

## EPISODE 10: STAYING ACTIVE WITH DIABETES

**Dr. Rita Kalyani:** Welcome to *Diabetes Deconstructed*, a podcast for people interested in learning more about diabetes. I'm your host, Dr. Rita Kalyani at Johns Hopkins. We developed this podcast as a companion to our *Patient Guide to Diabetes* website. If you want a trusted and easy to understand resource for diabetes or to listen to previous podcasts, please visit [Hopkinsdiabetesinfo.org](http://Hopkinsdiabetesinfo.org). On today's podcast, we are thrilled to welcome Dr. Mark Corriere, who will be talking about the importance of physical activity and diabetes. Dr. Corriere graduated from Notre Dame as part of the Navy ROTC program. He attended Washington University School of Medicine, completing his internal medicine residency at the National Naval Medical Center Bethesda, achieving the rank of Commander. His active-duty assignments included staff internist at the Attending Physician's Office to the United States Congress and Supreme Court and as an assistant professor of medicine at the Uniformed Services University. Following his Navy career, he completed a fellowship in endocrinology and diabetes at Johns Hopkins and is currently adjunct faculty at Johns Hopkins and a clinical endocrinologist at Maryland Endocrine in Maryland. Welcome, Dr. Corriere.

**Dr. Mark Corriere:** Thank you, Rita. It's great to be with you today.

**RK:** Well, we are so glad to have you here to talk about a really important topic that comes up all the time when we are educating our patients about lifestyle modifications: and that is the importance of physical activity and exercise. I was wondering if you could start off by telling us why is exercise important for people with diabetes?

**MC:** Yeah, it's a great question. You know, I think exercise is important for everyone, regardless if they have diabetes but particularly diabetes. I feel like I spend a lot of my day as a personal trainer/cheerleader, encouraging people to get up and move. And the reasons it's so important, we look at diabetes and the reasons we care about treating diabetes is we want to lower somebody's risk of having a bad outcome. We want them to live a long, full, healthy life and the things that cause people with diabetes problems tend to end up being things like heart disease and stroke. Exercise is wonderful for lowering the risk of heart attack and stroke. It helps improve blood pressure. It helps improve cholesterol. And these are all of the things that mix with diabetes, the combination of diabetes, high blood pressure, cholesterol, that leads to bad outcomes. Getting your patients to move, exercise, and get active can have so many beneficial effects from diabetes to heart and brain health. Not to mention, people feel better when they exercise. There tends to be less depression. There's a better sense of well-being. They have a higher ability to do more in their daily life. So, I'm a huge fan of exercise. It's something I talk to my patients about countless times during the day.

**RK:** Well, it's so true that exercise has so many benefits, as you mentioned. Is it important that exercise necessarily lead to weight loss or is exercise alone sufficient to obtain some of the benefits that we talked about?

**MC:** Obviously, weight loss is really important, particularly for our type 2 diabetes patients because obesity and being overweight plays such a role in type 2 diabetes. I always tell patients when we talk about exercise, 'we exercise for a number of reasons.' If you lose weight when

you exercise, that's great. I'm thrilled with that. That is going to help your diabetes. But even if you exercise and don't lose weight, you're going to have benefits. Some of the benefits I already mentioned: benefits to your heart and lungs. But I often use an analogy with the type 2 diabetes patients that their body is facing insulin resistance. So, their pancreas is working as hard as it can to make as much insulin as it can to overcome the resistance to insulin that they're experiencing. When I say that, what I mean is their body is not responding to insulin as efficiently as it should. When we exercise, we lower that amount of insulin resistance. And by lowering that amount of insulin resistance, you can use the analogy that you're getting more miles per gallon of gas that you have in the tank, so to speak. If we can get a patient to get out and exercise for 30 or 40 minutes every day, their pancreas isn't working at such an uphill battle the rest of the day. Where if they're spending their day sitting at their desk or sitting in front of the television not being active, we're putting that poor pancreas up against a higher degree of insulin resistance. So, it's wonderful when patients burn calories and lose weight. But even if they're not losing weight, I encourage them [to] keep exercising because it has great benefits.

