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Active Aging: Preventing Heart Failure in Older Women with Exercise

Dr. Butler:
According to the American Heart Association, physical activity is recommended to help lower the risk of heart disease. But how much physical activity is needed, especially for older women, to lower that risk?

You're listening to *Heart Matters* on ReachMD. I'm Dr. Javed Butler, and joining me today to discuss his research on physical activity and heart failure risk in older women is Dr. Michael LaMonte. Dr. LaMonte is a Research Professor of Epidemiology and Environmental Health at the University of Buffalo in New York.

Dr. LaMonte, welcome to the program.

Dr. LaMonte:
Well, thank you, Dr. Butler. It's a pleasure to be here, and I appreciate the invitation to talk about our recent findings.

Dr. Butler:
So why don't we jump right into the topic. Can you tell us a little bit about your study, what led you to undertake this study in the first place, and then why focus on older women?

Dr. LaMonte:
So the study is part of an ongoing, large, national program on women's health called the Women's Health Initiative. The Women's Health Initiative, or WHI as we abbreviate it, enrolled 161,808 women ages 50 to 79 a while back; 1993 to 1998 was the enrollment window. And the initial WHI program set forth to understand what were some of the major contributors to morbidity and mortality in aging postmenopausal women.

As the study progressed around 2012 or so, we had the opportunity to do an in-home clinical examination, which involved a fasting blood draw, resting blood pressure, anthropometric measures, a physical functioning test, and a few questionnaires. And as part of that in-home visit, we had funding to do an ancillary study, which is called the Objective Physical Activity and Cardiovascular Health study, or OPACH. The point of OPACH was to try and deploy accelerometer, or movement sensors, to the women who were completing this in-home examination. The idea there would be that we have objective measures of their physical activity and their sedentary behaviors at the same or close in time to this extensive in-home examination. And then as part of the national WHI, the women had been followed annually and were continued to be followed as a part of our OPACH study for incident morbidity and also mortality through various mechanisms used in the WHI.

So this opportunity really gave us a chance to overcome two things. One, as we age, our physical activity habits and patterns, including our intensity level of movement and the amount of time we spend sitting, changes dramatically, and the conventional approach to assessing this has always been a questionnaire. And of course, questionnaires have issues where people may not be able to recall accurately or completely all of the activities that they engage in on a regular basis. And this was particularly true as we get older. So that's one aspect that the accelerometer device helps us overcome because it basically senses all motion or movement that's being undertaken over a prespecified time interval that gets programmed into the device.

The second issue that using an objective measure like an accelerometer allows us to do is to tailor the summary of the movement that the person is doing while wearing the device. We can tailor that to the types and intensities of activity for particular age groups. And we did that as part of our OPACH study. We did that tailoring, if you will, as part of a laboratory-based calibration study in 400 of the study participants where we had them come into the laboratory setting, wear the device, and do usual activities that are relevant to an older woman's lifestyle. And therefore, we were able to summarize the activity patterns and intensities we were measuring with the device in

a manner that was more appropriate for the age group as opposed to what's been published in the scientific literature, which typically reflects more middle-aged individuals.

Dr. Butler:
So with that background that you have provided, can you tell us a little bit about overall results? What did you find, and what methods did you apply?

Dr. LaMonte:
So the manuscript that was published recently in *JAMA Cardiology* focused on incident heart failure or new-onset development of heart failure in these older women. They were on average around 79, I believe. The age range was 63 to 99 years when they wore the accelerometer device, the motion sensor. And we followed them up somewhere around seven years, eight years forward in time and counted the number of cases of hospitalized heart failure. And then based on the information we get regarding the hospitalization, we obtain the medical records from the individual—of course with their permission—and we sent that information to the University of North Carolina at Chapel Hill where a colleague of ours, Wayne Rosamond, who's also a cardiovascular epidemiologist, has established a heart failure subtyping center, initially as part of the ARIC cohort but now providing that service to other epidemiological cohorts. And what that enabled us to do was to use a standardized adjudication process, first of all, to understand whether or not the hospitalization truly was for new-onset acute and decompensated heart failure. And if that checked the box off, that in fact it was a valid heart failure hospitalization meeting those criteria, he then used various information from the medical record to subtype the heart failure into heart failure with preserved ejection fraction, heart failure with reduced ejection fraction, or heart failure of indeterminant ejection fraction where it wasn't clear which subtype it may have been.

