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Nicole Wood: So hello, and welcome to Redhawk squawk exercise for life, a podcast brought to you by Seattle universities Kinesiology department.

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Nicole Wood: Kinesiology is the study of how the human body functions and our department wants to share knowledge that will allow anybody to function a little healthier, regardless of their body's shape, ability, age, gender or race.

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Nicole Wood: Each of our podcasts will highlight a different aspect of our field and help translate existing research into everyday practice.

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Nicole Wood: Today we're joined by Dr Jimmy Bagley, an associate professor of kinesiology at San Francisco State University, where he teaches undergraduate and graduate courses in exercise physiology.

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Nicole Wood: Dr Bagley is the director of the muscle physiology lab with over 100 peer reviewed scientific articles and abstracts in the fields of exercise physiology,

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Nicole Wood: muscle biology and health technology. He has collaborated on projects from around the world, with the aim of better understanding human performance.

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Nicole Wood: His work has been featured in popular media outlets, such as the discovery channel, CNN, women's health, men's health, and runner's world magazines, that is quite the resume Dr Bagley welcome, and thank you for joining us today on this spring break edition of RedHawk squawk.

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Jimmy Bagley: No, thank you so much for having me, and thank you for that wonderful welcome there.

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Nicole Wood: Yeah so I want to start by just getting to know about the use of virtual reality gaming for exercise in general and then.

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Nicole Wood: I want to switch gears and talk specifically about your involvement in the virtual reality Institute for Health and exercise.

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Nicole Wood: But first and foremost, how are you? Today's conversation is all about technology So how are you adapting to life on zoom how is your teaching and research going amidst the pandemic.

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Nicole Wood: I know i'm certainly finding it not favorable to have students on zoom during labs you know not getting to do the hands on experiential learning that we love to have them do how's that working for you.

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Jimmy Bagley: yeah absolutely I wish I could say everything was going smoothly, but you know it's up and down, and I think you know.

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Jimmy Bagley: As this was recording we've been doing this for about a year now online, and I think Initially it was tough for students and teachers to get adapted to it, and you know I went through.

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Jimmy Bagley: A time talking about physical activity and exercise like I'm sure everybody else did where I went from being you know 10,000 steps a day or whatever to like down to 1,000 steps a day and I was like I gotta change I got to do something.

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Jimmy Bagley: So, after a few months of living that zoom life, you know I just had to schedule my walks. I basically had to walk myself like a dog, you know a few times a day I had to

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Jimmy Bagley: Do that kind of stuff. And then every once in a while unplug if you can so I was lucky, this is our spring break too, so I was able to go camping for a couple days.

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Jimmy Bagley: No Internet, no cell, phone no news, no media, and it was amazing. I feel like everybody should do that every once in a while, at least a day you know 24 hours just leave your phone off if you can.

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Jimmy Bagley: Yeah just trying to adapt to it's tough, but I think we're doing better.

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Nicole Wood: Yeah yeah you know, this is my first year teaching in the pandemic so i've kind of found the same thing or i've been used to just you know hitting my 10,000 steps and, as you said, suddenly.

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Nicole Wood: Bombing down to 1,000 steps and realizing i'm overly tired and I haven't actually done any exercise today.

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Nicole Wood: Yeah so, hopefully we can go back to normal whatever that looks like soon, but I guess before we get started on all the virtual reality stuff can you just tell our audience a little bit about your background and what really drew you into the field of kinesiology.

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Jimmy Bagley: Yeah so I mean like you said, I have a few different research areas, and I feel like I've picked up something everywhere I've been so you know we met down in southern California, I did a,

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Jimmy Bagley: First did my undergrad at Cal Poly, San Luis Obispo then my masters at Cal State, Fullerton and Fullerton is where I started really getting into the sports performance exercise physiology research and.

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Jimmy Bagley: You know, like a lot of students in my undergrad I was thinking about doing PT or thinking about OT or.

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Jimmy Bagley: Medical School or personal training I didn't know what I wanted to do and it took that master's degree for me to figure out that I liked research teaching.

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Jimmy Bagley: And turns out that's what professors do is teach and do research, so I was like I think I need to do that and then.

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Jimmy Bagley: You know realized, I had to go off to get a PhD. I didn't know what that entailed, like most people going into it and I, you know looked around and I ended up getting my.

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Jimmy Bagley: going to work on my PhD at Ball State University in Indiana so change from California, to the Midwest.

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Jimmy Bagley: And that's where I picked up my second research area, which is muscle physiology so I kind of got into single cell muscle physiology I don't know if you can see.

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Jimmy Bagley: Behind me I've got a little microscope there in my office lab so I look at muscle cells from the single cell level.

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Jimmy Bagley: And then going back to my master's where we studied whole body physiology and human performance I try to tie those ideas together.

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Jimmy Bagley: And then now, as you said, i'm getting into virtual reality, and I think that was a product of me moving back to California after indiana and.

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Jimmy Bagley: And setting up here in the Bay area San Francisco State University where i've been faculty for almost six years now, this is the end of my sixth year so.

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Jimmy Bagley: Being here, you know just surrounded by technology and tech companies and all that you kind of

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Jimmy Bagley: you know, they find you or you find them or students are interested in things and I had never thought about virtual reality or even health technology as a way to use

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Jimmy Bagley: Exercise physiology but then over the last few years we've been working with the vr Health Institute and that's got us into kind of that field there so that's a my kind of 10-12 year background in a short nutshell.

