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Provost Presents Faculty Research Series: "'Watch this!' The use of video technology to enhance motor learning and performance"

Mandy Rymal

Provost Presents Faculty Research Series

“‘Watch this!’ The use of video technology to enhance motor learning and performance” by Mandy Rymal (March 13, 2024)

In this presentation, Dr. Mandy Rymal, Associate Professor in the Department of Kinesiology, will discuss her research relating to the use of video technology on motor performance, its implications, and future directions for researchers and practitioners. She is an active member of the North American Society for the Psychology of Sport and Physical Activity, the Association of Applied Sport Psychology, and the Canadian Society for Psychomotor Learning and Sport Psychology.

START – 00:00:00

Speaker: Hello, everyone! Hello! Thank you. Welcome! Welcome to the to the file library of the Cs. USB. Libraries. Welcome to those of you who are in person and those of you who are attending. Virtually we are so happy you're here.

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Speaker: and really. Ha! Lovely to see the room re the room filled today I'm Rebecca Lubas. I'm the Dean of Libraries here at CSUSB. If you haven't met me before, and I am delighted for us to continue

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Speaker: the old slash new tradition of showcasing faculty research in the library and with our partners here at the Faculty Center for excellence. So I am going to go and introduce our esteemed Provost Rafik Mohamed, and he is going to in turn introduce The guest for today, and set the table for the wonderful research that we will be hearing about so welcome again.

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Speaker: It is officially afternoon. So good afternoon, everybody. It's a pleasure to be here with y'all today. I'll be brief and just getting out of your way. See you pacing around, eager to go

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Speaker: alright. Alright! Alright! Alright! First of all, thank you. But if, before I forget, thank you to Dean Lubas, and team library for making this event possible. She, this this is this is their Brainchild. I just show up and talk

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Speaker: and listen and learn. But this is just a really remarkable opportunity for our faculty students and staff to come together and learn from the experts that we have here in house at CSUSB, I see students in the room. Is that correct? Okay, okay, are you a student, ma'am? Yeah, okay, you you could pass. No, III

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Speaker: There are no people from social behavioral sciences in here, right? That's my former college, and and I was very proud to be a part of SBS.

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Speaker: But I will say, for the students in the room! Kinesiology is an awesome department. I love the enthusiasm and spirit of our Kinesiology faculty. Their leadership could use some tweaking just just kidding. No, no! Dr. Dabs, I'm joking. No! Really, I you are fortunate to have the faculty that you have in kinesiology. They're not just experts in their fields, but they're really good people. So. Ii appreciate them for that.

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Speaker: Oh, yeah, I have an introduction that I'm supposed to give. Yeah time tying. No, I'm meeting in your time. It says, good afternoon. Good afternoon. I'm honored to introduce today's presenter, Dr. Mandy Rymal, associate professor in the Department of Kinesiology. Dr. Rymal joined our campus community as an assistant professor in Fall 2,014 before that she served one year as a lecturer for the Department. She's also taught at San Francisco State University

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Speaker: and the University of Ottawa. I was Gonna make an Ottawa music reference from that I heard this morning about 5 man electrical band. But I'm not gonna even go down that road. In addition to teaching various courses from motor control and skill, learning to observation and field experience and Allied health, profession, and exercise science.

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Speaker: Dr. Rymal has served as faculty advisor for the Kinesiology Student Association since 2,018. She also provides sports, psychology workshops and consulting for CSUSB. Athletics and City Soccer Club Temecula.

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Speaker: page 2.

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Speaker: Done a lot alright. Her teaching and research interests include self observation, self modeling techniques for motor skill, learning and performance, psychological skills, training and skill, learning and performance, enhancement, self-regulation and underlying mechanisms of skill, acquisition and competitive performance. Dr. Reimel has authored several referee journal articles and book chapters, and has given numerous conference presentations.

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Speaker: raging and also raging. That's performance enhancement steroids raging there. We go ranging from the North American Society for the Psychology of Sport and Physical Activity to the Canadian Society for Psycho Motor Learning and Sports psychology conferences closer to home.

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Speaker: She has been a regular presenter at CSUSB's annual student Research competition and our meeting of the Mind Student Research Symposium, led by the office of Student Research. She additionally serves as a committee member for the California Conference for motor behavior, sport and exercise psychology and is a reviewer for several journals, including.

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we're almost finished.

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Speaker: the Journal of Motor learning and Development, the International Journal of Journal of Exercise, Physiology of Psychology, the Journal of Motor Behavior, the Journal of Mixed Methods, Research, and others. Dr. Rymal is a man is a member of the Association for Applied Sports Psychology, and the North American Society for the psychology of sport and physical activity

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Speaker: in her presentation today, watch this.

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Speaker: the use of video technology to enhance motor learning or performance. She will discuss her research about the use of video technology on motor performance, its

implications and future directions for researchers and practitioners. Please join me in welcoming Dr. Mandy Rymal.

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Speaker: Great. We don't think that.

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Speaker: thank you. That made me sound really good.

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Speaker: and I didn't even write that. And I was like, I wonder what they're going to say about me that that's wonderful. You can say that every time.