**RK:** Yeah, and those changes in body composition, also with the loss and fat and the increase in muscle that can happen as you mentioned, you can get more bang for the buck, if you will mileage from the fuel in terms of how well your pancreas is able to work. That's great to hear the analogy that you use. I really, really like that. You know, one of the questions I often get is, 'Is it safe for me to do exercise?' Can everyone with diabetes exercise safely? What would you say to that?

**MC:** You know, I think the broad answer to that is yes, now to varying degrees. Our older, more frail patients, do we ask them to go rock climbing or hiking or go out and run a 10k? No, I have older patients, you know, elderly patients where they participate in chair exercises, things with hand weights, small aerobic exercises, sit and fit programs. That is just getting them moving. That's wonderful. And they develop benefits from that. So, that's one extreme all the way to patients that run marathons, do triathlons, and everything in between. And I think when you mentioned safety, the first thing is, you know, how active are you at a baseline? And how active can you become? I think where we run into safety issues is when people try and go from zero to 60 miles per hour all at once. So, if you're somebody who is not exercising, and you decide, 'Alright, I'm going to do it, I'm going to jump all in.' And you start trying to do an hour to two hours of exercise a day, that could cause you some problems. So, we start 10 or 15 minutes of activity. Start slowly, try and build that up, try and progress that and that tends to work very well.

And then you also have to take into account other comorbid problems patients have. What I mean by that is a lot of patients with type 2 diabetes are heavysset. They may have arthritis of the knees or hips. And what are they able to do that's not going to agitate their arthritis? I'm a huge fan of water aerobics. I send a lot of patients to water aerobics programs, because that's something great for those patients who are having knee pain, back pain, hip pain, and have always said 'no, I can't exercise because of that.' Now, you can exercise in the water, it feels fine. Yes, I think it's [to] some degree, exercise is safe for all patients. It just has to be individualized.

**RK:** That was the next question I was gonna ask, but you answered: is there a best kind of activity for all people with diabetes, or it does it really have to be kind of patient to patient?

**MC:** I think the best kind of activity is the activity that your patient is willing to do. If people despise walking on a treadmill, then don't walk on a treadmill. You find the idea of getting on a stationary bike torture, then don't get on a stationary bike, but you have to find something that you enjoy, and it's out there, you just have to find it. The one example I'll use, pickleball. I had never heard of pickleball 10 years ago and I don't think it was a sport, maybe it was maybe a very niche sport. I have so many patients that telling me how much they love playing pickleball. You know, these were people that were not very athletically inclined in the past or didn't play [or] do a lot of exercise. And I have a number of older patients that play a ton of pickleball and it's great physical activity. It's essentially tennis on a smaller level, or ping pong on a bigger level. You really need to find something that you enjoy. And I always encourage people to find some accountability and sign up for a class if that's something that you know will help you get engaged and do something. Work out with a family member or a friend or a co-worker. Make it fun. The mention of a treadmill to some patients... I just see their face just start to frown and that the shoulders slumped. And I say 'Okay, okay, we're gonna avoid the treadmill, what do you enjoy? What do you like to do?' And you really have to search for that.

**RK:** I really liked that focus on what you enjoy as an individual because it really has to be something sustainable, doesn't it? You're willing to do on a constant basis. And I wonder if we could move now to what the recommendations are from the professional societies. And as we've talked about, they do have to be individualized for each person. But in general, what type of activities... aerobic, for instance, versus muscle strengthening activities do you usually recommend and for how long do you usually recommend people do those activities?