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Nicole Wood: Yeah you know you mentioned some of your work with technology and now you've done some 3D printing and

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Nicole Wood: So you've done quite a bit of work, I think, in kind of technology and when we see this growing field, you know wearable technology, you know I have my apple watch on that tells me.

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Nicole Wood: You know, how many steps I'm doing, what my heart rate looks like, all that good stuff and we're starting to see this kind of boom up into other areas.

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Nicole Wood: And as you said, you've been involved in so many areas of research and in different areas of human performance right you've done this in depth work with muscle physiology at the cellular level.

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Nicole Wood: You've looked at training adaptations right you've done the strength and conditioning stuff you know I know you're doing work with even the gut microbiome and

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Nicole Wood: how that relates to fitness. So I mean with all of that what really sparked your interest in virtual reality research, because I know that that's fairly recent right within the last handful of years.

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Jimmy Bagley: mm hmm yeah you know I think when you look at technology and science in general it's like the last 50 or 60 years in all sciences there's been these very you know.

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Jimmy Bagley: Specific fields, so if you're going to go into molecular biology you're only going to study this one gene pathway and then you're all in on that.

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Jimmy Bagley: And then you know, or if you're in physics you're studying this one thing or whatever, but now I think people are.

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Jimmy Bagley: realizing that we've got to kind of come back and integrate all these different sciences and fields together.

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Jimmy Bagley: To actually look at the big picture, more because we can keep going down these little rabbit holes and it's very interesting but somebody.

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Jimmy Bagley: has got to be able to at least look at that and be like well how does, for example, the gut microbiome How does that influence exercise or exercise influenced that. That thought hadn't crossed anybody's mind probably 20 years ago.

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Jimmy Bagley: Because everybody was in the siloed fields and now with you know technological advancements everything's relatively cheap like.

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Jimmy Bagley: So virtual reality, for example, this headset here is like \$300 whereas something like this didn't exist.

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Jimmy Bagley: 15 years ago and 10 years ago something like this would have cost \$10,000 or \$12,000 so it's like becoming more accessible to the general public.

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Jimmy Bagley: I mean it's still expensive technology is.... if you're on like kind of the cutting edge it's expensive, but if we're able to mass produce this kind of thing then it becomes

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Jimmy Bagley: more inexpensive. We're sharing things like you mentioned 3D printers. There's a setup in our library where if you're interested in 3D printing or virtual reality in this stuff and you don't have that at home, you can come into this maker space and build your own stuff. So

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Jimmy Bagley: I think the accessibility and integrating different fields that's kind of where I'm at now and I'm thinking what's the next kind of hot thing and it's virtual and augmented reality so kind of this people call it XR or AR.

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Jimmy Bagley: I think that's going to be the next version of our phone so everybody's got their phone in their pocket that all exists for a while, but pretty soon that's just going to be either the hard drive or processor or whatever.

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Jimmy Bagley: And you're going to be wearing it like you're wearing glasses that's your setup right there.

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Nicole Wood: Yeah, yeah I mean.

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Nicole Wood: I'm from part of the generation that really grew up amidst the popularity of the old Nintendo entertainment system, I know I totally just dated myself on that, but.

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Nicole Wood: You know it's just a simple two dimensional game platform, and you know we sat in front of the TV we played our video games and then we got up and went outside to play, you know those two things.

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Nicole Wood: were never you know they were never married right. Like you're never doing those things together, and I can assure you that I, not once

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Nicole Wood: did I ever think about you know video games as a part of exercise and, I think, generally speaking, we tend to think of gaming as

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Nicole Wood: you know associated with a more sedentary lifestyle and not with health and that's not always the case, certainly, but you know you see these changes in technology and you have.

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Nicole Wood: You know the increase in those first player video games that you know, maybe you were active with them, but you're kind of in that.

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Nicole Wood: You know, in that field and in that reality and you have the development of the Wii, for example with those

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Nicole Wood: You know, first player type of games, where you were Bowling and playing baseball and playing tennis you know against the computer and you spoke to the.

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Nicole Wood: You know the augmented reality like PokemonGo, for example, where it did get people off the couch and they were becoming a little bit more active.

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Nicole Wood: And now virtual reality is coming into play and becoming more popular I mean do you see that viewpoint changing.

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Nicole Wood: Across you know across the field that you know we're now looking at video games, is something that could be potentially used for exercise, or is it still just like no video games or for fun.

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Jimmy Bagley: Yeah I think you hit a lot of good points there, and you brought up a lot of things from my childhood yeah like playing NES playing.

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Jimmy Bagley: You know Sega Genesis these things are all awesome and super addicting and you know their game-i-fied for a reason to get you to play in the five more games and stuff but yeah you're sitting there and.

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Jimmy Bagley: you're burning minimal, you know calories are using minimal energy above resting because you're you know excited or talking or whatever, but.

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Jimmy Bagley: We never really thought about that as anything exercise related until the Wii came out. I think yeah about you know early 2000s that was kind of a big deal when the Wii came out, but then again that's one platforms, minimal games, it takes a while for new games to come out.

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Jimmy Bagley: But then I think as again like I was saying, technology now there's not just a couple you know you can still get playstations and things like that, but now

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Jimmy Bagley: HTC, Oculus these other companies are coming and building standalone VR headsets you know, like I said this one.

