Keysor: Welcome to our panel on impacting clinical outcomes among people with arthritis—the journey of PhD students at Sargent College, Boston University. I am Dr. Julie Keysor. I am an associate professor of physical therapy and athletic training here at Boston University, Sargent College, and director of the Center for Enhancing Activity and Participation among People with Arthritis, which we call ENACT for short. Our PhD and rehabilitation science program at Boston University is an interdisciplinary field of study, in which our students and our faculty engage in research to optimize activity, function, and participation in daily life activities among people who have disabilities or people who are at risk of developing them.

Today, I am delighted to introduce Rawan Alheresh, Aileen Ledingham, and Molly Vaughan, who are graduate students in our rehabilitation science program, and they are also fellows in our ENACT center training program. Rawan, to my far right, is an occupational therapist who joined our programs in July 2011. Rawan brings many really interesting past experiences to her work, including serving as a full-time lecturer at the University of Jordan and working in Palestinian refugee camps as part of a community-based rehabilitation program that was supported by work from the World Health Organization. Currently, Rawan’s research is focused on measurement of the performance of work activities and engagement in work roles among people with arthritis with an eye towards becoming a major leader in health services, education, prevention and research, and Jordan’s rehabilitation services programs and more broadly, in the Middle East region. Aileen is a physical therapist who joined our programs in September 2011. Aileen has many years of clinical experience in the United States as well as the United Kingdom, and while she was in the United Kingdom, she also worked in the health administration at the National Health Services in the UK. Aileen’s research interests over her career have ranged from pediatric to geriatric populations, and now, she’s more specifically interested in exercise adherence among people—older adults—with knee osteoarthritis, and Molly, to my right, is also a physical therapist who joined our programs in September 2012 after completing her doctor of physical therapy degree here at Boston University. So Molly is one of our alumni in our Doctor of PT program. It’s really wonderful to have some of our alumni in our program. Molly brings a very unique background to rehabilitation sciences, one that
combines a degree in architecture as well as physical therapy, and her goal with her work is to combine all of her backgrounds in physical therapy, architecture, and rehabilitation science to promote participation for older adults and people with mobility limitations with optimal interactions with the physical and social environments.

Ok, so those are our three panelists. We will move forward to hearing from them and learning about the work that they're doing, so please describe and talk to us a little bit about the kind of work that you’re currently doing in your research, your current scholarship, and maybe what’s important about it. Rawan, how about you?

**Alheresh:** I’m interested in helping people participate fully in their environments and within their work roles, despite of the health conditions that they have. What brought me here is trying to help people who have arthritis, specifically, and who have limitations in their workplace. Currently in the United States, with over 50 million people reporting a form of arthritis or rheumatological condition, many of them report having limitations in the workplace and do leave work early because of their health condition. This causes a huge burden on this side. Specifically here in the US, estimates are as high as two to four times the cost of direct health care when people leave work because they’re leaving their employment sooner. So this, for me, just triggered my research focus into that and my interest as a way to try to see what we can do as rehabilitation professionals to tackle this issue, and when this interest grew into something bigger, I looked at ways on how we can measure being productive in the workplace and how we can measure being disabled in the workplace, and this is what I’m currently investigating now in my research is how researchers measure productivity in the workplace, specifically for people with arthritis.

**Keysor:** Excellent, thank you. Yes, it’s so important for us to work on outcomes, but if we can’t measure what we’re trying to look at, then we have to start there. So it’s really important to have work in that area. Good. Aileen, how about you?

**Ledingham:** Well, my interest is really to help people, particularly with knee osteoarthritis, and that’s because we know that there’s millions of people with knee osteoarthritis, and we also know that exercise can help people with knee osteoarthritis. Yet, we also know not many people like to
use exercise as a means for managing their pain and their stiffness and their lack of mobility. When you have arthritis, it really can affect how you move through your day, even within your home, but even more so, let’s not forget the participation in the community, like getting out of the house and doing the things that you enjoy doing, so I would love to discover maybe a key new way, or two, that will help people learn their exercise and stick to it in hopes of helping their quality of life. So at the moment, I am a research assistant on a randomized control trial, which is looking at exercise adherence. We’re using a novel telephone technology to try and keep people exercising to the program that we developed for them, so I feel very fortunate that that is my interest and that’s the opportunity that I’ve had here—to learn some of the new techniques that might be useful.

Keysor: Excellent, I have done some work with you while you’ve been in the program, and we’ve been studying adherence for decades—certainly, one decade, if not a couple of decades now, in terms of exercise adherence, and I know you’re trying to come up with a new look at some new perspectives, which I think is really needed and really helpful to take a step back and look, what are those key factors we’re missing to move us forward, so that’s great. Molly, how about you?

Vaughan: My interest lies in the role of contextual factors, such as physical and social environment in older adults and people with mobility limitation. So when I say social environment, I’m thinking more about social support, neighborliness, different features about a person’s social environment, and in terms of physical environment, I’m looking at a variety of factors, but some may include accessibility, the neighborhood, it could include policies that are in place, such as public transportation, safety in the community. These are all different factors that I’m interested in looking at and seeing how they impact a person’s experience and whether or not that impacts their participation in physical activity, so that’s where my current research focuses.