**MC:** In general, for patients with diabetes, the guidelines suggest about 150 minutes a week of moderate intensity physical activity. That can be a mixture of cardio and resistance training. I always encourage folks... if you're in the gym lifting weights six days a week, you know, why don't you add in a little bit of aerobic exercise? If you only use a rowing machine and that's the only thing you do add in some weights one or two days a week. But some kind of combination where you're getting resistance training on your muscles and bones and you're getting your heart rate up and your lung capacity up. Now 150 minutes is a lot of exercise for some people who are very sedentary. So, as we mentioned earlier, tell folks, 'Let's try and get five or 10 minutes in.' Try that for three, four times a week for a week or two. And if that goes well, hey, let's go to 10 or 15 minutes and slowly build that up and really work to get out to 150 minutes a week. And then there's no reason they can't do more than 150 minutes a week. A phrase that I learned when I was training and that I use with patients and I'm sure you do is, 'Don't let two days go by in a row where you don't exercise.' Because after two days it becomes a habit and it becomes a bad habit of not exercising. So you want to make sure that you don't let two days or more go by where you're not doing some physical activity.

**RK:** Sometimes it can be hard to integrate regular physical activity into your schedule, especially people are at work all day or have obligations at home. What do you tell your patients about how to make this a habit?

**MC:** One thing I would suggest is, I'm a big proponent of, if possible, exercise first thing in the morning because the day then happens, and it becomes much harder to get back to it. You know, having had years of hearing patients tell me, 'I get home from work. I just had so much going on, it was hard to get in an exercise at that point.' So, I always encourage people to try and do it first thing in the morning when you wake up, if that's feasible. That's not feasible for everybody. And as you mentioned, life and work can be very encompassing for folks. I talk to folks a lot about incorporating activity into their daily life. Is that using a standing desk where they're on their feet at work, setting a timer on their phone for the top of every hour where you get up and you go walk around the office or walk around your home for five minutes. Don't take the elevator. You know, take the stairs, if you can. Park far away. As much activity as you can build into that work environment. I had a patient who had type 2 diabetes and was a very active guy in his normal job. And then COVID happened, and he became the type of person that just sat on a computer and stared at a screen all day. And he shared with me that at the top of every hour, he was trying to do push-ups, sit ups, and jumping jacks for five minutes at the top of every hour. And over his eight hour day, that was 40 minutes of physical activity. That was his way of making sure he was getting his exercise in and got him away from the computer. And I thought that was great.

**RK:** Yeah, that's a great idea to break up the workday, especially many people have been teleworking during the pandemic, and really just sitting in front of their computer. You know, we talk about sedentary time. You know, I wonder if you could talk about what that is, how we can decrease sedentary time, and why that's important in addition to exercise, too.

**MC:** Yeah, as a society we are, we are built for comfort and being sedentary, unfortunately. We spend a lot of time in front of computers. You know, a lot of people, their jobs involves sitting at a desk. Anything we can do to increase our physical activity during the workday or after the workday is helpful for diabetes. Ways that we can improve on that, we touched on some of them already. I think the highlight the importance of being sedentary versus not being sedentary, I often used an example with folks – that in the fall is when I use this example the most often – is on a Sunday afternoon, you know, you're someone who has type 2 diabetes. And you spend the whole day on Sunday sitting on the couch watching NFL football. Here, you start with the 1pm games and you watch football all the way through Sunday Night Football, and your only physical activity is clicking the remote control and getting up and walking to the fridge or the bathroom. You have so much insulin resistance from that lack of physical activity that day. Your blood sugars are going to run higher. If you're on insulin, you're not going to get the benefits of that insulin because of that sedentary lifestyle that you led that day. Now, let's say the following Sunday, you decide, 'Oh dear, I've got leaves that are all over my yard and I need to be out raking my leaves and I got a lot of yard work to do.' And you spend those eight hours raking leaves and bagging leaves and taking down branches and all that sort of stuff. That amount of physical activity you did, your blood sugars are going to be dramatically better. If you were on insulin, you're going to notice that per unit you got such a lower blood sugar, you know, with that physical activity. The difference in being sedentary, or sort of a bump on a log or sitting on the couch versus all of that physical activity, has a dramatic effect on blood sugars. And that's just an example of you know, a Sunday afternoon. If you repeat those type of activities in your daily life, it makes a tremendous difference in your diabetes control.