Dr. Butler:
For those just joining us, you're listening to *Heart Matters* on ReachMD. I'm Dr. Javed Butler, and I'm speaking with Dr. Michael LaMonte about his research on the risk of heart failure in older women based on physical activity and sedentary behavior.

So can you tell us the association between physical activity and risk of heart failure? Maybe heart failure with preserved versus reduced, did you find any differences?

Dr. LaMonte:
I believe, if I'm recalling correctly, well over 50 percent of the total heart failure was heart failure with preserved ejection fraction.

So then we related the physical activity measures that we collected with the device to the incidence or the occurrence or the risk of heart failure overall and then the two subtypes, and what we found was a very consistent inverse association between each of our physical activity measures—and we had several of them, which I'm happy to describe momentarily—but each of the physical activity measures, the movement measures, if you will, were associated with lower risk of developing overall heart failure as well as heart failure with preserved ejection fraction. And we found, for example, on average about a 30-minute or 34 to 35-minute increment in moderate physical activity was associated with about a 25 percent lower incidence or lower risk of overall heart failure, and we saw comparable association for light-intensity physical activity. However, the amount of light-intensity physical activity that we observed being associated with about a 25 percent lower risk of heart failure was double that of moderate intensity. It was about 70 minutes.

And what this study is showing, at least for older women who are ambulatory 63 to 99 years of age, that even lighter activity appears to be associated with lower risk of overall heart failure.

We quantified that amount of activity in a much easier metric or nomenclature as a part of trying to translate the findings into a more practical approach, and that nomenclature is steps per day.

As it turns out, Dr. Butler, in our cohort of older women, the average amount of steps per day was somewhere around 3,500 to 4,000. That's far fewer than 10,000 steps per day. In fact, we had very few women who got even close to 10,000 steps per day in our study, so finding an apparent lowering of heart failure risk at around 2,000 to 2,500 steps per day was very encouraging. And when we analyzed that further using a standard increment of 3,600 steps per day, which is about one standard deviation in our distribution of steps per day, we found that for each 3,600 steps per day, there was about a 30 percent lower risk of heart failure over the subsequent seven years.

Dr. Butler:
You know, this is really important data and really exciting. So can you give us some sort of takeaway messages or recommendations to the clinicians in light of what your findings are?

Dr. LaMonte:
I think there is plenty of evidence now accruing, particularly in the older adult population, to support the following: Sit less and move more. I worry that as the public health guidelines evolved starting back in the late '80s, it really had a proliferation of pronouncements in

the ‘90s and early 2000s. I worry that the public health messaging still confuses people because we’ve attached an amount in terms of time and an intensity, typically moderate intensity or more. We now have data showing that less intensity and probably even less amount is still beneficial relative to the converse of doing nothing at all. And to me, from a public health messaging standpoint, getting people who are doing nothing to start doing something is a very good step—no pun intended—in the right direction. We’re not going to get the couch potato to stand up and suddenly achieve public health recommendations, as modest as they may be, without first taking a few steps, making some progress, and gaining confidence. And I believe during that interim, getting moving is having health benefits, especially in older adults where functional resilience and loss of skeletal muscle and metabolic elasticity challenges the overall resilience of healthy aging against the various stressors that tend to be age-related disease insults.

Dr. Butler:
Well, Dr. LaMonte, really, congratulations. I really want to thank you so much for joining us and enlightening us with your insightful thoughts.

Dr. LaMonte:
Thank you.

Dr. Butler:
For ReachMD, I’m Dr. Javed Butler. To access this and other episodes in our series, visit *Heart Matters* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening.