.000 --> 01:16:45.000
By default, so yeah, we know it's itself. Oh good.

01:16:45.000 --> 01:16:48.000
Okay, look at that.

01:16:48.000 --> 01:16:49.000
All right.

01:16:49.000 --> 01:17:02.000
Okay, so I just hit login so I'm on the dashboard. It looks like this is showing each of your patients, like,

01:17:02.000 --> 01:17:08.000
okay, so it's showing demographics.

01:17:08.000 --> 01:17:12.000
Okay, shows notes.

01:17:12.000 --> 01:17:20.000
Oh no, it's all small.

01:17:20.000 --> 01:17:38.000
I think one of the things is the orientation on the tablet interface, maybe if Jared, or Sherry if you can make that landscape that might starboard.

01:17:38.000 --> 01:17:48.000
I'm just my unloading it on my own computer to see where it goes.

01:17:48.000 --> 01:17:50.000
Okay.

01:17:50.000 --> 01:17:52.000
I click back on this patient.

01:17:52.000 --> 01:17:55.000
Okay.

01:17:55.000 --> 01:18:12.000
So it looks like these are notes, I'm guessing that the therapist check of each session, which is nice. I like being able to free text I think sometimes it's better can just add more detail.

01:18:12.000 --> 01:18:21.000
goals overview percentage completed

01:18:21.000 --> 01:18:26.000
on these are different goals finish eating us cook 18 meals.

01:18:26.000 --> 01:18:32.000
you can really get dressed

01:18:32.000 --> 01:18:39.000
as a stranger keeps changing, making sure we're all awake.

01:18:39.000 --> 01:18:44.000
I'm.

01:18:44.000 --> 01:18:51.000
Okay, so this is like it's just tracking how the patient's meeting goals.

01:18:51.000 --> 01:18:53.000
That looks fixed for Thank you.

01:18:53.000 --> 01:18:56.000
Thank you.

01:18:56.000 --> 01:19:12.000
Um, okay. And then this looks like it's a bar graph of the same thing. I kind of like the bar graph just, I think it's a little more straightforward and it shows weeks, one through eight more clearly this is a little.

01:19:12.000 --> 01:19:17.000
Just for me. Visually, difficult to read.

01:19:17.000 --> 01:19:30.000
Um, yeah And this has a lot going on so I personally just if I'm gravitating towards just what a visual of is this person making progress towards goals weekly I like this.

01:19:30.000 --> 01:19:32.000
This is nice. Barbara.

01:19:32.000 --> 01:19:38.000
I'm accuracy.

01:19:38.000 --> 01:19:46.000
Okay. And this looks like this is part of the game so what they've done in the game.

01:19:46.000 --> 01:19:58.000
Okay, so it shows how compliant they are with the home exercise program which is very helpful because being. I don't know if you guys know that doesn't always happen.

01:19:58.000 --> 01:20:00.000
numbers don't lie.

01:20:00.000 --> 01:20:10.000

So, okay, no I like this. I like that it's, it shows kind of what was recommended by the therapist and what the patient decided to do.

01:20:10.000 --> 01:20:23.000
I like that also shows kind of what grand new can make up in therapy. No, I'm distribution of attempts of cross session.

01:20:23.000 --> 01:20:28.000
Okay so this showing how successful they are during sessions, I like that as well.

01:20:28.000 --> 01:20:35.000
I like the visuals are nice. I think that it's just easier to digest.

01:20:35.000 --> 01:20:41.000
And now it's broken into each kind of type of.

01:20:41.000 --> 01:20:45.000
Yeah, so imagine that autumn pictures of triangle.

01:20:45.000 --> 01:20:50.000
So actually, Could you describe for me how you would interpret that.

01:20:50.000 --> 01:20:53.000
That picture down there at the bottom.

01:20:53.000 --> 01:21:06.000
I would say that they started in this top left corner went over to the right down and then, it almost looks like a backward see what it looks like to me.

01:21:06.000 --> 01:21:12.000
Yeah, That's what it looks like a backward See, and then they hadn't completed it yet so.

01:21:12.000 --> 01:21:19.000
Okay, so our intention here and maybe you can help us make this better is to show you like.

01:21:19.000 --> 01:21:32.000
If you know maybe they did the triangle. Again this is supposed to be a triangle. So maybe they did the triangle gesture 20 times. This image is supposed to show you where overall they're getting the triangle wrong.

01:21:32.000 --> 01:21:41.000
So in that bottom right corner is the problem area, because it's highlighted in red.

01:21:41.000 --> 01:21:43.000

Okay.

01:21:43.000 --> 01:21:52.000
Okay now yeah I'm following now, so more of like this downward and outward most notion

01:21:52.000 --> 01:21:55.000
that could be communicated to you better.

01:21:55.000 --> 01:22:09.000
Um, I think, if you almost just have like a photo, like, I would definitely be more work, but I'm a photo of a triangle and just like a highlight of the area.