**RK:** What would you say about walking as a physical activity for people with diabetes? Is that something that can have benefits as well?

**MC:** Oh, it can have tremendous benefits. Yeah. Again, you don't have to go run a 5k or a 10k at a high speed to get benefits. You know, simple walking is great. I love it when I hear patients come in and tell me they got a puppy. You know, 'Oh, that dog needs to be walked, right? And you're walking your dog.' So, I really encourage people [that] walking is a great exercise. Being creative about your walking program, particularly in the winter. I have a lot of folks that like to go to Home Depot, they like to go to the local mall, they like to go to the grocery store. And they do they're walking in December, January, February. Patients who will literally go to the grocery store for one item, you know, every day just so they can walk the aisles of the grocery store for 15 or 20 minutes. Walking has tremendous benefits and it'll definitely help you.

**RK:** That's great to hear that physical activity doesn't have to be extreme. Really, it can just be as simple as walking or doing some of the simple measures that you mentioned, such as parking further away or taking the stairs to have benefit. Talking a bit more about medications and using them while you're being more physically active, are there any considerations for people that might be taking pills for diabetes that you usually talk about when they are more physically active or going to the gym, for instance?

**MC:** Sure, when we're talking about pills, that two sort of classes of medicines that I would counsel folks on--one would be what are called the SGLT-2 inhibitors. These are medicines commonly known as Farxiga, or Jardiance, or Invokana. These are medicines that work through your kidneys for patients with type 2 diabetes and they can almost have a water pill effect or a diuretic effect so people can urinate more often when they're on these medicines, and they can dehydrate you some. So, if we are engaging in higher intensity, physical activity, or we're not even that much higher intensity, just starting to engage in physical activity and you're on one of those medicines, it's important to stay well hydrated and make sure you're not running behind on your fluids.

The other class of pills that I talk to patients about if they're on what's called a sulfonylurea. These are medicines like glipizide, glimepiride, glyburide. And these are pills that stimulate the pancreas to make insulin. The problem with that is if we stimulate the pancreas to make insulin when we don't need insulin, we can provoke hypoglycemia, or low blood sugars. So, if we start to engage in a lot of physical activity or exercise, that can drive blood sugars down. So, if someone is on one of those medicines I mentioned, those glimepirides, glyburide, glipizide medicines, they may be more likely to have low blood sugar episodes during exercise, or particularly afterward. I often talk about checking your blood sugar before exercise, checking after exercise, taking in some nutrition or sugar if you start to see your blood sugars trending down with activity.

**RK:** And it sounds like hydration is just so important in general, for people with diabetes, but especially for those people on the SGLT-2 inhibitors like you mentioned. What about people taking insulin? What adjustments might they have to make during physical activity or exercise?

**MC:** The exercise component with insulin becomes more complex. And the reason being, as we mentioned, when you exercise, your body becomes more efficient at using the insulin – whether it's insulin we're injecting or insulin from your own pancreas. Patients who are on insulin and then start to engage in exercise are more prone to low blood sugar episodes, again, during the exercise or afterwards. So, the same sort of things that I mentioned with that sulfonylurea class holds true. We talked about checking blood sugars before the exercise, sometimes during the exercise, and definitely afterwards. Adjusting the dose of the insulin in anticipation of exercise is important, or after exercise is important. And what I mean by that is if I'm a patient who is on insulin, and I go work out, and I come home, and I'm sitting down to have dinner, you know, an hour after my workout, and typically I might give myself 10 units of insulin for this particular dinner. If I just came from the gym and I was on the treadmill for a half an hour and I lifted weights for a half an hour, 10 units of my normal insulin might be too much. I might decide, 'You know what, I'm probably really sensitive to insulin right now, because of that exercise. I'm gonna dial that back to seven or eight units.' You know, learning how to make those adjustments and nuances to insulin regimens is important as people exercise frequently. Frequent monitoring of blood sugar helps with that, and then continuous glucose monitors are just fabulous to help people see the effect of exercise on their blood sugar, and then the effect of their insulin on blood sugar after exercise.

