

Season 1 — Episode 6 — Dr. Jenny Campos

Transcript

CHRISTIAN COTÉ

Welcome to Behind The Breakthrough the podcast all about groundbreaking medical research and the people behind it, at Toronto's University Health Network, Canada's largest research and teaching hospital. I'm your host Christian Coté. Today's guest Dr. Jennifer Campos, award winning chief scientist and associate director at UHN's Rehabilitation Institute. Dr. Campos is a pioneer in the field of falls and driving accidents in older adults, she'll join us in a minute but first, here's the backstory on Dr. Jennifer Campos.

Growing up in Oakville Ontario in the '90s, Jenny was fascinated with how the brain works. In high school, she volunteered at a mental health distress center and a local hospital geriatric psychiatry unit. At university she majored in psychology continuing her studies all the way to a postgraduate fellowship at the prestigious Max Planck Institute in Germany.

But by the late 2000s Jenny was growing restless. She had a wealth of theoretical knowledge of the brain, but it wasn't enough. She wanted to apply that knowledge and impact people before they become patients. The motivation arose from the accidental death of her grandfather from injuries after he fell while walking home with some groceries. So in 2009, she leapt the chance to be a researcher at the state of the art facility at UHN's Toronto Rehab. And ever since she's been pioneering the study of inputs to the brain. and how they relate to why we fall with the goal of helping to prevent those falls from ever happening. Dr. Jenny Campos associate director at UHN's Toronto Rehab Institute, welcome to Behind The Breakthrough!

DR. JENNIFER CAMPOS

Thank you so much for having me.

CHRISTIAN COTÉ

For most people, walking is second nature. We don't really think about what's keeping us upright but there's a lot going on in the brain to do that, right?

DR. JENNIFER CAMPOS

Absolutely. So, it does feel highly automatic. It's something that we take for granted. But the brain has this extraordinary task to actually combine, use and integrate information from across a variety of our sensory systems. So, we're using visual information, we're using information about the sounds around us, our muscles and joints, and we have these little acceleration detectors in our inner ear called the vestibular system and of course we think of it as automatic but it uses cognitive processes. So, even though we're

not thinking about it, the brain is doing this really complex instantaneous integration across all of these systems.

CHRISTIAN COTÉ

So, it's probably not a stretch to predict that as we age the accuracy of these inputs some processes deteriorate, which I would imagine then heighten our risk of falling?

DR. JENNIFER CAMPOS

Absolutely. As we age and sort of along with typical normal aging we get declines across our sensory systems. So, in terms of vision we have poor visual acuity, we have poor contrast sensitivity, it's harder for us to adapt to the darkness. In terms of hearing, we have poor hearing acuity but also it becomes really difficult to do things like listen to people talking in a noisy restaurant, so being able to kind of extract that signal from the noise becomes very difficult. We start to experience you know muscle weakness, reductions in flexibility and even those acceleration detectors in our inner ear also become less sensitive. Along with our declines in our sensory systems we also experience changes in cognition. And those are typical changes to attention and memory, but of course whether we're talking about sensory health or cognitive health there are typical declines and then there are also impairments that are common with aging. So, we have visual impairments, hearing impairments and of course cognitive impairments like dementia. And all of those things contribute to the risk of falling.

CHRISTIAN COTÉ

So Jenny, what do we know then about the frequency of falls and injury in the elderly in Canada?

DR. JENNIFER CAMPOS

So, falls are a major problem for the elderly in Canada. They're the number one reason for injury and hospitalization in older adults. They're the number one reason for emergency room visits involving older adults. The Canadian Institutes for Health Information recently reported that four out of five injuries requiring hospitalization were due to a fall and these falls are also increasing in the elderly. The costs for the Ontario healthcare system is estimated at over two billion dollars in terms of direct costs. And when we consider that within the next 10 to 20 years, depending on where you live, a quarter of the entire population is going to be over 65, this is not a problem that's going to go away unless we start doing something about it.

CHRISTIAN COTÉ

My understanding is there's a rich tradition of falls research going back decades. So, give us a sense and if you don't mind just set us up with that research and how your lab approach differs.