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Speaker: so thank you for coming, and thank you to the library for allowing me to present on use of video technology to enhance motor learning as well as performance. So when it comes to my research, I'm kind of a fence sitter, I do some research related to motor learning, but I also do some research related to sports psychology.

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Speaker: no matter what my goal is to bridge the gap between theory and practice. So I'm that researchers like, sir, I love that lab research where you have these strict, your can, all of your constraints are controlled. And we have this 6 week intervention with a baseline and retention test, and like a 7 day retention test. I love that. But my thought is, it's great that we can find things in the lab. But let's make it real.

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Speaker: Right? Let's take it and actually see if we can apply it in a real world in a real world setting. And

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Speaker: one way to do this is to keep up with the time. Right? So what's popular right now? Well, technologies fall.

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Speaker: So why not use technology as a means to make it real and take what we find in the lab and actually apply it into a real setting. When we're looking at physical therapy

coaching, physical education, occupational therapy, or just teaching skills to our nieces, our nephews, our kids, whomever it may be.

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Speaker: Now, the question becomes, Well, how do we do this effectively? Well, one way to do this effectively is

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Speaker: to make sure that we know technology. I made a mistake. There, guys, poof!

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Speaker: Given faculty members jump slides. So technology is everywhere.

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Speaker: I don't like to learn new things. So for me.

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Speaker: getting into technology was relatively difficult. My kids sit there, and they know how to use the ipad, which is great. They don't know how to use the dishwasher.

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Speaker: but the ipad they're fantastic at using. And they show me how to do these things. Bottom line is that

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Speaker: technology is in our back pockets. Everyone have a phone

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Speaker: wonderful. You all have your laptop out as well. Right?

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Speaker: So we have this available to us. So let's use it. It doesn't matter whether you're a beginner, intermediate or advanced.

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Speaker: We have technology there. So

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Speaker: let's go back and think about how we can use this effectively.

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Speaker: We do this by looking at that literature. This is the applied use of observation. This is a model that myself and other colleagues have put together as a means to guide practitioners. So people in the real world, not just researchers to use observation effectively.

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Speaker: Now, with this model, a physical education teacher, a coach, whomever it may be.

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Speaker: can go back and kind of answer these questions and then figure out what is the best way to use a demonstration.

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Speaker: So how can we actually apply this? So what we did as researchers is, we went back and we looked through a ton of literature and created this beautiful models in hopes that people would start to apply it.

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Speaker: Let's go with an example.

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Speaker: Let's say we are teaching someone how to do butterfly in swimming. We are all coaches in swimming instructors and swimming, and we have a group of individuals, or one individual in particular, who is 8 years old, and we want to teach them how to do the butterfly.

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Speaker: And this individual is relatively

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Speaker: I guess they have a fear of making a mistake, a fear of an embarrassment in front of the rest of their classmates or their teammates, and they have very low confidence.

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Speaker: but as an instructor as the teacher, I may think. Do you know what I'm going to go find an Olympian and show this

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Speaker: entire team how to do Butterfly.

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Speaker: and they're going to learn from it right? You would think that that would be the best, feel the best, the best right.

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Speaker: Some of my students in my motor learning class are like, no rhyme. Well.

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Speaker: okay, you're correct.

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Speaker: Right? So the idea is that if this person has very low confidence.

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Speaker: and is afraid of making a mistake. And now I've just demonstrated to the entire group the best butterfly stroke ever.

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Speaker: Is it possible that this fair person may look at that and be like, are you kidding me

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Speaker: no way, there's no way. I'm even going to try this now you just showed this person. Do it absolutely perfectly. Now you want me to go out in front of all my teammates and completely mess up and be okay. With that

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Speaker: they already have low confidence. And now they're you're showing them something. And they're like, I'm never gonna get there.

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Speaker: So you've now just defeated the entire purpose of using some kind of model

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Speaker: or some kind of video in order to enhance their learning.

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Speaker: They don't even want to try that.

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Speaker: So the point of this is to provide some kind of guidance to those individuals to go back.

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Speaker: So you would write down the age of someone their stage of learning. If they're fearful of something.

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Speaker: then yet the task of a butterfly is relatively complex. These things will guide who is the most appropriate model to show in that situation.

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Speaker: That was the point of this observation. Framework was to help guide practitioners determine who would be the best to show, and in the situation I just gave you the best would probably be a teammate who has a little bit more confidence, but can still make mistakes.

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Speaker: so maybe that would be an unskilled model.

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Speaker: So now you would show this individual someone making mistakes doing the butterfly, but at least they'll give it a go right. They're not going to be discouraged from doing it.

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Speaker: And the goal is that these things would guide your motor outcome. And now they're actually going to learn that butterfly.

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Speaker: Now, for the purpose of this talk I'm going to focus on

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Speaker: who is the best person to observe, how

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Speaker: should we use observation? So I'm gonna really dive into like the speed of a demonstration, and then tap into a little bit of why? Why it is that observation work! Why is it that we actually can learn through a demonstration. And these are the 3 areas where I really think we can take advantage of technology.