01:22:09.000 --> 01:22:25.000
In, like almost like an overlay, maybe have a triangle like just even from like Word or something like that just an overlay of it and then that way it's a little more clear as to what's being depicted.

01:22:25.000 --> 01:22:26.000
Thank you.

01:22:26.000 --> 01:22:28.000
Yeah.

01:22:28.000 --> 01:22:35.000
Okay, it's gonna square, so we didn't do all of the guests. All right right I remember now.

01:22:35.000 --> 01:22:38.000
I was getting excited.

01:22:38.000 --> 01:22:39.000
Okay.

01:22:39.000 --> 01:22:46.000
Again, this shows duration so this is that I talked about that's nice to know.

01:22:46.000 --> 01:22:51.000
Total gameplay time per day.

01:22:51.000 --> 01:23:01.000
And I know that's really important to show idle time versus gesture time I use this Eastern device that shows you actual time, Eastern delivered versus actual time the devices just on.

01:23:01.000 --> 01:23:13.000
I find that helpful.

01:23:13.000 --> 01:23:17.000
times velocity.

01:23:17.000 --> 01:23:26.000
I think this information is helpful I also think it would be a little bit above of what I would document to like a pair.

01:23:26.000 --> 01:23:34.000
So I might just that just might be, like, if you are looking for things you want us to take out or reduce like the amount of information.

01:23:34.000 --> 01:23:39.000
To me, that would be something that I wouldn't look at as much

01:23:39.000 --> 01:23:42.000
range of motion.

01:23:42.000 --> 01:23:58.000
Okay. Neck range of motion, degrees and would this be the therapist measuring this, this would be the, the VR headset, like, assuming this is zero, like this is 90, either direction, measuring how much the patient is turning their head.

01:23:58.000 --> 01:24:02.000
Okay, interesting.

01:24:02.000 --> 01:24:10.000
I definitely think also like some patients with stroke get things like left and intention or right and intention so this could actually show up that's improving to.

01:24:10.000 --> 01:24:13.000
So, that's useful.

01:24:13.000 --> 01:24:18.000
I'm going to go back, hit this note section out, and that's what that was.

01:24:18.000 --> 01:24:26.000
OK, dashboard message.

01:24:26.000 --> 01:24:36.000
So you can interact with your clinician which is always nice.

01:24:36.000 --> 01:24:38.000
So library.

01:24:38.000 --> 01:24:44.000
And is this where you would you could go in possibly and set your spells for your patience.

01:24:44.000 --> 01:24:47.000
Okay.

01:24:47.000 --> 01:25:00.000
We also imagine it as a place for like let's say this.

01:25:00.000 --> 01:25:05.000
we can share that with the larger spell casters community.

01:25:05.000 --> 01:25:27.000
Now that's, that's really good. That's what we have in our home exercise program that we use. You can kind of share them with the whole entire network which is nice.

01:25:27.000 --> 01:25:30.000
Okay, I'm gonna stop sharing my screen.

01:25:30.000 --> 01:25:39.000
Awesome. Yeah, that was super helpful I really appreciate it the comments on as you're going through it.

01:25:39.000 --> 01:25:46.000
So is this, do you think, an app like this would make spell casters more valuable.

01:25:46.000 --> 01:25:59.000
I do actually think that's a great supplement, um, you know access is a big thing. And so I think that's easily accessible and i a lot of the things I had mentioned that I would want to see we're actually here so I'm sure you guys feel like all chuckling

01:25:59.000 --> 01:26:13.000
to yourself but I mean I'm chuckling now, but, um, I think it's nice and also it just has a lot of great trackable data there and it allows the patient people to access you easily.

01:26:13.000 --> 01:26:25.000
You know patients that I work with, I always give them my desk number my email so they can access me anyway but if they're already in the app and, you know, there's an issue or something's not happening or they're having a problem or pain, they could

01:26:25.000 --> 01:26:27.000
just do it that way.

01:26:27.000 --> 01:26:29.000
Right.

01:26:29.000 --> 01:26:35.000
And can you think of anything, generally to improve it so that would be more useful to you.

01:26:35.000 --> 01:26:50.000
Um, I think just maybe having a way for it to be kind of I recognize like this is for a minute for like a tablet or an iPhone that maybe finding a way that it was like on a website so that way you know if I'm at work.

01:26:50.000 --> 01:27:01.000
I'm not I don't have just like my own tablet I have a Microsoft Surface Pro and so that way I could check it periodically like during the day just to make sure things are going okay.

01:27:01.000 --> 01:27:13.000
Yeah, our intention actually was for it to be like a web app on any device it's just as you saw, we were it was kept changing what it was built for working on it.

01:27:13.000 --> 01:27:16.000
We try to update it in between each one of these.