DR. JENNIFER CAMPOS

Historically there's been a little bit of an isolation approach when you start thinking about specifically how sensory function and cognitive function contribute to falls. And so in the clinical setting and in research it's been very common for these silos to exist

where you go get your hearing tested by the audiologist and you get your vision tested by the optometrist and you go to your physiotherapist to strengthen your muscles and to improve your balance. But of course this is not at all how the real world works. So, those are those are very important and critical aspects of research in the healthcare system. But what I'm really interested in is putting all those things together. So, when you are walking and navigating and going about your activities of daily living, your brain has this extraordinary task of having to manage those things all at the same time.

And so what my research contributes to this landscape is to really understand the challenges that the brain has in being able to integrate those systems, how changes to each of those sensory systems is affecting mobility involves risk, but also the piece I think that's unique is that we're really striving to understand how these things are affecting people under really realistic conditions.

It's typical in a clinical or lab based setting to have high degrees of control and safety and precision. And again that's very important. But if you really want to translate the research from the lab to real life, then we need to start thinking about how these things are functioning in everyday life and try to mimic those.

CHRISTIAN COTÉ

So I want to go into detail but I'm curious was there an aha moment for you? Like how did you come to the realization that you wanted to integrate all these inputs in your research when studying why we fall when we get older?

DR. JENNIFER CAMPOS

I think it was because even though I've been so interested in sort of the theoretical underpinnings of how the brain processes sensory information, what was missing for me a little bit was to understand or appreciate the "So What" behind that research. So, I wanted to really understand: what are the implications? So, this is how the brain works this is how the brain is operating. There is an emerging sort of theoretical literature understanding the neuro-mechanisms of how the brain integrates different sensory systems. But to me I was starting to wonder to what end? And so there's lots of reasons why your brain has to integrate sensory information. It's pretty much inherent in everything that we do. But to me in my research background, understanding how it was critical to supporting mobility, mobility in my mind ranges from being able to maintain standing balance, to being able to walk, to being able to drive, so really kind of extending across that spectrum. And of course understanding walking and particularly driving, which are extremely complex tasks it's not really just enough to look at one sensory system over another. You really have to think about how these things are working together.

CHRISTIAN COTÉ

Let's talk about how you design your research and the technology available to you when it comes to testing people for how and why they fall.

DR. JENNIFER CAMPOS

I am extremely fortunate because at Toronto Rehab we have a world class \$40 million state of the art simulation and virtual reality facility. It's called the Challenging Environment Assessment Lab or CEAL for short, and these simulators allow us to really mimic the conditions and challenges that people are experiencing every day. Those challenges include driving that we can test with our driving simulator. We have a virtual reality simulator called Street Lab, which can allow us to simulate for instance walking across busy city intersections including the sights and the sounds and the real motion that you get from walking on a treadmill. We have Winter Lab which mimics the harsh Canadian winters including ice floor, winds and subzero temperatures that can be mimicked. And we also have Stair Lab which is where we can start to look at the design of the built environment by creating different types of staircase designs interior and exterior built design elements to look at safety.

The amazing thing about this facility is that you can study falls from a number of different perspectives. So, one is that we have a large motion platform. So, what you're able to do is you're actually able to put people off balance and look at their balance recovery. We can also change the inclination of the floor surface to make it more difficult walking up and down slopes and cross slopes. Where I've been using these research facilities most frequently is in our virtual reality simulator Street Lab. And the reason that I use that simulator most often is because I'm interested in the sensory and cognitive contributions to fall risk and what street lab allows us to do is create a sort of brain stress test that I like to call it. Again, going back to this idea that walking seems automatic and is not, we can create a situation in street lab where people are walking across, for instance University Avenue, a busy multi lane road and you have traffic and you have pedestrians and you have noises and you have three friends talking to you at the same time. So, now you have to manage walking, navigating, listening and looking simultaneously. And this is not trivial. And we can ramp up or down the difficulty of this task by making it harder or easier. And then we can look at how people are able to manage the different loads as they're walking.

