

Treating Heart Failure in Adults with CHD Physical Activity

Announcer: Welcome to the Mayo Clinic Cardiovascular Continuing Medical Education podcast. Join us each week to discuss the most pressing topics in cardiology and gain valuable insights that can be directly applied to your practice.

Dr. Burchill - Welcome back to "Interview with the Experts," a podcast series from Mayo Clinic Cardiovascular Education. I'm your host, Dr. Luke Burchill. I'm leading development of the heart failure care pathway for adults with congenital heart disease here at Mayo Clinic. And joining me today is Dr. Amanda Bonikowske, the program director for cardiac rehabilitation. Thanks for joining us, Amanda.

Dr. Bonikowske - Thanks for having me, Dr. Burchill. Great to see you today.

Dr. Burchill - So I'm excited about this conversation because it's about something we all need to do a better job of, and that's physical activity and exercise. So thanks again.

Dr. Bonikowske - Absolutely.

Dr. Burchill - The big question, if I think about the sort of barriers to exercise for young adults with congenital heart disease, so many of my patients and their families, they come and say, "We were told not to exercise," because of their cardiac condition. And some people have actually received that advice even as adults. So the first question for you is, is physical activity safe for these young adults with congenital heart disease, particularly those who have developed heart failure as a complication?

Dr. Bonikowske - Yeah, it's a great question, Luke. And I think first let's just define two words, physical activity, which is two words, but physical activity and then exercise. So physical activity encompasses a very wide range of different activities that many of us do every day all the time. You know, we can think of, like, walking or gardening, or all of these other low-level activities that we do every single day. And then, of course, exercise also falls into the realm of physical activity. But exercise we think more of as, like, structured rhythmic type activity. Things like you might still go for a walk for exercise, which is wonderful, or biking or rowing, or, you know, kind of more of a planned activity versus all of the other physical activities we do within our day. So first of all, yes, physical activity is safe for most patients with stable chronic heart failure. And so they can absolutely continue to participate in all of those types of activities. Where we might stumble a little bit is once we get into the actual exercise training, and, of course, exercise training is a class one indication from both American Heart Association and American College of Cardiology for patients that have heart failure. But again, we'll bring in that word stable again. So patients that are considered stable on their guideline-directed medical therapy and who don't have any significant contraindications to exercise, which I'm assuming the majority of the patients that you are then suggesting should exercise, they've met those criteria.

So it is safe to participate in both physical activity and exercise. So again, the overall risk of participating in exercise is quite low, especially when we do pre-participation assessment. And again, if they've already seen their cardiologist, then they're probably at a point where that is safe.

Dr. Burchill - There are so many great points in what you just said, and so I might sort of respond to you. And I'm thinking about the listener out there, perhaps it's a cardiologist, it's a colleague in the community. I think our role as the cardiologist is, as you say, it's to make sure that that patient is safe. So is there a contraindication present? And so we can do things like, let's rule out any arrhythmia that's unstable that could contribute to a problem. Let's examine the patient, maybe run some tests. Is there evidence of decompensation? Do they have fluid overload? Do they have fluid on their chest, on their chest X-ray? Do they have very high JVP, lots of peripheral edema? Do they have evidence of end-organ problems? Their kidney function's gone off, their liver function suggests that they might have that congestive sort of liver disease. Do they have coronary disease? Perhaps this is a patient with heart failure but also chest pain, often overlooked in young adults with congenital heart disease. Some do have coronary disease, either because of their surgery or because they've gone on to develop other risk factors for coronary disease. So these are all just examples of the kinds of things the cardiologist plays a really vital role in making sure that the patient's stable. Let's imagine that that's happened. I've done my job, I've ruled out all those contraindications, and then I have a partner in the exercise physiologist, correct? Maybe can you educate us, educate me, on an exercise physiologist doesn't just meet the patient and start exercising them. As you just mentioned, there's actually an assessment, correct?

Dr. Bonikowske - Absolutely. Yeah, so pre-participation assessment can include a wide range of things that you might be looking for. You've already identified, you've ruled out all of the major contraindications of, you know, either the uncontrolled, the acute, anything along those lines. And so then, you know, and especially maybe in this congenital heart disease population, it's assessing for, you know, things that might make exercise difficult for this individual. So it might include, say, an initial exercise test to determine their exercise capacity. That gives us a really good idea of where to start with the aerobic exercise. We might also do some strength testing to determine where they're at as far as the strength, upper body, lower body strength, and you can even test, you know, is one side weaker than the other, and we can make really specific exercise recommendations. And then we can also test for things like frailty and other conditions that might make exercise difficult for this population.

Dr. Burchill - And I know we're gonna talk a little bit about frailties, so people should stay tuned for that because, I think, again, it's depending upon when you trained, it might not be something that, as a cardiologist, you really learned a lot about. It might be something that you associate with, say, older people or geriatric medicine, whereas I think it's probably very relevant to a larger proportion of the young adults with congenital heart disease patients that I see. So let's park that. Let's come back to that. I wanted to talk about specifically about cardiac rehab. So what is cardiac rehabilitation, and what benefits might it offer for our young adults with congenital heart disease who have heart failure and who have a reduced ejection fraction less than 35%? How might cardiac rehabilitation benefit that individual?

Dr. Bonikowske - Yeah, absolutely. So first, cardiac rehab is a multi-component both risk factor and lifestyle management program. So it, of course, includes exercise sessions, and a lot of that pre-participation assessment we just went over is included within cardiac rehab, so that we do know where to start with their exercise program. So beyond the exercise sessions, which would be progressive over the duration of the program, many programs are, you know, 36 sessions, about 12 weeks, something along those lines. And then it also includes things like stress management, smoking cessation, if appropriate, dietary assessment, and nutritional strategies to reduce the risk of cardiovascular disease. So it really is a very multi-component program. Now to the second question, how does it help people living with heart failure? Well, one of the major impacts of cardiac rehab is reducing both all-cause and heart failure related hospital admissions. And then the second big factor that comes out of participation in cardiac rehab is improving health-related quality of life. So both of those combined are some pretty big impacts from cardiac rehab participation.

Dr. Burchill - It's huge. And so often I have a patient where the cardiac rehabilitation team has identified an issue. Who has referred them back into care, and it's led to earlier recognition and treatment of things related to their heart failure. So, I think, better optimization of their treatment overall. So, okay, let's think about these young adults that I'm seeing, that we are seeing, congenital heart disease, heart failure. What specific exercises might be most beneficial for these patients? I know you've already mentioned a few, but let's come back to that. What kinds of elements or dimensions should we be including in that patient and their exercise program?

Dr. Bonikowske - Yeah, absolutely. And so one of the other benefits of working with someone like an exercise physiologist is that they will, of course, determine where are the deficits, where do we need to help with and where do we start. But I think in, you know, when I think about a specific group in adult congenital heart disease, say those with Fontan physiology, if you take a look at Cordina and colleagues work in the exercise training realm, really a focus on lower extremity strength training has shown great benefit in those individuals. And then, on top of that, the inspiratory muscle training. So, again, if those patients are reliant on diaphragmatic function, we can maybe help to reduce respiratory muscle fatigue with inspiratory muscle training. And that area is really growing rapidly in the entire world of heart failure. So I think we're gonna start to see inspiratory muscle training recommended more widely. And then the other thing to consider would be for the aerobic exercise, more of an interval or intermittent approach. So again, dependent on patient response to exercise, but that intermittent aerobic approach can be really beneficial too in those that maybe desaturate with exercise, because obviously they can't continue going the more they desaturate. So if we can take more of an intermittent approach, that can be really beneficial as well. And the interval-type training has shown benefit, significant benefits in patients with heart failure, so interval training can be another great approach for the aerobic side of training.

Dr. Burchill - So lower limb resistance, some inspiratory diaphragmatic muscle training, intermittent exercise, and interval training. And I'm going to confirm, we're not talking about high-intensity interval training like you might see late night on television or streaming service. I

like to call it the insanity workout. It's an imaginary thing that exists in my mind, but it's one of those, you know, DVD sets that you get sent to your home to do this insanity workout. We're really not talking about that for these patients in the adult congenital heart disease clinic, are we?