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Speaker: So we're going to start with who.

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Speaker: So there are many models in which we can observe, I'm gonna focus on observing ourselves, because I think that's where we can take advantage of technology.

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Speaker: The one forum is called self-modeling.

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Speaker: Self-modeling is basically observing yourself on a videotape showing only desired behaviors. And what that means. It's kind of like those highlight videos. Right? So you're only seeing what you're doing correctly. You're not seeing any of the mistakes that you're doing. And there's 2 different ways in which you can do this to highlight those positive behaviors.

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Speaker: One of them is positive self review. And that's those highlight videos. That's when I would videotape you doing the butterfly stroke, and I would only show you your your portions of the swim that were really good. I wouldn't show your mistakes at all. That's what your positive self review is. In this situation. You could be sitting down with your athlete, who's a tennis player, and you would show them

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Speaker: footage of their best serves only not the ones that they made mistake from.

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Speaker: That's our positive self review.

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Speaker: Then another form is known as feed-forward, self model.

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Speaker: feed-forward self modeling. Think of it as

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Speaker: fast forwarding into the future, to showing where you want to be at.

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Speaker: Okay, what you think that you will get to at some point. So this is more along the lines of editing footage. In order to show the optimal level that you can do. So, we're taking footage from the past.

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Speaker: We're actually editing it and splicing it together and fast forwarding it to where you should be.

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Speaker: So this is an example of skills kind of being spliced together. But I'll give you going back to that swimming example.

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Speaker: Let's say, for example, you are trying to get 50 meters in the pool, and your first 5 meters of the Butterfly are the absolute best.

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Speaker: but then the rest of them. You get a little tired and you get a little wonky, so the skill's not as good. So you would take those first 5 meters, and you would splice it and put the same first 5 meters on top. Now you have 10 meters

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Speaker: right, and then you have 20, and then you have 30. Then you have a full

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Speaker: 50 meters of the pool that you're doing it. But you're kind of modeling what you want to be in the future. Right? It's still you doing it. But you're editing it to make it appear as though you've done the entire

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Speaker: yeah. 50 meters in the pool at that perfect amount.

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Speaker: The other way we can look at this is known as mirror reversal mirror. Reversal is also showing another snapshot into the future of where you could be

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Speaker: any basketball players.

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Speaker: golfers?

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Speaker: okay, golfers. Yes.

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Speaker: Do you think it would be beneficial to be able to golf both right and left?

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Speaker: If a ball lands by a tree right, you don't want to like shimmer your booty in there you can't fit, so maybe you want to go left.

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Speaker: Make sense.

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Speaker: So practical application of it could be there. So this mirror reversal would take your dominant side. So for looking at Gulf, and I'm a righty

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Speaker: false, and I would take that right, and I would flip the image

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Speaker: and appear as though I'm actually golfing left. But I'm using my right footage to do so.

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Speaker: So again, it's feed-forwarding into where you could be in the future. If we're doing a three-pointer in basketball, it could be that you have a defender on one side of you. Maybe you need to switch and shoot with the other hand.

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Speaker: in order to get there so it could be very applicable in real life.

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Speaker: Now

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Speaker: let's talk about all this video footage and editing. And is it worth it while? The research says, yes, it's worth it that there is a lot of research that shows positive effects for our positive self review, including some of my research and other individuals. There's research that shows there is benefits for feed-forward self modeling. So that's that

editing aspect when it comes to physical education, competitive beam performance with gymnasts

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Speaker: and mirror reversal as well when it comes to rehabilitation settings as well as motor scale acquisition, doing this free throw performance.

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Speaker: That flipping these videos editing these videos are, in fact, worth it, that it's working. So it does take time. But it is benefiting our actual motor performance in multiple areas of our life. Now.

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Speaker: is it just for skill, learning, and the idea is, it's not. It's not just to learn and skill that it can actually be done in a competitive environment as well.

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Speaker: So here's an example.

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Speaker: Have a feed-forward, self-modeling video that I created when I was looking with competitive athletes.

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Speaker: Now I want you to watch this video. This is a level 8 gymnast.

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Speaker: She is doing her competitive bar routine. And I had her watch this video as as well as other gymnasts.

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Speaker: During their competition. So this is called a soul circle. She jumps to the high bar.

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Speaker: She does her giant, and then she does her dismap

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in the thirteenth.

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That's what the book.

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Speaker: Okay?

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Speaker: So in that video, how many edits did you see?

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Speaker: Hopefully, you send none, because that means I'm really good. So none right?

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Speaker: No. Oh, yes. Okay. I made 3 edits in that video. So what that means is that I took footage from this gymnast, doing her low bar, I took some footage from her high bar, and I took some footage, related to her dismount, and what I did is I picked the best low bar, and I spliced it on top of the best high bar and the best dismount.

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Speaker: So I created this optimal routine because any kind of skills that are these serial skills, we can get tired those serial continuous skills. You can get tired after doing them so it could be that she's tired by the time she gets through a high bar and her dance around the bar and her dismount aren't good.

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Speaker: We clip this together, and we want to know, can this enhance

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Speaker: the performance at competitions? Now

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Speaker: we did not find results for this.

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Speaker: There were

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Speaker: increases in their scores from competitions in which

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Speaker: they saw the video versus when they didn't see the video. Now, if you think about gymnastics, a 0 point 1 difference. If anyone taken steps

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you couldn't have that right.

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Speaker: That's class. If you have a point, one difference. Is it likely that there's going to be a significant difference?

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Speaker: Probably not. Right? So, statistically speaking, you're kind of like, well, that research is garbage.

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Speaker: Okay

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Speaker: to that gymnast, that point. One difference determined whether or not she even got a medal, or she came tenth place.

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Speaker: So even though something is not statistically significant, doesn't mean that it's not significant in the practical world.

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Speaker: So for these athletes they got medals. They got a championship, whatever it may be, that 1 point can make a big difference in the real world, and that's where I come in with this whole practical application.

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Speaker: It is important to make it real.

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Speaker: So let's stick with another practical application. This little bugger up here. This is Jack. This is my son.

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Speaker: Alright. And so when he was younger, I was like

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Speaker: being from Canada. I was like, we're gonna put em in hockey.

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Speaker: I'm like, Boom, it's gonna be great.

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Speaker: And my husband was like, Okay, Mandy, we are not in Canada anymore.

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Speaker: There's not just the hockey rink down the street. There's no way we're doing carpools with anyone, because no one plays hockey.

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Speaker: And I was like, Well, man, what are we gonna put in it. Then we decided baseball. And I was like, Okay, baseball.

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Speaker: And I did a baseball. And I was like, Oh, he could be a switch hitter

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Speaker: and be the next Mickey mantle and make me lots of money

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Speaker: right?

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Speaker: Oh, I was so excited, and I was like, Oh, my gosh! I'm doing all this research on Mirror reversal. He was a little bit stronger on his right hand than he was on his left hand. So this is perfect. I'll just video him a bunch of times hitting right from the teeth.

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Speaker: and then I'll mirror image it and make it look like he's hitting left, and we're gonna make so much money off this kid.

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Speaker: I'll try. We can solve weather results later. But

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practical standpoint.

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Speaker: Yes, he was very young, but I was kind of like what?

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Speaker: Give it a go, and just kind of see what happened. So I did it. I did some mirror reversal stuff with it, and you know he kind of smiled about it afterwards, and was like, Yeah, that's pretty cool. And he kept wanting to try hitting left, even though it was, it wasn't his dominant side, but it kind of motivated him to be like, hmm, you know, that'd be pretty cool if I could switch hit

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Speaker: even at the young age. Okay. So this is where my practical part comes into play is that it's still very beneficial for these individuals, and for that he kind of got a like a rise out of it. He was kind of pumped about it. It motivated him a little bit.

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Speaker: and he was pretty excited.

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Speaker: Now we know about model type. And yes, there is some research out there that are quite a bit of research that supports this idea of using video technology to learn motor skills. And from a practical standpoint, I'm finding that it is very beneficial for these athletes or for Jacks to use video technology to help with their motor skill learning. Now, we're gonna shift into the how. And we're gonna look at speed of demon.

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Speaker: Now, this area is kind of fun because you can really toy with videos, and you can speed it up, slow it down.

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Speaker: do a combination of both.

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Speaker: So when we look at speed of demonstration. we've done some research in the lab that I haven't published yet, and Dr. Carlinsky is in here right now, and she might yell at me to get on it to publish.

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Speaker: So

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Speaker: we wanted to look at doing the rainbow kick. So here's just your normal demonstration of.

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Speaker: we wanted students to watch this video at doing the rainbow kick, and it doesn't have to be yourself. This could be of other individuals as well, and there's multiple angles.

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Speaker: So for the next 10,

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Speaker: here's a demonstration of it in slow motion to get an idea of slowing things down and seeing if we're actually picking up information that's different from watching something in real time.

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Speaker: and if doing a combination or real time is better than the other.

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Speaker: So that's just an example. Right there.

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Speaker: We've also kind of, tapped into this idea with the vertical jump

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Speaker: when looking at whether or not viewing a skilled model in real time is more beneficial than slow time, or the combination time. Myself and Dr. Dabs and some students presented some pilot work

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Speaker: at a conference, and we found that individuals that watched a video in real time and the combination time actually enhance their vertical jump performance more so than slow time.

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Speaker: There's research out there that shows us that slow time may be beneficial when you're looking at technique. But any kind of timing

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Speaker: activity so vertical jump, for example, there's a timing there's an acceleration of when we actually push off the ground in order to make sure that we gain that height.

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Speaker: So in this situation, it kind of makes sense that if you're just watching flow time. You're not going to benefit from the vertical jumps. Because is anyone gonna jump like this, anyone do the bird tech. We're all consumed right?

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Speaker: You guys do that. Do you go like this? Oh, and then we come back

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and make those sound, effective books.

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Speaker: Yes, absolutely wonderful. Okay.

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Speaker: so it makes sense that real time to get the proper timing right of what you're doing. The proper timing of the joints, and like maybe a combination of slow time in real time are more beneficial.