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Jimmy Bagley: In five years ago, I would have said nobody's thinking about exercise and gaming and then win a game I don't know if you're familiar with Beat Sabor, it was like probably still is the most popular game and VR.

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Jimmy Bagley: That started to come out and people started realizing hey I'm moving and I feel like it's kind of like dance dance revolution and arcades.

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Jimmy Bagley: And that could be a pretty good workout and people start thinking like right getting my heart rate up is this exercise or not, and then we did an initial study that was led by my

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Jimmy Bagley: Grad student about three years ago Dulce Gomez she's down at Auburn

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Jimmy Bagley: Getting her PhD in cardiovascular physiology now but, at the time she was really interested in VR and

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Jimmy Bagley: our question was: Is this even exercise? So we've gone from that, and you know I could talk about that study a little more to but we found out Yes, this is exercise, your metabolic rates going up like a lot, it could be vigorous exercise.

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Jimmy Bagley: And now we're trying to figure out again, how can.

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Jimmy Bagley: We get people everybody to realize that this is not just a sedentary thing, it can be used for sedentary things or other, you know, has multiple purposes, but gaming and exercise now or kind of

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Jimmy Bagley: I think like you said they're coming together, where people, at least in the last two or three years are starting to think that this is a viable field to get into I think.

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Nicole Wood: Yeah and you know you talk about all the different types of.

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Nicole Wood: You know technology with virtual reality there's a standalone I think i've heard playstation has their own VR version.

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Nicole Wood: You know how accessible, is this really I mean you talked about cost.

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Nicole Wood: I mean \$300 is still quite a bit of money, I mean of course it's not as expensive as going on buying like a playstation five or something like that and it's not as expensive as going out and buying a treadmill.

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Nicole Wood: Or maybe over the course of the year, a gym membership, but you know what is that accessibility look like in terms of cost, even in terms of ease of use is it easy to use, you know what type of space, do you need those kinds of things.

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Jimmy Bagley: Yeah that's good points, and all these things are evolving so.

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Jimmy Bagley: Again, like five years ago, the whole setup would have been because you need a gaming computer to run these you know the original Oculus and HTC Vive Pro which we have to. It's awesome but you need a \$4,000 computer to run it and most people don't have that.

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Jimmy Bagley: So it's kind of more of a hobby where you know, think about how.

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Jimmy Bagley: remote control cars and stuff are kind of a hobby where it's accessible, but you really got to be into it and I think it's going from that to being like.

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Jimmy Bagley: Well there's a lot of people to have playstations and stuff so that's a little bit bigger market but still less accessible and then

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Jimmy Bagley: right before the pandemic, I would have told you that there's going to be VR arcades everywhere, because there was one in San Francisco and we had at our wellness Center here students could come in and we had.

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Jimmy Bagley: Five or six VR headsets setup and they could play either against each other or play different games, so we were thinking of a model where we might have 100 headsets.

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Jimmy Bagley: We could have people coming in and you need about two or three meters each very small, you could do this in a basketball gym but.

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Jimmy Bagley: Now, with COVID you're not going to want to get 100 people in a room together, so it is kind of coming back to where

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Jimmy Bagley: you probably need something at home, and I still think this is not the generation that everybody's going to have like a cell phone. Almost everybody has a cell phone now.

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Jimmy Bagley: 10-15 years ago wasn't like that I think the next generation is going to look more like glasses and it's going to be more augmented reality, where you could play Pokemon Go.

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00:15:41.220 --> 00:15:53.970

Jimmy Bagley: Or you could check your grocery list or text or play VR games so we're almost there, but this I mean this is the first headset that I would probably recommend people can purchase like as a gift or something or.

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Jimmy Bagley: You know the other ones are a little bit more in depth, like you got to be a hobbyist to get into them.

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Nicole Wood: Yeah, yeah you know it's interesting you mentioned, like the space component and I've never played a virtual reality game.

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Nicole Wood: So I don't know what it feels like. How realistic is it? Maybe you can talk to that a little bit more, but.

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Nicole Wood: I'm imagining that I have my VR goggles on and I'm moving about the room and I completely lose track of my spacing and my total awareness, you know I mean are people actually staying in those spaces.

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Jimmy Bagley: yeah that's a good question too and there's a lot of issues around liability so playstation, for example, they don't want you to move outside of your sitting area they want you to remain sitting and stuff that's obviously not going to work for exercise but.

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Jimmy Bagley: The ones that are standalone have multiple cameras on them, so it actually will know when you're coming up you kind of set your area beforehand, so it knows where all the obstacles are.

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Jimmy Bagley: And you can actually set it to where it is augmented reality, you can see around your room and everything so it'll warn you and the other ones

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Jimmy Bagley: Have these things, called lighthouses. So it uses different technology, just to make sure you're in this box space and those spaces can go up to

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Jimmy Bagley: 10 meters plus. So if you have enough lighthouses up, you could actually, and you had a big enough room like a basketball court, you could play a game where it almost seemed like you were, it was never ending. Because you're running around and there were slight changes and angles.

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Jimmy Bagley: And then treadmills 3D treadmills are starting to come out which are super expensive now there's a few of them that I know of in the Bay area but.

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Jimmy Bagley: Where they can go elevation changed, and they can go in 360 degrees where you're kind of in a harness if you were to fall you're just not going to like slide off the 3D treadmill but.

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Jimmy Bagley: You know, some combination of all of these I think people will end up having or maybe even a space in your House in the garage set up to do something like this, so.