01:27:16.000 --> 01:27:28.000
These sessions to continually improve it. So that's what you were noticing was just some bugs, but I'm okay. No, I just think yeah I think that would be helpful just being able to really quickly get to it.

01:27:28.000 --> 01:27:33.000
I liked how each patient was quickly there and you can easily access the notes.

01:27:33.000 --> 01:27:42.000
Like I said, the velocity thing I think would just be a little irrelevant to me but I'm not sure if other clinicians bought the same.

01:27:42.000 --> 01:27:52.000
No I and I liked the visuals I just, it wasn't just words and numbers and things that data out there I think it did a lot of the work for you which is always helpful.

01:27:52.000 --> 01:28:02.000
Great. Well, I really appreciate your time. It's been a lot like you've given us a lot of your time so I'm not going to ask any more questions myself, but thank you again.

01:28:02.000 --> 01:28:05.000
You're very welcome. It's no problem.

01:28:05.000 --> 01:28:06.000
Yeah.

01:28:06.000 --> 01:28:20.000
I just have one or two more questions, and then I think that will be all there any other variables or data like visualizations they would add to that, to the app.

01:28:20.000 --> 01:28:22.000
Yes.

01:28:22.000 --> 01:28:26.000
Um,

01:28:26.000 --> 01:28:33.000
Oi, you have the time, oh maybe now you had time per session.

01:28:33.000 --> 01:28:44.000
I don't know if the repetitions were on there so how many repetitions I just can't remember it they might have been. I think you had it per, per item but I don't know if it was per day.

01:28:44.000 --> 01:28:57.000
I also know you guys aren't finished with the app so I may just not have looked at that tab, but maybe having just what repetitions of what movements per day, or per session.

01:28:57.000 --> 01:28:58.000
Okay.

01:28:58.000 --> 01:29:06.000
And what interval would be best suited for the visualizations would you say per session per week.

01:29:06.000 --> 01:29:19.000
Um, I would say per session I think that gives you just more comparable data because per week if a patient does it twice one week and then five times and other week I think the data is going to be off.

01:29:19.000 --> 01:29:29.000
So I think this section would just give you a more standardized data.

01:29:29.000 --> 01:29:41.000
And can you think of anybody else that would be interested in being part of this process and you know maybe somebody who you think that would be new should, we should connect with.

01:29:41.000 --> 01:29:48.000
And I'm not sure. Yeah, I have several friends who work in inpatient rehabilitation.

01:29:48.000 --> 01:30:02.000

So they're on just a different part of the continuum, but they also use the same VR robotic devices that I used, and they treat neurologic patients they just haven't had the experience of working in outpatient like I have.

01:30:02.000 --> 01:30:12.000
So that could be one of the barriers, but if you would like me to kind of let them know that this, if that's still would be beneficial to your study, I'm, I'm happy to let them know and see if they'd be interested.

01:30:12.000 --> 01:30:15.000
Again, that will be super helpful. Yeah.

01:30:15.000 --> 01:30:29.000
Okay, I can definitely do that. And I will shoot them an email Monday and kind of let you know. Does that sound good. Yeah, and then this there okay you can send me the email information and I can definitely set that time.

01:30:29.000 --> 01:30:32.000
Sure. Ok, I will definitely do that.

01:30:32.000 --> 01:30:47.000
Thank you very much for your time here today, literally got amazing feedback will definitely work on that. Thank you. No problem. Thank you guys for having me and I will be sure to also send to your email those three things we mentioned I think like the

01:30:47.000 --> 01:30:57.000
apps, the home exercise programs and the devices that I've used in the past, and also any sort of 10 status test.

01:30:57.000 --> 01:31:15.000
Oh yeah, sure, I will send that.

OT14. Dr McGrath - notes by Sherry

Introduction

- Occupational Therapist
- Practicing in DC for 8 years

Presurvey

Do you work with stroke patients primary?

- "I do, primary, I say that's the majority of my caseload"

Demographics?

- Widespread
- Only client in DC that takes medicaid and lower economic income patients

- Also a whole wide range: diplomats, etc.

Age Group

- With covid, a lot more younger patients
- 4 patients right now are under 35 (might be tied to COVID related strokes)
- Most often, 50 to 80s.
- Some that have traumatic brain injury that are younger

Describe Exercises

- Start with stretching
- Mobile arm support if they need
- Synergy patterns, and retraining those motor patterns like: shoulder flexions, abduction, extensions, wrist and hand flexion, elbow flexion. Forward flexion.
- Ensure a good exercise and functional routine
- Task as function routine is often better

Time? Reps?

- Acute stroke → 2 to 3 times a week, blocked into 45 minute sections.
- Someone who needs a little more, 90 minutes
- Start with any tightness, tone etc. Work around 8 minute rule, then go into preparatory tasks. Reaching for something over and over again. Ends with a functional based task. Like cutting food with a fork and knife.
- High repetition… 40 to 60 times in a row.