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Speaker: We've just finished our data collection with this. And so Dr. Dabs, Dr. Farlink and myself are going through the research are going through the data right now to see if we're finding any differences or benefits from one time versus the other.

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Speaker: Okay, so now we're gonna switch into this idea of why? Well, why is it working? Why are we using observation? How does it benefit us

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Speaker: so?

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Speaker: Is it worth it? When we look at the why, we know that it helps with skill acquisition, using video technology can help learn a skill. And it can also help with competitive performance. Right? We found that with the beam, the gymnast doing their beam performance that the feed forward video did. In fact, work. It worked with swimming. It's worked with trampoline skills.

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Speaker: It also helps develop strategies and helps execute these strategies as well. So what I really want to talk about

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Speaker: is the performance aspect. So when we talk about performance aspect. Don't think about it as respect to moving, like, physically performing. We're going to think about performance with respect to the psychological constructs and specifically self-efficacy and imagery. So what does

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Speaker: observation, or what does viewing a model due to one's self-efficacy, or what does viewing a model due to one's imagery? Ability? And how is this benefiting performance?

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Speaker: So first, let's start with self-efficacy. Self-efficacy is the belief in our ability to do a task. All it is is a heightened belief

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Speaker: or heightened self-confidence. Self-confidence is more general. Self-equacy is like specifically to do a task.

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Speaker: and Bandara's social cognitive theory suggests that the most powerful means in which we can enhance self-efficacy is through an active mastery, experience, and vicarious experience. And what that means is that the best way that we can enhance someone's belief in their ability

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Speaker: is by showing what they've done in the past. showing that they've done it properly in the past.

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Speaker: And then the next best way is through vicarious experience. So living through something else, watching someone else do it. Now these 2 things are very different. But if you combine them.

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Speaker: but self-model.

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Speaker: self-modeling as a means to show past performance.

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Speaker: But if we use feed forward, it also is showing vicarious experience, because it's showing what you want to be doing in the future.

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Speaker: So in this situation, we've done

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Speaker: a lot of research. And we have found that

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Speaker: self-modeling video, a feed-forward, self-modeling video, despite it, not showing physical performance with these competitive athletes. Statistically, it actually enhanced a lot of their self-regulatory mechanisms, one of being self efficacy.

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Speaker: So now they felt more confident to go out and compete, and maybe, even though it only increased it by point one or point 2. That was enough to make them on the podium as a posting, not even place

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Speaker: on the events.

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Speaker: Then we did research with our mirror reversal with free throw shots, and we found that those that saw a mirror reverse image of their dominant arm to appear as though it's their non-dominant arm. So, for example, I took footage from my right

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Speaker: and flipped it to make it appear as though it was. I was shooting from my left.

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Speaker: and I was getting good shots in. It actually increased the belief in my ability to use my non-dominarm to do those free throw shots.

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Speaker: So editing, using our technology is enhancing our confidence. It's building our confidence.

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Speaker: Now. The next one I want to talk about is imagery. And this idea of imagining and comparing it to self-modeling

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Speaker: imagery is basically creating or recreating an image in your head or a scenario in your head.

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Speaker: Right? You guys remember that video that you just watch.

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Speaker: Ok, I want you to take a second eyes open eyes closed, whatever it is, and try to imagine yourself doing that bar routine. Go

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Speaker: imagine yourself doing a vertical jump. Go!

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Speaker: We had a very great student faculty, not so much. Students, very good students.

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Speaker: Okay. Now.

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Speaker: if you are able to create this beautiful image, that is a good use of imagery, right? So imagery is that recreation of that image or that scene in your head, whereas observation or self-modeling.

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Speaker: it's just basically having that image already created for you. Right? And it's just that external stimulus.

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Speaker: Now, if we think about imagery, we have an internal perspective and an external perspective, we're going to focus on the seeing ones. Right now. Okay, internal perspective is imagining from your own view, from your own eyes. So you see your hands, etc. You see the world around you as it is.

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Speaker: an external perspective is if you stepped outside of your body and you were looking at yourself on the court, on the field.

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Speaker: Okay, when you just did your imagery with respect to the vertical jumper, that routine.

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Speaker: the key things with imagery is that it needs to be controlled. And it needs to be vivid.

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Speaker: Okay. what if

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Speaker: you can't see your image? What if your images are very are not vivid? They're fuzzy. It's not even you. There.

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Speaker: Okay, what if your ability to do external imagery? You just imagine yourself messing up all the time?

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Speaker: Do you think that this is going to help you in your performance?

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Speaker: Probably not right, because now you're imagining yourself screwing up.

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Speaker: Okay, I was an athlete, and my coach would tell me, Mandy, go and imagine your B routine.

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Speaker: and I was like, yes, coach. So I go, and I imagine my beam routine, and I would close my eyes, and I would sit there, and I would imagine myself falling off the beam every single time.

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Speaker: and all that would do was recreate this idea that I was just going to fall on my backhand spring. I was going to slip a hand, and I was just going to fall, so I wasn't good at imagery.