Dr. Bonikowske - No, we're really not. And, you know, you might have that end of the spectrum where, okay, they have adult congenital heart disease, they run marathons, but that's a very small portion of the population, and absolutely we'll adjust our aerobic exercise prescription to match where they're at. But you're absolutely right, we're talking more intervals of, you might be walking on the treadmill at two miles an hour, and now we add a 1% grade, you know, to make it a little more difficult and progress from there. But it's not, you know, all-out 10 second sprints with 10 seconds in between. It's nothing along those lines.

Dr. Burchill - Yeah, exactly. As I say to my patients, "We're not going from zero to hero." We want something that is steady, gradual, and sustainable and that they can incorporate into their lifestyle. And I think sometimes that also includes involving family members. Can I get your comments just while we've got you here? What about the after-dinner family walk? I mean, does that fit in to these kinds of increases in physical activity?

Dr. Bonikowske - Absolutely. You know, everybody exercises a little bit differently, but I think having a social support group is really important, and it does show benefits across a lot of different exercise metrics. But again, you mentioned walking. Walking is exercise, and walking is physical activity. And so walking is a wonderful form of both of those things that we can do with others. So having social connection at the same time as performing the activity we need to for the day. And you know, this study I'm referring to was not done in patients that have a congenital heart disease but a simple walking interval program, so you walk a little bit faster, say, light pole to light pole, and these individuals saw better improvements in their exercise capacity, more weight loss compared to a group that just walked at the same pace for a half an hour. So I think we often forget that walking is a really wonderful form of moderate-intensity exercise.

Dr. Burchill - Yeah, it's definitely good for clearing the mind, and I think it gets the blood flowing. So generally, I ask my patients to just start by tracking their average daily step count. So again, for the listening cardiologist out there, and I'm sure many of you are already doing this in your practice, but asking people to look at their phone or if they have a watch or if they bought a Fitbit or perhaps even just a cheap pedometer, I like to say, "Let's just turn on the light and find out what the baseline is. Let's answer the question of what's happening now." And I try to say there is no step count that is too low, that's not the point. But for reference, the average American takes three to 4,000 average steps per day, and we are aiming for 8,000 or, in the future, 10,000. But again, we're not going from zero to hero. We wanna find out where our patients are and then support them in a gradual increase. And what's your sort of idea of a gradual increase over time in average daily step count?

Dr. Bonikowske - So I'll individualize it for patients, but you could take an approach of, say, 50 to 100 more steps per day, or if we're even more on the deconditioned side, we could say 50 to

100 steps per week, more than you were at. And it's really just this kind of slow, gradual progression that you won't even realize is happening when you make it that small amount of activity. And then, I often remind patients that this'll take time. You know, allow six months to get to your goal, because that's the reality if you take this really slow, gradual approach. But find something that's achievable for you because you're still gonna get there one way or the other. It's just a matter of what's achievable, feasible, and something that you believe that you can do.

Dr. Burchill - I really like this approach because I think what we're trying to give patients an experience of is success and sort of some mastery over the recommendations that we're giving. One barrier that I see with exercise recommendations is that there's an immediate mindset about equipment or joining a gym. And they're imaginary barriers, right? Because mostly what people can do, it's available to us today and I love the focus on step count because it's something available to most people. So I think that this is really helpful, setting those goals so that people can be successful and then using that as a foundation to build on future success is a great way to go, I think. So frailty, we said that we would talk about it. We're not just talking about an older person who might be your classic geriatric medicine patient. What is frailty?

Dr. Bonikowske - Yeah, so it's a loaded question, right? Now, frailty, it's a multidimensional syndrome and may include muscle weakness, sarcopenia, mobility issues, could even include cognitive impairment, often includes fatigue. And you're absolutely right, it greatly impacts the elderly population. But we also see young, very young patients within our cardiac rehab program that do meet the criteria for frailty. So important to assess, no matter the age. So absolutely, we'll take that approach.

Dr. Burchill - Okay, and what might someone who is frail, what might they be experiencing on the day-to-day as a consequence of their frailty that someone who is not frail is experiencing in their daily life?

Dr. Bonikowske - Yeah, I think it's more of a reduced ability and, you know, I guess overall ability to do the activities that seem so simple for everyone else. And if there is additional fatigue and additional cognitive impairment, it's really this kind of loss of independence and inability to take care of yourself.

Dr. Burchill - So I think that these kinds of questions you can incorporate into your medical or your social history. So it's not just saying to someone, "Do you dress independently?" for instance, as a measure of their personal activities of daily living. It's, "Do you need to rest while you are getting dressed? Do you need to rest while you are doing those domestic duties around the house?" And the more that people are limited, like you said, in sort of daily function, things that are sort of standard for getting through a normal day, the more likely they are to be frail. Is that fair to say?

Dr. Bonikowske - Yeah, that sounds pretty accurate.

Dr. Burchill - And so, okay, we have these patients, and we identify them as having features of frailty. What is the difference? How do you tailor the approach to people who have frailty?

Dr. Bonikowske - Yeah, so there's definitely a shift in the exercise prescription. You know, there's this huge focus on aerobic activity, which is very, very important. And when I say aerobic, I mean things like walking, biking, rowing, elliptical, those types of activities. But there's a shift to a preference or a greater focus on resistance training because the reality is you're not going to be able to ask the frail patient to go on the treadmill for 30 minutes every day. They're simply not going to be able to perform that activity. So we actually start with increasing strength first. And again, this is all on a spectrum. So we may be starting with simple activities such as like a chair sit to stand, which, again, we also would wanna focus on functional activities that translate into the typical things that you try to do during your day. And much of that is getting up out of a chair or even getting up off of the floor, carrying bags. You know, can we even carry our own bags in from the car or getting things out of a car? So trying to find those kind of functional activities that will build strength for the things that we do kind of on a daily basis. So initial focus on some strength training. Then also a large focus on balance and agility because, again, we need to rebuild that strength, but we also need to make sure that they can reduce their risk of falling. So the different balance and agility activities can help to reduce risk of falls. And then the initial, like I said, aerobic prescription is gonna be brief, you know, say in, like, the 10 minute range, and it might need to be intermittent as well. And then we progress from there, where we start to shift a little bit more back to add some more aerobic once we've built up enough strength to be able to do that continuous aerobic activity.

Dr. Burchill - And I think people would be surprised too with that idea that there's a young adult with congenital heart disease who actually scores as frail or screens as frail. I know you're not gonna go into any individual patient details, but do you have any examples or experiences with younger adults with frailty and how they've responded to that kind of program that you just outlined?

Dr. Bonikowske - Yeah, and, you know, not to give a specific example, but if we think about how quickly deconditioning happens and it's about one to two weeks where we lose a significant amount of our exercise capacity, you know, think about these kids that have been told not to do anything for years. And so they do respond really, really well, that's the beauty of it. And that's kind of the hopeful side of it all is that even though you've experienced profound deconditioning, we can absolutely help you rebuild, improve your strength. You know, one specific example, the kiddo had never even been able to play any sort of sports because of their condition and how long it took to have surgery. And so they got to play soccer and kick a ball around, and do all these other types of activities, and they picked it up so fast. So I think that's the wonderful part about the kids is that they're very resilient, and they absolutely have the capacity to build the strength and the aerobic exercise capacity.

Dr. Burchill - I love that. That's such a positive note to end on. I think, you know, focusing on strengths, focusing on solutions, opening these new dimensions for young adults that might have really been denied any access to physical activity to exercise these kinds of experiences.

Something as simple as kicking a soccer ball and feeling good about it, I couldn't agree more that that's exactly what we want to be offering our patients. Whether they've got heart failure or not, I think that there's a lot of work to be done for these young adults with congenital heart disease, and I'm lucky to have your support in providing that care here at Mayo Clinic. Thank you.

Dr. Bonikowske - Yeah, you're so welcome. I'm also lucky to work with you. It's a wonderful service we can provide.