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Nicole Wood: yeah it's really interesting the growth of this field in I guess kind of switching gears to the exercise component, a little bit I mean.

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Nicole Wood: You know, we all know that a well rounded exercise program should target many areas right, so we should be looking at endurance or Cardio respiratory capacity or health.

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Nicole Wood: muscular fitness so in the gym lifting weights or at all lifting weights wherever you can lift weights, you know things like flexibility balance, I mean it seems like virtual reality gaming is really only going to target a couple of those areas so.

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Nicole Wood: You know what would the recommendation be for consumers who might want to use this technology for exercise? You know i'm assume, I mean I ask is this enough? And I know the answer right, it's not it's not enough if we want a well rounded Program.

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Nicole Wood: You know, is the intensity high enough to mimic more traditional exercises like running or swimming? You know those kinds of things. So where do we go from there is it just part of it, or is it just a means to get sedentary people off the couch still having fun

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Jimmy Bagley: yeah I think now it's a component like you said it's like having a

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Jimmy Bagley: Peloton at your House. That's a pretty big investment, a lot of people have them. It's like that, but it's you know freestanding and you could do other things with it as well.

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Jimmy Bagley: So right now it's a component. It could be a component exercise. There is some resistance training stuff you could do with it with bands and things but that requires more technology that you got to buy to add to it but standalone.

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Jimmy Bagley: Some of these games so new games come out every week and you can get them if you have a

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Jimmy Bagley: computer based one it's on the steam platform, so you know if you just search steam VR games every week there's new ones, and a lot of them are...

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Jimmy Bagley: ...So the way that we rate intensity, you know American college of sports medicine is you know low moderate vigorous intensity we find games and all those categories and some of the ones, specifically like

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Jimmy Bagley: shadow boxing games or archery games where you're moving and squatting like kind of using your lower body, a lot there vigorous intensity. So up there with swimming.

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Jimmy Bagley: Running and sprinting like there's games, I can only play for 10 or 15 minutes, where I've got a,

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00:19:56.700 --> 00:20:04.800

Jimmy Bagley: You know, you have to actually wear a cover on there's other little hacks so you got to wear a cover to make sure you don't sweat all over your headset.

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Jimmy Bagley: So there's a little covers you could wear that you can wash and stuff too and there's little fans people attached to it because it's like wearing glasses that get fogged up because you're exercising but.

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Jimmy Bagley: No, you can, I think, right now, it's like, especially if you live in a city where you can't get out or in the winter, where you can't go out and.

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Jimmy Bagley: You can go out in the snow and stuff, but if you want to stay inside and get some Cardio respiratory exercise then.

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Jimmy Bagley: think the VR gaming right now is the way to go in the future, though it's going to be part of everything like you'll have it as you're running around the track it'll tell you, your split time it'll,

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00:20:34.260 --> 00:20:42.120

Jimmy Bagley: It'll have games, where you might play on the track like collecting coins, as you know, it could be, there's unlimited capabilities, once we get to

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Jimmy Bagley: augmented reality, so we can combine VR where it's kind of like you can't really see the world with AR where you can see the world but it's just different so.

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yeah.

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00:20:54.180 --> 00:21:02.790

Nicole Wood: So what about some of the drawbacks to virtual reality gaming um you know, specifically, I think of like those video games that are very repetitive in nature.

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00:21:03.120 --> 00:21:12.180

Nicole Wood: Like I can imagine having this wonderful new way that you know to exercise that's interactive and fun and then boom tennis elbow right from like Beat Saber too much.

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00:21:12.660 --> 00:21:25.650

Nicole Wood: You know I'm sure there's increased incidence even with the introduction of like Wii tennis, for example, and I admittedly played that fairly obsessively when it first came out because there's a lot of fun. And

141

00:21:26.820 --> 00:21:32.100

Nicole Wood: you know this might be more apparent in the cemetery population us maybe just starting to get up and move a little bit, but.

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00:21:32.640 --> 00:21:48.420

Nicole Wood: I mean, have you seen or heard of any like increased in injury incidents with these Games, or I guess thinking forward to the future, I mean, how do you think, or do you think that, how do you think that might unfold as those Games become more popular?

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00:21:49.200 --> 00:21:51.480

Jimmy Bagley: yeah I think the key is

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00:21:52.800 --> 00:22:00.720

Jimmy Bagley: have diversity in the Games, you play. So you know, like I said new games come out every week so beat saver might be your favorite game, but you're probably.

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00:22:01.140 --> 00:22:09.750

Jimmy Bagley: Like maybe the first week you're going to play it for 10 hours 20 hours, then you'll start to taper off, but when you get sick of that game there's plenty of other games, you can go play.

146

00:22:10.110 --> 00:22:24.990

Jimmy Bagley: And the group that i'm working with is the VR Health Institute, we actually will rate games, based on the amount of calories that you're consuming per minute so telling you whether that's you know low moderate vigorous intensity.

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00:22:26.580 --> 00:22:30.930

Jimmy Bagley: Like if you're saying like Okay, I want to rest day, so i'm going to do, low intensity exercise.

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00:22:31.110 --> 00:22:39.540

Jimmy Bagley: Then, tomorrow I want 30 minutes of high intensity, you can pick the Games, you want to kind of again make it so it's not you're not playing tennis or Bowling all day you're using.