We see that older adults with even mild hearing loss are at three times greater risk of falling and as they're hearing loss increases the risk of falling also increases. One of the things that is really unknown at this point is why does hearing loss contribute to fall risk? And so we're operating and testing a few different hypotheses. One is that it's an issue of cognitive load and what I mean by that is that when you have to work really hard to listen, if listening effort is really high for you, then that means that the cognitive resources that you have to put towards listening could be taking away from the cognitive resources that you could assign to other tasks or behaviors including walking and so it could compromise mobility in that way.

CHRISTIAN COTÉ

Is our brain doing this without us knowing or are we actually consciously focusing so much on hearing that it distracts us perhaps from other inputs?

DR. JENNIFER CAMPOS

I think it can work on all different levels. So, I think if you ask individuals with hearing loss they will also express subjective effort and fatigue when having to listen. And that's often why they avoid certain situations. They may not go out and participate as much or meet friends in noisy restaurants and avoid a lot of noisy social situations, which is another contributing factor which leads to social isolation in fact. But I think that it can also happen at a subconscious level. So, you're really not aware for instance that your brain has a certain number of cognitive resources that you then have to allocate towards different tasks that is happening clearly automatically. And so it's very difficult for you to be able to strategically change where your resources are being applied.

So we can test this in Street Lab and we have tested this in street lab using that scenario I just described. So, we have older adults with and without hearing loss crossing University Avenue and having to listen to three friends talk at them at the same time and they have to listen for certain information, retain it and repeat it. They have to do all of this without compromising safe walking, which we can also measure because we have sensors on them and we can measure their walking abilities and look and see whether or not there are sort of unsafe characteristics to their walking.

So we do find clearly that older adults compared to younger adults certainly show that they have much more difficulty managing these multiple tasks at the same time. But, we also see that older adults with hearing loss show evidence of having markers of poor mobility and more difficulty in performing these tasks.

CHRISTIAN COTÉ

And is there a way at this point to try and help people with that deficit in terms of hearing?

DR. JENNIFER CAMPOS

This is probably going to be a multipronged approach and it could in part relate to hearing devices although we don't necessarily know how much they're improving at this time. But something we're pursuing right now is to actually try to increase cognitive capacity through training. We know that listening effort is again taking up some of these cognitive resources. So, if we can build up those cognitive resources in individuals through some type of cognitive training that's shown to be effective for other groups then we could see whether or not we have effects pre-training and post-training that are evidenced in terms of safer walking patterns.

CHRISTIAN COTÉ

What I see is interesting also in your research is that you see this issue of the elderly and their increased vulnerability for falling is preventable. How so?

DR. JENNIFER CAMPOS

That's a really big question. We absolutely believe that many of these injuries and deaths due to falls are preventable. But this is a multifaceted problem. So, what my research contributes to this is that we clearly know that sensory health and cognitive health are contributing to the problem of falls. And so the first thing the thing is obvious is that you need to address and monitor your sensory health and cognitive health and where possible, treat it. But of course there's all kinds of other things that we can do to prevent falls so other colleagues in my lab for instance are looking at how do we design the built environment in order to support mobility? How do we design staircases? Bathroom design? Intersection design? Other colleagues are looking at how do we develop better footwear to prevent slipping under winter conditions for instance. Of course we can consider medications and how do we balance medications to make sure that we're not putting people at risk of falls. What kind of physical interventions, cognitive interventions can we do to help train people to give them increased capacity so that they can manage better? So, this is going to be a multipronged approach, but absolutely there are many things that we could be doing to prevent falls.

Even if we prevent just a small proportion of the falls that are happening now in the elderly we would be able to save literally hundreds of millions of dollars.

CHRISTIAN COTÉ

And injuries and potentially lives?

DR. JENNIFER CAMPOS

Which is the most important part of course, right? Is that especially when we consider older adults and falls, the consequences can be catastrophic. They can be life altering. Even considering injuries due to falls, an injury to an older adult can be much different than an injury to a younger adult in terms of how it's affecting their quality of life and longevity. And so this is not a trivial issue and it's not just about dollars and cents, it's about lives and well-being of individuals and their caregivers and their family.

CHRISTIAN COTÉ

So, I understand your research has also expanded into another big issue for the elderly which is driving and accidents. Can you talk to us a little bit about that research?