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Speaker: so imagery didn't benefit me so if it doesn't benefit me. Is it possible that the use of a self-modeling video where the images are already clear for me?

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Speaker: I don't imagine myself doing it incorrectly because I watch it on video. And it's already correct for me, and it's completely controlled. Is it possible that that would benefit me more than I would do so if I was poor at imagery.

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Speaker: Maybe it is, maybe is that the use of a self-moding video can actually increase your ability to image.

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Speaker: And then, if you don't have your phone on you, then imagery would actually help you

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Speaker: right? We don't want to give up on those poor souls that don't know how to do imagery. You don't want to give up on people like me

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Speaker: right if you're good at imaging great roll with it. But if you're not, why not enhance it?

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Speaker: Because it could be that you're out on the field and you can't just pull your phone out and watch.

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Speaker: So let's use self-modeling as a means to actually enhance their immigrability.

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Speaker: And that's what we're finding.

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Speaker: We've done research where we found that competitive divers actually increased their imagery ability. After watching a self-modeling video.

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Speaker: We have found this with gymnasts as well when they're doing their beam routines when they're doing their bar routines that their imagery is increasing after viewing a self-mulling video that it's actually helping them create more controlled images

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Speaker: and more vivid images.

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So it's benefiting them quite a bit.

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Speaker: So.

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Speaker: in conclusion, is it worth it doing all this video editing, taking all this time? Because if you have a large group.

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Speaker: it's going to take a long time to edit these videos right? And I've had a lot of people say, Is it worth it?

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Speaker: And sometimes, statistically, I'm like man. It takes forever. I don't know if it's like.

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Speaker: but when it comes to me bridging that gap between theory and practice, and really looking at the practical aspect of it. I say, yes, it's worth it.

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Speaker: And so if a picture pitcher is worth a thousand words, is observation worth a million.

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Speaker: all of you are like this. Right

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student.

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Speaker: I'll see you guys later. You better be nodding.

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Speaker: Okay.

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Speaker: that's kind of the research I've done on observation. With respect to motor skill learning. I've done a little bit with coaches and individuals with disabilities as well. But I really want to focus on the whole, how can we apply this in the real world.

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Speaker: and that understanding that

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Speaker: statistics is wonderful. there is a if Dr. Hill was here, he would talk to us about peah.

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Speaker: And as researchers, we tend to only publish the research that

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Speaker: their statistical significance and we take that research that maybe we didn't find anything. And we put it in the drawer.

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Speaker: Okay, for whatever reason, I'm really good at not finding much.

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Speaker: Okay, I'm really good at this. So this whole new era of like, oh, let's publish research that we don't find statistical exist significance. It gets really me really excited because

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Speaker: I'm good at it. Now I'm like, Oh, there's hope. And we'll get more research out there.

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Speaker: Okay.

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Speaker: so taking this into the practical perspective, use technology, use it. You have it at your fingertips. Why not give it a go.

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Speaker: Okay for me. I like the idea of self-modeling and using it for all age levels to enhance motor learning, but also to build that confidence

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Speaker: to help with self-regulation, and for those that aren't good images.

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Speaker: try it and see if it actually helps you in in your life. And when you're working with kids in the future, whatever it may be.

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Speaker: So I just want to say, Thank you. These are my 2 goobers right here.

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Speaker: my poor kids that are like my guinea pigs, and I'm

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make make them

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Speaker: watch their videos and run around. And Payton's my soccer player. And then Jackson is my baseball player. So I have any questions.

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Speaker: Questions.

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Speaker: Yeah, alright. Let's start

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this piece.

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Speaker: What? What?

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Speaker: What drew me to this research?

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Speaker: well, the example that I gave with respect to being a gymnast, and not

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Speaker: being very good at imagery.

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Speaker: so that was probably my main drive to it, and looking at gymnasts, and

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Speaker: I think, with respect to the practical aspect of it.

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Speaker: I think back to the days when I was training, and I and I coached

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Speaker: national level trampoline and gymnastics, and we always had a mirror in front of us, too, right? So we can always go back and watch ourselves in the mirror, whatever it may be, and we didn't really have footage of it afterwards, but

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Speaker: I think for them it was like, Well, what about sports that don't always have a mirror in front of them, you know. Can we watch footage and actually apply it into the real world? So I guess just my experience as an athlete and a coach.

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Hello!

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A long time.

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Speaker: I it's been ongoing since my Phd.

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Speaker: And my master's so I've been. I've been kind of working this area of observational learning, self modeling and those psychological skills. For a long time. I don't want to give a number, because then it will age me

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Speaker: have a quick question. For

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Speaker: I know I think I know the answer for you. But is anyone in your field using AI as a tool to

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Speaker: develop these feed forward videos instead of you having to go and edit them. I just it came to mind that

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Speaker: there's so much AI technology with you could put a video in something that something is not my area, but to to develop a video of a perfect skill. I'm just curious if that's a trend that's gonna start happening. Yeah, and that's a good question. And an area that I'm not as familiar with. But I know that

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Speaker: there is some AI stuff with

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Speaker: even like robot robots. And

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Speaker: just change behavioral change. So children having a robot and interacting with them in order to enhance proper behavioral mechanisms as well.