Keysor: Excellent, also a very important area as the country ages. I mean, we need to think about keeping people active and healthy in their current environments. Excellent. So could you tell us a little bit about whether or not there were any past experiences that led you to develop your area of
interest or did you develop it here when you were in the program? Rawan, how about you to start?

**Alheresh:** As you said in the beginning, I worked as a full-time lecturer in the University of Jordan back in the Middle East where I used to live, so I was involved in multiple research projects and rehabilitation, specifically. We started working on developing interventions and even studying the phenomenon of conditions and how it affects people’s lives and participation. We started with the assessments and the measurements that we had, and they were all developed in Europe and the United States and Australia, so we had none that were Arabic. The first step that we did was try to translate them and then, validate them cross culturally to suit the Arab population and the Jordanian population, specifically. This is where my interest in measurement began, and my teaching there developed into courses for physical dysfunction, so my understanding of musculoskeletal conditions began to grow. Then, I heard about the opportunity here at Boston University and specifically, ENACT, where one of the main themes of the ENACT agenda was tackling employment for people with arthritis, which are both areas of work that I’m really interested in, and that’s how I came here. I’m very fortunate to be doing that.

**Keysor:** Excellent, so you had a lot of measurement interest even prior to coming to the program, which is great, as well as arthritis work. Aileen, how about you?

**Ledingham:** What triggered my interest was really a bit of frustration that I experienced as a physical therapy clinician. I would work with patients and I’d be like great, you’re doing your exercises, great, you look like you’re feeling better, you’re moving better, here’s your home exercise program, have a nice life, and the problem is people would start coming back because I think they weren’t able to implement that exercise program into their lifestyle so that it would be a regular means of managing their musculoskeletal conditions. The fact that so many people have knee osteoarthritis in the aging population and all the other reasons for the prevalence to be increasing really was the tipping point for me to really want to research this line of inquiry to see if we, as physical therapists and other health professionals, can learn some key components to getting people to do their exercises, particularly with chronic diseases.
**Keysor:** Absolutely. No, we hear that a lot from clinicians, who like it better when we work with them, but to sustain that over time is really hard for people who need to come up with new ways to do that. Molly, how about you?

**Vaughan:** Sure, so once I obtained a degree in architecture, I ended up collaborating with a friend on a documentary film project, and that involved taking a teenager with muscular dystrophy across the United States for two months. During that time, we really encountered a lot of environmental obstacles, and that kind of just put a seed of interest into my head, but I decided after working with him that I wanted to do physical therapy. While I was here at BU in the physical therapy program, I decided to combine my backgrounds and look at the environment in disability, and so I decided to pursue the PhD in rehabilitation sciences here. My interest is basically what are the environments that we’re sending our patients home to and do they make a difference in their lives. So I’m specifically interested in older adults and people with arthritis, but I may expand that into other areas.

**Keysor:** That’s great. I love that you have a background in architecture, and I think that’s going to be so important to looking at aging in place, combining physical therapy rehab sciences and architecture, so really, very exciting. Excellent, so are there any activities that you have done the past few years that you have been in the program that have been particularly meaningful for your career development?

**Alheresh:** Yep, so what I thought was extremely exceptional about my experience here that was meaningful was having the ability to attend weekly scientific research meetings that was specifically in other schools, other than Sargent—specifically, in the School of Public Health and the School of Medicine. One was more epidemiology-focused, and the other one was more instruments- and measurement-focused, which fall very nicely into my research interests. What I really liked about that was the multidisciplinary component that these meetings brought, so it had various people from different professions talking about what is important for the lives of people who have health conditions, like arthritis, to try to enhance their performance in their life. In addition to attending these multidisciplinary team meetings, I attended, I think me and the other fellows, annual scientific meetings, including the rheumatology scientific meeting, and for
me, personally, I attended the occupational therapy meeting. Within those meetings, I developed a very good network of researchers and scientists who are interested in employment and people with arthritis. We have a really good connection, and we meet every year. I met with them annually for the past four years, and we now really know each other. We know what’s going on in the field, and hopefully, this will bloom into something very meaningful in our science.

**Keysor:** Those connections also led to you being asked to be on review panels on some of these national conferences and meetings, which is also excellent. Excellent, Aileen?

**Ledingham:** I would second the notion about the multidisciplinary aspect, but I’ll jump back to my research assistant job as one of the primary meaningful experiences that I’ve had because reading the literature, it looks so clean and squeaky, but actually living the part of being a research assistant and seeing maybe not the development of the study, but the intake to the finishing of a study, there’s so many nuances to actually producing a successful randomized control trial that I did not appreciate just from reading the articles. It is just amazing what goes into having this research move forward, and that’s really what I’m interested in is research. The other valuable experience in the last couple years is really the time spent with my fellow graduate students. We have a class called doc seminar, and it’s a very casual environment. It’s multidisciplinary. It’s all with rehab specialty in the foreground, in the future, but very different backgrounds to start out with. It’s really great to be able to learn from their experiences also.