DR. JENNIFER CAMPOS

Absolutely. So, vehicle collisions are another significant problem, it's actually the number two reason for injuries and hospitalizations and ER visits in older adults in Canada. It's also perhaps not surprising that we see changes to driving performance as a function of older age because of the changes that we see in sensory, motor and cognitive functioning. We are studying many different themes of topics in Driver Lab that are related to safety in older drivers. So some examples of those include the effects of drugs and medications on driving, opioids being one example. We know that opioids are being prescribed, for instance, for chronic pain. What we don't know is how do we advise people who are taking these drugs in terms of their concerns about driving? And what

are the tradeoffs? So, if you have a well controlled dose of opioids that's managing your pain. How is that going to affect your driving and the side effects of the drugs compared to the effects of unmanaged chronic severe pain on driving? And we really don't know the answers to that. So, we have studies that are really looking at how sleep disorders and drowsiness are affecting driving and of course how to mitigate that. So how can we detect drowsiness on the spot and how do we create some sort of alerting system?

And then of course we're interested in just general understanding fitness to drive. So, if you are experiencing sensory, motor and cognitive declines, including dementia, what does that mean in terms of your driving safety? A dementia diagnosis in and of itself does not require an automatic revoking of one's license. People at early stages of dementia are still safe to drive, but at what point does that become dangerous and it's really now up to the physician's discretion. There's not a lot of tools at their disposal to make that determination. And so that's something that we're looking at as well.

Another very hot topic is automated vehicle technologies. Automated vehicles are exciting prospects, especially when you consider older drivers and when you consider the issues of driving cessation and having to give up your license. Automated vehicles may provide a solution for that, but it's not so easy. So, we're looking at how older adults are accepting of automated vehicle technologies and how they're able to operate them understanding that it's changing the role of the driver. It's not removing the need for a driver when you are using these systems.

CHRISTIAN COTÉ

Is this drivers lives something down the line where it could be utilized by government to send elderly drivers to test their abilities to drive safely?

DR. JENNIFER CAMPOS

It's a really good question. So, Driver Lab is exclusively a research facility a research lab and there's a reason for that because it's very expensive, it's very large, it's difficult to operate and it has all the bells and whistles. And the reason that we have all the bells and whistles here is because we need to know what are the most important features of the simulator that are helping us answer our questions. So, it may be the case that the full motion base, or that the full field of view, or that the the full car is actually an unnecessary component to be able to do these assessments effectively. But what our long term vision is, is to use driver lab to be able to develop deployable, scalable, smaller version simulators that have all the critical components and to use those in testing and training centers.

CHRISTIAN COTÉ

Let's examine lab to life, then. How do you go about leveraging your research so that it has an impact say in the educational world for example?

DR. JENNIFER CAMPOS

In the research that we're doing now we're early days in terms of changing policies or changing practice but we are very much within the space of trying to create education for people who can apply this knowledge into practice. And so we're seeing an appetite for instance in audiologists to understand how they can consider cognitive function or false risk in their patients. So, despite the fact that they are really focused on the hearing part they're starting now very much to be aware of the consequences of hearing loss to things other than just speech communication. And so we see our role as being able to talk to audiologists and provide them with tools that could help them for instance identify false risk or cognitive decline and how to maneuver that in their clients.

CHRISTIAN COTÉ

You're listening to Behind The Breakthrough, a podcast of groundbreaking medical research and the people behind it at the University Health Network in Toronto, Canada's largest teaching and research hospital. I'm your host Christian Coté and we're speaking today with Dr. Jenny Campos, associate director at UHN's Toronto Rehabilitation Institute and a pioneer in the study of falls and driving accidents related to the elderly. As well as solutions to prevent these problems. Jenny we mentioned at the top, you're at the Max Planck Institute in Germany. You're doing quite nicely. And then in 2009 you decide to move to Toronto. That decision was somewhat of a turning point for you right? Talk to us then about the motivation behind that decision.

DR. JENNIFER CAMPOS

I was working at arguably one of the top institutes in the world for understanding human perception and performance using simulators and virtual reality. It was in Tübingen in Germany which is this I dislike German town my office and the research institute was up on the Swedish Alps. It was really extraordinary. It was a hub for research and in health research and beyond. And I loved it and I feel very fortunate to have worked there. But I wanted to come home. I'm from the Toronto area. I wanted to be close to my family. I wanted to start a family and that was my priority and I had colleagues say to me that that was very disadvantageous to my career and very limiting and that should not be an approach that I should take. But at the time and still I was willing to make some sacrifices because I wanted to be home. And it was a bit of a serendipitous moment while I was in Germany. We were having a workshop of international guests who were interested in walking in virtual environments and I was reviewing abstract submissions and there was one that came in from a doctor Geoff Fernie. Dr. Geoff Fernie is the former Institute director at Toronto Rehab and really the pioneer behind bringing everything together in building this number one rehab research institute in the world.

CHRISTIAN COTÉ

He's currently got that 40 million dollar lab up and running right?

DR. JENNIFER CAMPOS

Exactly. And so this was before that lab even existed. And he was presenting at this meeting the concept of SEAL and the concept of research trying to rehab and how he was going to use simulators to solve these problems and to help older adults age well. And so I was reviewing these abstracts and my brain kind of exploded. This was in Toronto. It was using simulators in virtual reality and it was doing important critical translational research that was very close to my heart. So, to say that I was excited is an understatement. I'd like to pick your brain about how my research might be relevant to what you're doing at Toronto Rehab and I want to hear more about this incredible facility that you're building. And he agreed that was a clearly a turning point. And when my postdoc was over and I was coming back to Toronto that's when I reconnected and the rest is history so to say.

CHRISTIAN COTÉ

You're referencing the fact you wanted to start a family there was this serendipitous connection with the people at Toronto Rehab who are going to start this challenging lab? You wanted to have more of an impact on people, talk to us about that balance though of career and family because I am guessing it's fairly challenging?

DR. JENNIFER CAMPOS

Absolutely. Maintaining that work-life balance of course is probably one of the most challenging balances to strike in academia and I'm sure in many careers. I'm very fortunate because I have a very supportive husband who's made sacrifices for me. He took a leave of absence when I went to Germany. He has a very high level role now but prioritizes my career as much as his. I have a support network that I've learned not to hesitate asking for help, including my parents. But there is a learning curve for that there is a learning curve in how do you find and strike that balance? And I often tell to early career scientists and people who haven't started a family but would like to start one that it's fine to start to anticipate what your path is going to be and to create a timeline. But you can't be rigid in that timeline because things don't always work the way that you think they will. And to be very candid when we were trying to start a family it was very very difficult. We had a lot of problems and it turns out we didn't think actually that we were going to be able to have children. So, balancing all of those challenges at the same time while starting this new career was a very exciting but ultimately trying time. Again I think what it came down to was the excitement that I had to be where I was surrounding myself by supportive family and of course supportive colleagues which really allowed me to learn how to strike that balance and also prioritize.

CHRISTIAN COTÉ

Are there any other challenges that you faced along the way that you think might be useful to share say to young scientists who are trying to come up the same road?

DR. JENNIFER CAMPOS

One of the biggest challenges in academia is the fact that you're criticized a lot.

CHRISTIAN COTÉ

How so?

DR. JENNIFER CAMPOS

And that's and also that's that's intentional and that's the way it should be.

CHRISTIAN COTÉ

So all these years of critiquing your work.

DR. JENNIFER CAMPOS

Exactly.

CHRISTIAN COTÉ

Sorry. I thought you meant just personally being criticized.

DR. JENNIFER CAMPOS

No no. So, what happens in academia and this is necessary for the progression of science is that whether we're talking about submitting your manuscript for publication in a journal and then receiving back the reviewers feedback or submitting a grant application and having it accepted or rejected or giving a talk and having people stand up and ask you critical questions it really feels a lot of the time as though people are being critical of you and it's constructively critical. That's the point. So, in order for your science to progress you have to be questioned. You have to be queried. You have to be able to defend yourself. That's just the nature of how it is. But at the same time sometimes that can feel deflating sometimes you feel that you don't have a lot of opportunity for recognition or to have those successes. And so sometimes you have to create those for yourself. And another common experience I think is imposter syndrome. And this is the ideas that you feel as though you have to be an expert in your given field and that you need to know everything. And of course you learn more about what you don't know yet and have less of an appreciation of everything that you do know. And because of that you may feel inadequate and you may feel as though that even though you're being treated as an expert you may not feel that you are that expert.

And again with time and experience you just have to own that and you just have to be honest with yourself and others and say I don't know everything. I don't need to know everything and I'm willing to learn what I don't know. And so that again is something that I think a lot of people have to overcome.

CHRISTIAN COTÉ

We discussed at the outset some of the scope and scale of the problem of falls and driving in the elderly population, given those stakes do you feel pressure to come up with solutions when you walk into work every day?

DR. JENNIFER CAMPOS

I thrive on pressure. I think like everything else in life pressure serves as kind of has sort of a U shape function in terms of how it supports productivity and success. And if you don't have any pressure on the one end of the spectrum then I think you don't feel that same drive if you have too much pressure then it can be destabilising or it can create you to sort of freeze and not know which direction to go but with that right amount of pressure which you have to learn how to hone in balance yourself that's where you see the most success. And so I've tried very hard throughout my career to try to balance that pressure and to kind of hit that sweet spot and there's ebbs and flows. So, it's changing all the time.

CHRISTIAN COTÉ

When I was gonna say also medical research takes time? I mean it's rigorous. It takes you know painstaking step by step approach. How do you reconcile that need for a treatment or a solution with the pace of science?

DR. JENNIFER CAMPOS

It's a really good point. In terms of my research priorities, I understand and appreciate the critical importance of scientific rigour and the types of experiments we do in particular they take a long time and you need a lot of experiments in order to come to any kind of conclusion. And so it's an evolution and it's not a race. And as soon as you treat it like a race then quality suffers. I think it's important to have the end goal in mind to always keep your compass aligned with where you're going and what you ultimately would like to achieve and what impact you think your research will ultimately have. That compass is important to directing you. But in terms of how long it takes you to get there that's not something that you can predetermine.

CHRISTIAN COTÉ

And I imagine there are also challenges along the way in terms of research not working out or failing. How do you cope with that or what's your approach to when things fail?

DR. JENNIFER CAMPOS

That's a really interesting word to use. Failure. It depends on how you define failure.

CHRISTIAN COTÉ

I don't mean it a pejorative sense.

DR. JENNIFER CAMPOS

I know. No but this is this is a common term. So, failure to me within a research setting is rare because if you are conducting your research with rigour carefully ethically then your research findings may not be what you predicted. But that's not failure.

CHRISTIAN COTÉ

OK.

DR. JENNIFER CAMPOS

That just means that your predictions were wrong and that means you've gained greater insight and that means that your research has progressed. So, I do think that science is changing its perspectives on this a little bit. It used to be the case that if you had a so-called null finding or a finding that basically there was no differences between your groups or what you were testing or your manipulation that was difficult to publish because it wasn't exciting or new or you didn't see an effect. But I think that there's now some pushback on that for really clear reasons. And that's because knowing that there is no effect is just as important as knowing when there is an effect.

CHRISTIAN COTÉ

And a form I imagine someone maybe years down the line thinking of going down that road and they can read your journal report or whatever and go oh that's already been tried.

DR. JENNIFER CAMPOS

Exactly. So, studies with respect to replication are important and studies with respect to not reinventing the wheel and not applying resources and time and thinking to an issue that's already been solved but hasn't been communicated again going back to this question of failure. I think that you actually have low risk of failing. I think that you have mostly high rates of success with progress even if every single one of your studies demonstrates a non significant result.

CHRISTIAN COTÉ

That's a good point. I have never heard it expressed that way actually. I understand you created a very unique mentorship program at Toronto Rehab, the Young Innovators Outreach Program. Tell us about the genesis of that and what is it?