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Speaker: There is some simulated learning where it's like your partner's on a screen. and you're kind of copying what your partner's doing, or you have someone exercising alongside of you. So that is available as well.

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Speaker: I think for me.

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Speaker: the question comes to this idea of model similarity. So in the research right now, the thought is that

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Speaker: you are going to pay attention to a demonstration. If you feel as though you are similar to that person.

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Speaker: So, for example, if I were to watch my daughter when she was younger, rock climbing, we took up rock climbing. If I was to watch her. Her joints are going to move very differently than my joints, so I won't attend to that information. And I'm not gonna benefit from that demonstration. So I think when it comes to AI. If there's a possible means in making it pretty much yourself, then yes, it would benefit, and it would clear up a ton of time. But if it's more of a robot, I think that there's that gap with respect to their movement and whether or not you even see yourself as being similar to that

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Speaker: Dr. Reimel, your video with the gymnast routine. You fooled me. I thought that was one whole thing. I didn't know

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Speaker: that you had spliced in different clips. That's amazing that

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Speaker: II can't. I can't tell where the seams are, cause even the the pattern.

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Speaker: No, it looked really good. I couldn't tell.

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Speaker: cause I was like W. This lady looks really good like she looks like she knows what she's doing. It looks like a perfect routine. I couldn't tell where any of the splices were, because the flight pattern it wasn't like she was here in the air, and the next clip. She was down here, or something. So somehow you had to have looked at several video clips. I'm thinking so like how many clips did you? How many times did she have to do that routine for you to finally get

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Speaker: the perfect shots displaced together? And then and then how long did it take you to do that. Just that one person cause. Now, we're thinking you have to do that for multiple people, right?

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Speaker: Yeah, how long? It probably took me longer than it should

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Speaker: but that that, and that was the best one that I had done. So I gave. I showed you the best is the best of the editing that I had done. There, if you.

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Speaker: if you look in the background, you'll notice the Canadian flag and it like glitches at 1 point and then another point. It's a small glitch, and that's the only way in which you can tell that those edits are there. But it was like fine tuning cut fine tuning cut, and then I'd make a mistake.

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Speaker: it's like ours. So how many times did she have to do that routine, so

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Speaker: she probably did. I didn't have her do the full routine. I had her do the low bar.

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Speaker: and then she would do that a couple of times, and she would jump up and then just do the hybrid part, and then she would just do a couple of handstands to giants afterwards. So she did not practice the full routine multiple times. She did it where she wasn't exhausted, and the best that she could do it. So I would say, and realistically to be the competitive athletes. They're probably training bars for at least an hour of their 4 or 5 h practice.

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Speaker: So in that hour time the coach that I was

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Speaker: my boss at the time that was coaching at that gym. She was open to me coming in and allowing me one bar.

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so that I could have the footage always in the same spot.

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Speaker: probably did about 5 to 10. And

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Speaker: do you think with the use of video technology like in enhancing motor learning. Do you think in the future there'll be less

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Speaker: availability or less need for coaches?

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Speaker: That's a great question.

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Speaker: I hope that that's not the case.

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Speaker: I hope

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Speaker: that we can start integrating this in a lot of our coaching modules and informing coaches on how to properly properly implement this

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Speaker: for various individuals. That's the path that I'm I'm hoping that we

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we kind of take right now, I'm

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Speaker: actually looking into working with them.

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Speaker: A coaching certification program in Canada, on on building modules where we can implement some of this observational learning and teach coaches how to effectively implement these kind of things with their athletes.

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It's possible.

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Speaker: like the grocery store. Right? We scan our own things now.

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hopefully not

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Speaker: I have an anecdote. So when I was in high school I was captain of the cheerleading team.

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Speaker: and I love cheerleading, and I got injured while we were preparing for competition, which takes months and months of you know, it's really hard.

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Speaker: And I was so depressed.

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Speaker: and I attended practice, and I would just watch them, and I was obsessed, and I just pictured it every night when I would go home I'd picture the routine in my head, over and over, and when I could finally get back after like 2 months. I could do everything perfectly. I was totally shocked with myself because

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Speaker: we have to learn all that from scratch and the skills are really hard.

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Speaker: So when I saw your presentation, I was like that reminded me exactly of that time, and I know it works cause well, I'm an anecdote. But still it works, I think. And that's a good point, Kelly, because

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Speaker: for you doing that imagery actually created those motor neurons to go out to your muscles, then activate those muscles. And that's why you are able to actually go back out and perform those skills. When you're observing, it does very similar to actual imagery, and it can start to stimulate parts of the brain where the brain sends the information out to your muscles to kind of

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Speaker: activate those things, and this is done in rehabilitation as well. Now, imagery is the most beneficial when it comes to sending that information out your muscles as if you're seeing the skill.

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Speaker: But in that situation like it could be that

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Speaker: if, for example, if you weren't good at imagery, you could probably go back and not be able to do those skills. So watching, a video would be the next best thing and maybe help you create those proper images.