**RK:** And how long do you usually see those effects on blood sugar after exercise?

**MC:** It can be fairly prolonged. Up to six to 10 hours later, you can still see, you know, the decrease in insulin resistance. I have a patient who wears an insulin pump, who plays indoor soccer, and she plays indoor soccer at night after work and her games are, she's told me for anywhere from like six, seven, eight, nine, ten o'clock at night. And she's fairly intense in the indoor soccer she plays and she was very commonly getting low blood sugars at three, four or five in the morning after the indoor soccer the night before. We came to the conclusion, 'Hey, we really need to cut back on your insulin when you get home from the indoor soccer events.' Like she boluses less insulin for her dinner when she gets home and then she would turn down her basal insulin overnight. We often think that, you know, exercise only has an effect right away, you know, in the first hour or two afterwards on blood sugars, but that's not the case. It can last for really 6 to 10 hours. And if you have somebody engaging in extreme exercise, really prolonged physical activity, that effect can last all day.

**RK:** You know, he talked about blood sugars often being low after intense exercise and the effects can be prolonged for a few hours, really. And it's important to know that not just during exercise, but after exercise, the blood sugars can change. Sometimes, people report that their blood sugars can actually go high. Have you seen that in your practice? And do you think it's due to certain types of exercise? Or when have you seen that?

**MC:** That's a great question. And that is an example I've experienced many times talking to patients about exercise. When we look at exercise, when we look at a high intensity exercise versus slow duration or duration exercise or endurance exercise, you can see a difference in blood sugar response. The overall key is all of this exercise is good. In the long run, no matter what type of exercise we're doing, whether it's powerlifting, or you're going out to run 20 miles, it's going to have a beneficial effect in the long run on your blood sugars. But in the short-term,

as you mentioned Rita, sometimes when people exercise right away, they'll notice their blood sugars will go up initially, and that'll be very concerning to them. And that may discourage them from exercising. And that effect we can see from certain stress hormones that can occur during exercise. We can release adrenaline-like hormones or cortisol or growth hormone that can happen during intense exercise. And that can cause your blood sugars to initially go up before they'll slowly come down following the exercise. So explaining that to a patient so they're not concerned... they'll come back and they'll say, 'Oh my gosh, you told me to exercise, it was going to lower my blood sugar. I did a finger stick and my blood sugar had gone up 50 points, what are you doing to me?' And I say, 'Okay, it's fine. It does go up initially, but it's going to come down in the long run.'

The flip side of that is sort of steady, chronic endurance exercise. People will start out at a certain level and tend to just slowly see their blood sugars fade or come down. Athletes with diabetes can use those distinctions to their advantage. For example, if you're a distance runner who has diabetes and is on insulin, those folks run into problems with low blood sugars during their run. So, mixing in high intensity or intervals to their runs can actually bring up their blood sugar. You know, they may choose to sprint one lap around the track as hard as they can for every four or five other laps around the track that they run. And that one lap where they run as hard as they can, they'll get a burst of adrenaline which can work through the liver to help release glucose and bring up blood sugars. Knowing the distinction between those two responses to exercise can be important.

**RK:** That's so interesting what you described with doing those sprints and then doing the distance. That makes a lot of sense. And it sounds like just getting to know how your body responds to exercise and really adjusting is important for the long run. As a distance runner yourself, I wonder what you would say to a person with diabetes who does want to be a little bit more intense about their exercise and maybe not a professional athlete, but you know they want to run a marathon, or they want to engage in some more competitive sports. Can people with diabetes do those things? And what do you usually recommend?