DR. JENNIFER CAMPOS

So, as soon as I came to Toronto Rehab I launched the young innovators program and basically this is a way for us to connect with elementary and secondary school students. Toronto Rehab has this phenomenal ability to connect with students and to promote STEM and that's because we've got these exciting state of the art facilities. We're doing ground breaking research that is really intuitive and meaningful and relatable to a lot of people. And we have a very diverse group of scientists who serve as excellent role models. And so we have elementary and secondary school classes and youth groups come through for tours. We develop activities to do with them. We have scientist panels we have events such as design challenges. And so this is to get students really excited about science about engineering and math generally speaking but also about rehabilitation science in particular it's really looking to develop scientific capital and scientific knowledge in the next generation. And another priority of mine was to really promote STEM to girls. We really wanted to create increased visibility of women in science to serve as role models for girls. And now I have two boys. I have a seven year old and a four year old boy. And the revelation to me was that, it's just as critical to promote women in STEM to boys. This is another priority of the program. We have hosted or interacted with over 20000 elementary and secondary school students and we have school groups who have now made it part of their curriculum. So, we have teachers that bring their classes every single year. I like to think that it's providing a free and novel and interactive and stimulating experience for people across Toronto. People in the GTA and we're really trying to expand that through some web based materials as well. So, it continues to grow.

CHRISTIAN COTÉ

So, what's your advice today then to a young person interested in this field of medical rehab research? What do you tell them?

DR. JENNIFER CAMPOS

The most exciting part of research I think generally speaking is your ability to apply your imagination and your creativity and the independence that you have in sort of carving that path. And of course when you look at rehab research in particular that gives you the opportunity to see how these creative and interesting endeavors that you have the luxury of being able to pursue and have them guided by your own interests are also helped and guided by the impact it can have on others.

CHRISTIAN COTÉ

Talk to me about your career path? Because, I see a CV with a number of accolades and things like you know a prestigious NIH National Institutes of Health. I think it's called. Rising Star Award. You've been called an emerging world leader in multi-sensory integration and simulation technology research. Is that in any way a burden for you?

DR. JENNIFER CAMPOS

Clearly it's validating and that's something that provides reassurance and of course that breeds confidence. And when you have that confidence then you can really pursue things with greater energy. And it really helps to promote that momentum. I'm very grateful for the opportunities I've had.

CHRISTIAN COTÉ

What keeps you going every day?

DR. JENNIFER CAMPOS

I love what I do. It's never a chore to come into work. I look forward to it every single day. I work with amazing people. I have incredible students. They are so impressive. I learn a lot from them. They have so much energy and my colleagues my collaborators have a really long list of collaborators and I feel extremely fortunate for that. I have different groups that I'm a part of and I learn from them every day. And of course I work in this phenomenal research facility. We have visitors coming internationally all the time and I have the privilege of being able to show them around the simulator labs and and be able to talk to them about the important research that we're doing that's extremely stimulating and motivating to be able to have the opportunity to share that with other people. And so generally speaking every day is exciting. I never have a boring day. It's filled and I just truly feel fortunate to be in the position that I'm in.

CHRISTIAN COTÉ

We mentioned your grandpa at the outset in your back story that his death due to injuries from a fall was part of your inspiration for moving into the field of research that you do. What do you suppose he'd think of what you're doing today?

DR. JENNIFER CAMPOS

I think he would be extremely proud. I think that he would clearly see the importance in what we're doing. He was a very active man. He was in his 80s and he was driving and he was doing his own grocery shopping living in his own house traveling the world and he was really very impressive. And so the fact that things can change in an instant and he was carrying groceries up the stairs and fell and in that split second everything changed. And so I think that really trying to prevent those isolated events is of course a big priority. But I think this appreciation for how we have to focus on helping older adults live well I think it's going to be what he would be most proud of.

CHRISTIAN COTÉ

And what's next for you? What's next in your field of research?

DR. JENNIFER CAMPOS

Ultimately what I hope is next is that some of these changes and felt impact that we've been talking about throughout will actually come to fruition and that there'll be a moment in time where I can see how all of the research that we've been pursuing and all of the progress that we've made has had some impact on someone's life.

CHRISTIAN COTÉ

That's great. Dr. Jenny Campos associate director of UHN's Toronto Rehabilitation Institute. Thanks for speaking with us today and continued success.

DR. JENNIFER CAMPOS

Thank you so much. It's been a pleasure.

CHRISTIAN COTÉ

For more on the podcast go to our website, www.behindthebreakthrough.ca and let us know what you think. We crave the feedback! That's a wrap for this episode of Behind The Break through the podcast all about groundbreaking medical research and the people behind it at the University Health Network. I'm your host Christian Coté. Thanks for listening.