149

00:22:40.080 --> 00:22:49.800

Jimmy Bagley: Multiple muscle groups and everything so that if you have a new game that just came out and you want it rated and you don't know what it is, you can submit that on our website for the vr Health Institute.

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00:22:50.280 --> 00:22:56.640

Jimmy Bagley: And will read it for you, eventually, we do have a backlog of these. So, but we've rated well over 100 games now.

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00:22:57.540 --> 00:23:03.870

Jimmy Bagley: Using algorithms from VO2 which is you know we look at with a metabolic cart how many calories are actually consuming.

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00:23:04.170 --> 00:23:16.740

Jimmy Bagley: And then, looking at heart rate and if you know VO2 and heart rate correlate really well to same on a treadmill or VR games, so we can kind of really estimate pretty good of how many calories you're going to be using based on your body size.

153

00:23:18.420 --> 00:23:26.220

Nicole Wood: yeah so that's a great segue into I guess your involvement with the virtual reality Institute of Health and exercise.

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00:23:26.700 --> 00:23:35.820

Nicole Wood: And like I said earlier, I think this is founded, you know less than a handful of years ago, so relatively new how did that institute get started?

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00:23:36.300 --> 00:23:46.560

Nicole Wood: What's you know kind of the main goal or mission of that Institute? And I guess, can you just talk about some of the work that you've done or are doing in that space.

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00:23:46.890 --> 00:23:57.270

Jimmy Bagley: mm hmm yeah so about like you said, I think this was the end of 2016 or 2017 when we were approached by a guy named Aaron stanton who's a game developer.

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00:23:58.290 --> 00:24:10.620

Jimmy Bagley: And he was playing VR games and realized, he was like I said heart rate up sweating he was like is this exercise or not, so he literally googled San Francisco exercise physiology lab and that our lab came up.

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00:24:11.250 --> 00:24:15.990

Jimmy Bagley: Because that's what you found if you Google that and he basically came over and talk to.

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00:24:16.470 --> 00:24:21.540

Jimmy Bagley: Our department Chair at the time, Dr Mary Alice Curren who just retired she's still involved with the Institute.

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00:24:22.320 --> 00:24:29.580

Jimmy Bagley: And was like can we get a study going to figure this out, if this is true or not, so we found some Grad students interested he donated.

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00:24:30.000 --> 00:24:37.560

Jimmy Bagley: Some of the equipment so that's great. With partnering with some of these institute's nonprofits startups businesses you'll probably get a lot of free equipment.

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00:24:37.890 --> 00:24:45.270

Jimmy Bagley: You might not have a lot of money to pay you so you know we work for basically for free because it's an institute through our campus but.

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00:24:45.570 --> 00:24:53.400

Jimmy Bagley: students were able to get research projects out of it and we ended up collecting data on 30 or 40 individuals, multiple different games, and found that.

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00:24:53.820 --> 00:24:58.950

Jimmy Bagley: yeah even if you're standing you're obviously doing more than resting so that's better than nothing, and then

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00:24:59.130 --> 00:25:10.260

Jimmy Bagley: most of these Games are moderate intensity exercise. So you're actually going to be able to meet American college of sports medicine guidelines say most days of the week, you should be doing about 30 or more minutes of cardio respiratory activity.

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00:25:10.920 --> 00:25:14.010

Jimmy Bagley: You could do that with a VR gaming system now.

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00:25:15.750 --> 00:25:21.000

Nicole Wood: Yeah and you said, you mentioned earlier that you're reading these based on.

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00:25:21.900 --> 00:25:31.890

Nicole Wood: You know measurement of heart rate and VO2 Max...

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00:25:34.050 --> 00:25:44.010

Nicole Wood: ...Are there any other kind of physiological outcomes that you're measuring with that or looking to measure in the future, or is it just a matter of you know, looking at exercise intensity.

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00:25:45.060 --> 00:25:50.430

Jimmy Bagley: This is how we initially started it so yeah The first question was intensity is this intense enough to be exercise and.

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00:25:50.640 --> 00:25:57.900

Jimmy Bagley: We got a lot of people, this was great for undergrad and Grad students to work on, because in an exercise physiology lab you learn how to use a metabolic cart.

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00:25:58.170 --> 00:26:03.750

Jimmy Bagley: But now we this was troubleshooting right, we had to figure out how do you fit a metabolic cart mask under here.

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00:26:03.990 --> 00:26:14.700

Jimmy Bagley: So united the nose plug thing and had to troubleshoot how the design, but then our protocol really is to do a resting metabolic rate under hood with a person, so we figure out what the resting

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00:26:14.910 --> 00:26:19.650

Jimmy Bagley: metabolic rate is then we do a VO2 Max test on a treadmill to figure out what their Max is.

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00:26:19.980 --> 00:26:25.950

Jimmy Bagley: And then we have them play a bunch of different games and we're collecting heart rate and Vo to live, while they're doing that and we're able to get.

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00:26:26.550 --> 00:26:29.280

Jimmy Bagley: Almost exactly how many calories are burning per minute.