**MC:** The short answer is absolutely yes, you can do these things. Diabetes should not limit you in any way in achieving any athletic goals you want to achieve. Now, can it be more challenging? Can it take some... are there hurdles? Are there learning curves? Absolutely. I'm a big advocate of the continuous glucose monitors really helping patients see the response of exercise on their blood sugars. You use the example of marathons and distance running. I run, that's my hobby. I like to do long-distance running. I do not have diabetes. I've worn continuous glucose monitors. When they come out, I like to wear them so I know what the technology is like so I can have the experience, so then I can talk to patients about them. I've worn them when I've done you know, 20-mile runs. And again, not having diabetes, just seeing the effect of my blood sugar during a run like that was fascinating. When we throw into, you know, obviously diabetes, on insulin, the duration of distance exercise like that... having the technology like a continuous glucose monitor is invaluable. Patients will start to see patterns; they can start to see, 'This is when I need to stop and refuel.' They'll see, 'Hey, I just don't have it today. My blood sugar is just not cooperating. Today is not my day.' Those sorts of

technologies – the ability to know your blood sugar all the time – has made it so much easier for athletes with diabetes.

**RK:** I think, as you said, the role of technology and the ability for it to facilitate really these prolonged periods of exercise has been tremendous. This idea of carb-loading. You know, I wonder if you could talk a little bit about that, in general. And then also how it relates to people with diabetes? Because our recommendations are on carbohydrates, you know, often, we tell people with diabetes to moderate their carbs. Is this something people with diabetes can do? Or what role does it have in those who are more physically active?

**MC:** The concept in patients without diabetes is trying to load carbohydrates before long duration exercise, in hopes of making sure we have good glycogen or glucose stores in our liver that we'll be able to tap into during the exercise. We are very careful when we talk about carbohydrates and carbohydrate intake with patients with diabetes because that is what drives up blood sugars. I typically don't recommend just loading up on the carbohydrates before exercise, but you need to have available to you rapid-acting carbohydrates. And what I mean by that is something that's going to quickly be absorbed. Examples are: apple juice, or orange juice, hard candy, or Starburst. Something that has a lot of sugar in it – 15 to 20 grams of sugar that can quickly boost your blood sugar during the exercise. Or it's 4 in the afternoon, you're getting off work, that's when you're going to exercise but your blood sugar is already on the lower end, you need to take something that's going to rapidly bring up your blood sugar before the exercise event, so you don't run into problems with low blood sugars during the exercise. I think that's the role of carbohydrates for the patient with diabetes. Quickly a patient of mine popped into my head and he loves to walk on a treadmill. And he walks into a treadmill with [him], he has two bottles, he tells me he has one bottle of water and one bottle of regular Gatorade. And he has a continuous glucose monitor that he puts on the treadmill. And as he walk he decides, 'Am I gonna drink my water? Or do I need to sip the Gatorade full of sugar?' And he's able to moderate his blood sugar. You know, he's so experienced at doing this that, you know, it's almost like pushing on the gas or pushing on the brake. But that's how he does his hour on the treadmill a number of days a week, and he's gotten very talented at it.

**RK:** It sounds like it's quite a skill on to balance them both to keep the sugar at range. That's really remarkable. You know, talking about sports and diabetes, this often comes up in our younger population, our adolescents or teenagers who are engaged in high school sports or even college sports. You know, I wonder if you could talk a little bit about what you might recommend to the young adult, for instance, who's really engaged in exercise, leagues, or wanting to be more physically active. What special considerations might they have?

**MC:** I think I would go back to what I mentioned earlier. I strongly encourage folks, don't let diabetes hold you back. If your dream is to be a major league baseball player or play in the NFL or be in the NBA, aim for your dream and do your best. And it's meant to be, it's meant to be. I coach a lot of youth sports; I have coached two young gentlemen that have had type 1 diabetes in baseball in the past for a number of years. And both of them wore pumps on the field and did great. Now, were there slots of planning that was involved for them before a game? Was their planning if we were playing a doubleheader out in the heat? Absolutely. Their families would come with a cooler and the cooler would have that apple juice and orange juice in it. One of the



boys who I still coach takes off his pump during the game, and he'll come over and get his blood sugar checked, you know, in between innings. And in between games, the pump goes back on and he'll get insulin at that time. There's trial and error to that and they've gotten good at that. But it shouldn't hold you back in any stretch. There are professional athletes out there who are doing great things with diabetes. Here in Baltimore, Mark Andrews of the Ravens is a perfect example of that, an All-pro tight end with type 1 diabetes who has done great things in the NFL, and you'd never know he has diabetes unless you read about it or heard it mentioned on the broadcast.

**RK:** I fully agree with the planning and the preparation you mentioned. And really with the use of technology, there's really no reason that a person with diabetes can't be engaged in exercise to whatever degree they are comfortable with. What about patients who have complications of diabetes, such as neuropathy, or retinopathy or maybe even a history of heart attack? When would you recommend that patients have a pre-exercise physical or consultation with their doctor to ensure that they can exercise safely?

**MC:** The heart one is sort of that special situation that I get concerned about. Fortunately, a lot of the cardiologists that I share patients with are very good about this and most patients after an event that I take care of – when I say, ‘an event’, a heart attack or a bypass – go through a cardiac rehab program, which is just perfectly designed for this. It's sort of designed to safely get them back to exercise in a monitored setting to make sure that they're going to be successful and... promote good health and not harm. I worry... you mentioned retinopathy, and we're talking about vision problems related to diabetes and neuropathy and nerve problems. I worry if my patient is, you know, can't see or can't feel their feet, right? And then I'm encouraging them, “Hey, let's hop on a treadmill,” or “Let's go for a walk,” or “Let's do some stairs,” we're going to create more harm than good potentially. If there are red flags when I'm talking to somebody and I realize, you know, encouraging them to just jump right in and do exercise sounds like it might cause more harm than good... that's when we take a pause and say, ‘All right, let's have you see your eye doctor, let's talk about how your feet are feeling. Are there other exercises we can do? Can we do hand weights? Can we do sort of a hand stationary bike where you're pedaling with your hands?’ There are creative ways to be active. You just have to be adaptive to the patient's needs.

**RK:** Thanks so much for such an insightful and informative discussion on exercise and diabetes. I wonder just some parting words you might have for a person with diabetes, who might be listening, who is inspired and wants to be more physically active, but just isn't sure how to go about doing that. What would you recommend they to do as next steps?

**MC:** *Getting out there and taking the first steps is the most important thing. If you haven't done anything at all, you start with 5 to 10 minutes of activity and try and make it a habit. Just try and do it as many days in a row as you can and then sort of slowly grow things from there. Again, it doesn't have to be incredible intensity or anything overly athletic. Just you doing more than what you're doing now and just sort of build on that each day and slowly you'll see some of the benefits of exercise and improving your diabetes and hopefully your overall health. We talked about heart, lungs, brain, and just mental health, too. I think exercise is the one prescription we should write for all patients because it's so helpful.*

**RK:** Well, thanks so much again, Dr. Corriere, for being here. We really appreciate your time and your expertise.

**MC:** My pleasure. Thank you.

**RK:** I'm Dr. Rita Kalyani, and you've been listening to *Diabetes Deconstructed*, a companion podcast to the *Johns Hopkins Patient Guide to Diabetes* website, which has all kinds of useful information about diabetes, including videos and animations, a lifestyle and nutrition blog, and a comprehensive diabetes glossary among other topics. For more information, visit [Hopkinsdiabetesinfo.org](http://Hopkinsdiabetesinfo.org). We'd love to hear from our listeners. The email address is [Hopkinsdiabetesinfo@jhmi.edu](mailto:Hopkinsdiabetesinfo@jhmi.edu). Thanks for listening. Be well and see you next time.