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Speaker: I have a question.

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Speaker: Number one, did you get Irb approval for your son's research, your kid, your kids research. But you don't have to go through that. My, no. The questions about team effects. And

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Speaker: what got me think about this was, you know you were talking about the point one increase in score, and so on on the with just a single athlete that might seem like a negligible difference, or at least you were talking to a statistician. But having worked with athletes myself.

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Speaker: you know, there's this kind of inspiration effect. So if someone, if someone improves a little bit at through using a particular technique, whether it be, you know.

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Speaker: video technology or what have you? It inspires other people on the team to want to get better using the same technique. So have you thought about looking at, or has anyone looked at, or have you looked at?

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Speaker: How something like this can

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Speaker: positively affect team outcomes, not just at the individual.

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Speaker: a very good perspective. I have not looked at that. I have not looked at how implementing a video technique can help another individual

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use that video technique. Is that what they're

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Speaker: almost like? It becomes infectious like there. Oh, that helps that helped Jennifer. So I want to do it, too. And the whole team gets better because they start all doing the same thing.

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Speaker: Yeah. And so there, there needs to be a buy in, right. So they have to believe that this will actually benefit them. And there's some research out there regarding the control of observation. So, and whether or not I actually buy into it. Or if I have the choice to control, how often I see a video, it is more beneficial than a coach telling me, well, you're gonna watch it because it helped this person as well. So I think that's kind of where the tie-in comes to play is that there needs to be a buy-in team to actually believe our students

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Speaker: athletes whenever it is, needs to believe that

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Speaker: it could potentially benefit their performance.

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Speaker: But I haven't looked at it from a team perspective. I'm usually more of that individual sport.

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Speaker: Great, thank you. Question.

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Speaker: Do you believe that students, when they're using this AI app. Do you think that it benefits them to watch back the videos that they did good on or watch back the mistakes they made?

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Speaker: Do you believe that the athletes that made a mistake in a video while being recorded, do you think they should watch their mistake before watching them do the actual performance correctly, so they can get better overall. Or is it better to for them to watch the corrected video before the

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Speaker: mistake? So the question was looking at the difference between watching errors and watching correctness. So a lot of my research is watching correct.

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possibly do

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Speaker: correct. That goes back to this idea of a model right? If someone has or the observation framework that we've kind of implemented.

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Speaker: If someone has very high confidence.

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Speaker: sure show them errors because you'll learn from errors right? We all know that if you watch yourself in the mirror and you make a mistake, you can correct it, and you can learn from it right where this really comes into play is that more of that psychological aspect and the the self-efficacy is that

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Speaker: if someone has low confidence and you're showing them only their mistakes. You're only going to drive them down deeper into having less confidence.

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Speaker: But if someone has low confidence in you're showing them what they can do. It's gonna build their confidence, which in that case is gonna enhance their performance.

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Speaker: There is more recent research out looking at this combination idea of showing

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Speaker: yourself doing it at the current skill level with mistakes, but then also showing a skilled model, and where you should be. And they're finding that this combination model is doing a little bit of mistakes, and correctness is actually benefiting more so than doing just one.

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Speaker: I have not looked at research, looking at the combination models. But this is something that I definitely want to kind of tap into. And I think even more interesting is this idea of superimposing one model on top of the other.

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Speaker: and it could be. You watch yourself

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Speaker: at your current skill level, and then it could be. You watch a skilled model, and see where the slight difference lies.

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Speaker: and learn that way. But that's kind of like a future perspective that I think I have for my.

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Speaker: I think we there's a question there which I'm I'm assuming. James Trotter or Mihaila popescu, or somebody else from X Real is is a plant. But do you collaborate with the Xreel lab on campus for videos, too?

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Speaker: I want to say yes, but I don't. I should. I most definitely should look into that and collaborate on those lines. So this will be like a

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Speaker: Ryan will get your act together and go collaborate, though.

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Speaker: Are there any other questions from folks here or folks online.

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Speaker: How do your kids feel about you using this app on them? How did they feel about what about you using this app on them.

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Speaker: they're okay with it. I do. I do. Consulting with

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Speaker: my daughter's soccer team. And so I'll do some video footage with them. And they have that trace footage now where they they go back, and they review their games and that kind of stuff, and then they'll ask me to come in and help out with like

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Speaker: picking out the proper and creating highlight videos for them. So I think that they're they're getting there, my son being a little bit younger. He's kind of like Mom. He gets a little bit embarrassed, but

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Speaker: possibly doing, anyway.

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Speaker: Well, another round of applause, please, for Dr. Reimb.

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Speaker: thank you.

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Speaker: Thank you once again for your willingness to do this, and sharing your insights with with us. I was inspired, so thank you, and I will pass

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Speaker: to Dean Lubass.

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Speaker: and this will give me a chance to ask you to come to the next one, which is March 20, eighth at noon. Also in this space, and there will also be an opportunity to attend online as well. And it is the structure of working memory, and that will be by Dr. Kevin Rosales. So please try and come for that one too. So thank you. Thank you. Thank you.

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You're welcome.

END – 00:45:44