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00:26:30.180 --> 00:26:40.650

Jimmy Bagley: You know some of the Games do have variability so we take averages, and this is another fun thing for students to learn about statistics. Is it better to take 22nd averages or minute averages, and we depends on the game. So

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00:26:41.370 --> 00:26:50.430

Jimmy Bagley: we put all that information on the methodology on our website so people could see that and it's published in there, but intensity was question one now question two is

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00:26:51.120 --> 00:27:01.170

Jimmy Bagley: How do we get people to play this more? It's kind of like it is game-ified, but how do we make this part of their exercise and, in this initial study the cool well, one of the coolest things we found out was

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00:27:01.530 --> 00:27:15.300

Jimmy Bagley: We also ask them RPE so rating and perceived exertion is subjectively how you feel about that exercise intensity right so let's say you were maxed out you're going all out, you should be at an RPE on our scale of 19 or 20.

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00:27:16.050 --> 00:27:25.320

Jimmy Bagley: That's the Borg scale, so we asked them that, while their gaming too. We're like how are you feeling and they would say 1011 whatever and we found that consistently across the board

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00:27:25.770 --> 00:27:32.490

Jimmy Bagley: statistically, significantly, they were reporting lower subjective RPE versus their actual intensity.

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00:27:32.910 --> 00:27:41.910

Jimmy Bagley: So it would be the same as if you were playing a sport, if you were to do a rating of perceived exertion during soccer or baseball or whatever people would consistently rate.

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00:27:42.240 --> 00:27:48.750

Jimmy Bagley: Their perceived exertion, lower than where they're at, so this is good right, this means you're exercising without thinking that you're exercising.

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00:27:48.810 --> 00:27:50.070

Jimmy Bagley: Right yeah.

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00:27:50.940 --> 00:28:03.060

Nicole Wood: Yeah and I guess that begs the question, what is the I mean, where do you target what consumer do you even target for this right, do you target those who are already physically active and bring them into the gaming world?

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00:28:03.420 --> 00:28:07.770

Nicole Wood: Or do you target the gamers and bring them into the exercise world?

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00:28:08.700 --> 00:28:15.360

Jimmy Bagley: I think that is what the idea is now because it is a little more niche still you got to be into it, so

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00:28:15.450 --> 00:28:20.760

Jimmy Bagley: If you have a playstation you could probably get you're going to probably want a VR headset. So we're kind of targeting gamers.

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00:28:21.330 --> 00:28:30.210

Jimmy Bagley: Just if you get moving 30 minutes a day you know that's going to again change your life if you're not moving at all so getting that going and then next is general population.

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00:28:30.630 --> 00:28:39.420

Jimmy Bagley: These things are made for like I don't know what the age, probably 10 and up right now, you can't get a headset on this kid right now but eventually probably kids older adults.

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00:28:39.840 --> 00:28:49.980

Jimmy Bagley: As the gaming generation that grew up with Nintendo and even atari before that ages into the elderly population we're going to be getting older people they're going to be wanting to play these Games to.

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00:28:51.180 --> 00:29:00.150

Jimmy Bagley: People with Disabilities also people that had just gone through cardiac rehab or like had a heart surgery and you're not able to exercise like you did before playing some.

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00:29:00.480 --> 00:29:08.220

Jimmy Bagley: Lower intensity games to get you moving again a way to get your mind off it think you're not exercising but also get your heart rate up a little bit.

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00:29:09.810 --> 00:29:14.850

Nicole Wood: yeah you actually just took my next question from me, which is you know i've seen

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00:29:15.960 --> 00:29:31.380

Nicole Wood: that there is some literature that exists on using the technology for the purposes of injury rehab you know, in the older population think i've seen it for use with kids with cerebral palsy, for example, or other sorts of physical disabilities.

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00:29:32.700 --> 00:29:42.150

Nicole Wood: Who, and again I think, with some of those populations it's important to not really think that you're exercising but that you know you're, you're still getting up and moving but

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00:29:43.230 --> 00:29:56.670

Nicole Wood: I think you know when you think about people with physical disabilities or older adults who you know have some limitations, where they don't get to or they can't really participate in sport or exercise in the traditional sense.

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00:29:58.020 --> 00:30:02.220

Nicole Wood: You know I think that's an important kind of avenue to look at for this.

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00:30:02.790 --> 00:30:16.590

Nicole Wood: And so you know it appears that there's certainly a translational component to this VR technology, it appears that there's a growing body of evidence for its effectiveness, I mean do you see longevity in that? I mean

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00:30:17.640 --> 00:30:30.000

Nicole Wood: I know we were seeing this kind of exponential growth in the use of that, I mean do you see longevity in it in terms of even just to use for exercise and or rehab? I mean what's The next step and reaching that wider consumer base?

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00:30:30.750 --> 00:30:38.010

Jimmy Bagley: Yeah I think those are all great points too and I'm you know, working with some people at the University of Illinois, Chicago.

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00:30:38.310 --> 00:30:46.860

Jimmy Bagley: Sam Bond and and Jamal Ozenebeck there they're working specifically with cardiac rehab trying to design games that could work with people that don't have

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00:30:47.610 --> 00:30:56.550

Jimmy Bagley: You know, maybe even complete movement with both hands, they can set these up. The Games are so adaptable so imagine once you create a game, it can be adapted to.

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00:30:57.180 --> 00:31:03.840

Jimmy Bagley: Any person that's visually impaired, even that's some of the sound is amazing in these two so you don't necessarily even have to see everything.

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00:31:04.530 --> 00:31:13.920

Jimmy Bagley: Somebody that can only use one half of their body, anything can be adapted and it's quick and easy, and now I think it's just getting people on board in these rehab settings that

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00:31:14.250 --> 00:31:25.200

Jimmy Bagley: might not have thought about this as a way that's.... again it's really also it's pretty liberating and freeing to be in a game where you're like flying you know you most, you know that you know you're not flying but,

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00:31:25.530 --> 00:31:32.640

Jimmy Bagley: you do get that feeling in your stomach of where wow i'm really up high it's it's more realistic than your 2d screen.

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00:31:33.030 --> 00:31:42.210

Jimmy Bagley: And even that can be liberating and freeing you know if you get into a video game long enough you almost feel like you're in a different world. This is like that, but just way more

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00:31:43.290 --> 00:32:00.930

Jimmy Bagley: I guess intense. From all sight sound and now with haptics there's companies that are building suicide gloves and full suits to where you can actually feel things in in virtual reality. So it's super adaptable, I think, older people and people with disabilities, this is going to be huge

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00:32:01.980 --> 00:32:07.140

Jimmy Bagley: in those spaces, so I would look out for that, especially now that it's becoming more inexpensive too.

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00:32:09.030 --> 00:32:16.530

Nicole Wood: Yeah I guess that begs the question you know, for you know you have you know you're putting yourself into this other kind of world and.

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00:32:17.460 --> 00:32:24.060

Nicole Wood: You know I know when I played video games in the past, or you know spent a lot of time watching my nephews play video games because

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00:32:24.450 --> 00:32:33.810

Nicole Wood: they're always, you know kids always want you to watch them do everything that they do, and you know, I know even after 20-30 minutes it's I'm feeling dizzy, I have a headache.

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00:32:34.230 --> 00:32:48.270

Nicole Wood: You know so How does that play into that you know you think about you know motion sickness, for example, and you have people with these sight and sound issues um you know how does that play into it?

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00:32:49.140 --> 00:32:55.410

Jimmy Bagley: Yeah, that's another thing that a lot of people were worried about early on, is motion sickness and we've been looking at that too.

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00:32:56.220 --> 00:33:02.310

Jimmy Bagley: Specifically there's some games that are a bike like a peloton and instead of a 2d screen, you have a VR headset.

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00:33:02.760 --> 00:33:12.810

Jimmy Bagley: The reason that people get motion sickness, most of the time is there's either the refresh rate on the headsets too slow or the movement is not synced up with the movement of your eyes so imagine

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00:33:13.020 --> 00:33:20.850

Jimmy Bagley: you're on a roller coaster but your eyes are delayed, just like split second you would, everybody would get sick, probably because you wouldn't know what to expect. So those

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00:33:20.850 --> 00:33:25.770

Jimmy Bagley: Things are, I think those are hardware issues really and there again adaptable.

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00:33:26.910 --> 00:33:27.570

Jimmy Bagley: yeah i'm sure.

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00:33:28.590 --> 00:33:33.180

Jimmy Bagley: yeah that where there's probably people that are more susceptible to things like motion sickness and.

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00:33:33.390 --> 00:33:47.280

Jimmy Bagley: Maybe certain games wouldn't you wouldn't want to play so even when you see a warning like this make this video may cause seizures because it has flashing lights sequences there might be more warnings like if you are susceptible to motion sickness play a different game so.

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00:33:48.120 --> 00:33:55.860

Nicole Wood: Yeah and and I guess with the VR Institute, you know doing their ratings based on intensity or

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00:33:56.370 --> 00:34:08.880

Nicole Wood: I think, specifically it's like calories per minute right because that's what we all want to see how many calories are we burning. Is there anything you know, in the works to maybe write that for motion sickness? I mean within the Institute itself?

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00:34:09.630 --> 00:34:14.790

Jimmy Bagley: I don't know we haven't thought about that specifically in the Institute, but I think that would be something that we could do.

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00:34:15.900 --> 00:34:20.640

Jimmy Bagley: Again the problem is when we have a few people playing the game they might be.

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00:34:21.300 --> 00:34:27.570

Jimmy Bagley: This is another thing we're looking at is people that have more experience. Gaming experience will dictate a lot of potentially.

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00:34:27.960 --> 00:34:35.070

Jimmy Bagley: How many calories you're using or your ability to have motion sickness or how well you do in a game, whether or not you've seen that game before.

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00:34:35.490 --> 00:34:47.250

Jimmy Bagley: So it might be hard, I think that there will be something like that, and there will be some there's like there's those ESRP ratings T for teen and all that there should be probably ratings for a lot of these attributes for games.

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00:34:48.180 --> 00:34:59.280

Nicole Wood: Yeah, yeah it's really interesting I'm just fascinated by this use of gaming for exercise, I guess, like I said it's not something that I think a lot of people think about.

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00:35:00.930 --> 00:35:05.430

Nicole Wood: And, and hopefully the technology grows enough that the cost comes down and.

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00:35:06.900 --> 00:35:09.630

Nicole Wood: I guess, I have one last question for you.

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00:35:10.920 --> 00:35:18.090

Nicole Wood: Do you have any recommendations you've played, you've done the research on it, do you have any recommendations for people who

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00:35:18.480 --> 00:35:33.090

Nicole Wood: You know, might want to try it out for their own health benefits? Is there a way to you know, is there a way to try it out without purchasing a \$300 headset? You know, how does somebody go about getting started in that without you know, maybe less than the bank?

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00:35:33.600 --> 00:35:41.310

Jimmy Bagley: Yeah, no first thing that you could do is if you know somebody that has one and it's safe to go there with coven and everything if you're in your own bubble or

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00:35:41.490 --> 00:35:51.180

Jimmy Bagley: you've been vaccinated and everything you could use somebody else's to try it out, or, if you want to try the low tech one most phones have setups to where you can either buy the cardboard

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00:35:51.990 --> 00:35:55.350

Jimmy Bagley: headset cut-out or buy like a galaxy gear

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00:35:56.190 --> 00:36:04.920

Jimmy Bagley: I don't even know if they're making those, I think they still are. But, those are again low tech where you use your phone to do it it's not the same experience at all so just

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00:36:05.220 --> 00:36:11.190

Jimmy Bagley: You keep that in mind if you use that and you don't use one of the big headsets, but if you try it I think you'll.

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00:36:11.670 --> 00:36:20.640

Jimmy Bagley: Most people have tried it or like it, and if you try it more times and play a few different games you'll start to realize that there is more utility in it it's not just kind of a one and done

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00:36:21.150 --> 00:36:34.530

Jimmy Bagley: thing it's not. I think fads come and go, but this is not a fad. I think this is going to morph and mutate into something that literally everybody that has a phone now will have something like AR and VR and 10 or 15 years.

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00:36:35.640 --> 00:36:39.480

Nicole Wood: What is this cardboard cutout saying i've heard of that?

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00:36:40.290 --> 00:36:52.950

Jimmy Bagley: Google it and it was made for the iPhone, but if you just search cardboard vr phone and you could either make them yourself or by the kind of printouts and unfolds, and everything, those are.

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00:36:53.430 --> 00:36:59.040

Jimmy Bagley: that's a way like for kids in school where you could have a bunch of those and do different things, but

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00:36:59.310 --> 00:37:08.610

Jimmy Bagley: yeah even I mean before the pandemic, I was going to museums and some museums have little VR setups in there, too, so I think as more people see it and it's kind of.

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00:37:09.000 --> 00:37:14.310

Jimmy Bagley: Look at it be like that's weird then as soon as you try it you'll be like I can see why people like this, or you can see that.

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00:37:14.730 --> 00:37:24.720

Jimmy Bagley: Right now, or i'm on a 2d screen with you on zoom, why are we not sitting at a conference table, you know in VR that's totally doable right now, I think that that's just going to be the technology

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00:37:25.620 --> 00:37:36.720

Jimmy Bagley: as we advanced the next couple years. And things like the pandemic has accelerated this because we can't see everybody that we want to see so communication gaming all these things are going to be really big.

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00:37:37.500 --> 00:37:37.860

yeah.

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00:38:03.360 --> 00:38:08.280

Jimmy Bagley: yeah, I guess, I will say too that you know, being an exercise science kinesiology this field.

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00:38:09.150 --> 00:38:21.360

Jimmy Bagley: Like I would have never thought of VR as being a part of it, and now that I'm in VR I'm starting to expand and seeing that our field is so great, because it's diverse. Biomechanics, exercise physiology, exercise sports psychology.

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00:38:22.380 --> 00:38:31.890

Jimmy Bagley: All of these things. Socio-cultural aspects like sport history like there's a spot for everybody to do research in VR I think VR gaming.

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00:38:33.300 --> 00:38:42.420

Nicole Wood: yeah I believe we have a headset in our lab you know the pandemic we haven't you know really been able to do anything or do much as i'm sure you're fully aware.

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00:38:43.650 --> 00:38:50.970

Nicole Wood: You know we're building our mobile lab and I think that can be something that becomes a component of it and just getting people outside and

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00:38:52.290 --> 00:38:55.200

Nicole Wood: You know, working in different spaces and stuff so.

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00:39:13.860 --> 00:39:22.950

Jimmy Bagley: that's great yeah I think students always think about what's the next big thing you know and there's so many different things, but VR gaming is,

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00:39:23.250 --> 00:39:31.650

Jimmy Bagley: I mean there's a lot of research to do so if you have any questions related to behavior change exercise, exercise physiology, you can gear that towards this field for sure.

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00:39:33.030 --> 00:39:33.420

Nicole Wood: yeah.

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00:39:34.890 --> 00:39:46.290

Nicole Wood: Alright, well, thank you to Dr Bagley for taking the time to speak with us today, we really appreciate it, and thank you to our audience for taking the time out of your spring break to engage with us.

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00:39:47.040 --> 00:39:56.670

Nicole Wood: Our next podcast is on April 12th as we speak with Darcy Winslow who was a former Nike executive who spearheaded

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00:39:57.900 --> 00:40:15.270

Nicole Wood: their women's and girls product lines, with a focus on designing quality products for females, rather than just marketing to them, as usual, we can be reached through our website social media platforms Tyler, can you tell our friends, how to find us on the World Wide Web.

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00:40:16.590 --> 00:40:27.270

Seattle U Webinar Host: Yeah so you can follow us on our social medias at Seattle, you can you see ology on Twitter instagram and Facebook and for more information about our department, you can go to our website.

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00:40:27.750 --> 00:40:44.700

Seattle U Webinar Host: That is Seattle u.edu slash kinesiology you can also listen to our archives podcasts on there as well, lastly, we're on pod bean to where you can share like download and follow all of our past podcast episodes at red Hawk squat exercise for life podcast.

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00:40:46.530 --> 00:40:54.630

Nicole Wood: Great well, that is, all the time we have for today thanks again and remember be kind, be healthy and be active.