**Keysor:** Thank you. Molly, your colleagues already said a lot. Do you have anything to add?

**Vaughan:** Yes, well echoing their interdisciplinary collaborations that we had an opportunity to be a part of, I think also the PhD program allows one to take courses in a number of different colleges on the BU campus and at the School of Public Health. I was fortunate enough to take a mapping class that really echoes some of my interests and allowed me to learn a little bit more about that skill. I think also having the opportunity to, as Aileen said, collect data, but I also was able to sort of help lead small projects with the CDC and the Arthritis Foundation, looking at walkability of
cities and what is important, specifically for people with arthritis, sort of
taking the lead in that project, in terms of data collection, recruitment, and
then eventually, the analysis and manuscript development. I think that
really helps give a practical application to my research interests, and it’s
very fortunate that I’ve been given the opportunity.

Keysor: So I know all of you very well because I work a lot with all of you,
and you’re all in your dissertation days. I’m so surprised that writing wasn’t
mentioned as particularly meaningful, but that’s okay. We’ll move forward
from there. Pursuing a PhD is a major decision. It’s a very big time
commitment. It’s a very big financial commitment. For people who might be
considering a PhD in rehabilitation science, do you have any thoughts for
them to help steer them to the right decision? Molly, let’s start with you,
since you’ve had to go last the whole time.

Vaughan: Sure. It is a really big decision. I think as a clinician going into
research, learning how to conduct research is really valuable because we
need more evidence-based intervention and more empirical research about
speech occupational therapy and physical therapy, so I think it’s a great
opportunity to really learn how to conduct research and take it back to the
clinic, if that’s where you choose to go. Besides that, I think there are
financial considerations because obviously, you’ll be making less money
being part of a PhD program, but I think, on the flip side, you come out with
a wider range of skills and possibly, better job opportunities. The financial
hit upfront might turn into something better down the road. I think, besides
that, some things to consider, as we’ve all kind of touched upon, is it takes
a lot to conduct research. It requires you to be a very detail-oriented
person, to be a lifelong learner, and to really be proactive while you’re a
part of a PhD or if you are considering doing a PhD.

Keysor: Excellent, well said. Aileen, do you have anything to add?

Ledingham: I’d say, from my personal experience, I’m on the second half
of my life span, so this was a mid-life change. It was a bigger change than I
would have expected and totally worth it, but there is a lot of time required
to integrate into the new ways, particularly computers. I thought I was pretty
computer savvy, but I never heard of the market—when you send a
document about those people, track changes, or RefWorks. There’s just so
many technological advances. I mean, there’s the pros and the cons—
definitely some pros. I would suggest anyone like me who hasn’t had a lot of time in the academic world or is not a recent student to beef up on those skills before you have to really beef up on the academic aspect of the program. I would say that, yes, Molly, the lifelong learning attitude is certainly what would be required because there’s an endless amount of learning through this process, and sometimes it’s painful. But for the most part, it’s really worth it. I think, for me, it will open up more doors for more opportunities in the second half of my career lifespan.

**Keysor:** Interesting. Aileen, I think the rehabilitation science fields need more people who have research degrees with their clinical degrees, and as people come in mid-career, I think we need to figure out how to support people from mid-career to prepare them, so that they can be successful in the programs. I think you bring up a really important point that academic institutions need to think about, so we can make sure our students are all successful who come in. Rawan, how about you?

**Alheresh:** Well, I want to echo what Molly and Aileen said about having the skills and certain traits, but I also had a certain challenge of my own. I came from the Middle East, halfway across the world, so I had to make a very important decision. It’s probably one of the biggest decisions I’ve made in my life to transition not only myself, but my family, from Jordan here to the US to get my education. But I think when the person is very passionate and has a goal in mind, you work towards that goal, regardless of what you have to give up, like the family support I had back home and coming to a different culture, because it’s all worth it. As Aileen said, you do learn a huge amount when you do that. When I started the program, I started with one child, and now, I have three. I had twins on the way when I was studying. Sargent College and Julie, specifically, were extremely supportive of that. So if you are considering doing a PhD, I would advise people to go ahead and do it. Make sure you do have the support from the school you’re applying for because that does play a very important role in your decision.

**Keysor:** We have a few minutes left, so let me ask you to put on some binoculars, a little bit. In terms of your areas of interest, where is the field going to go in the next decade? What are going to be some of the important things that you will need to tackle? Molly, how about you?
Vaughan: Sure. Older adult populations are really growing and the communities that they’re going home to or they want to remain in are really important, so I think there needs to be more research in the area on older adults and their environments, as well as more vulnerable populations, such as people with arthritis or people with mobility limitations. Right now, from previous work I’ve done, sort of more of a literature review, I’ve identified certain gaps in the work. I think that’s where my role moving forward will come into play. Specifically, there are not many long-term studies looking at the role of the environment and participation over time. Also, there are certain aspects of the environment that haven’t been looked at thoroughly, so looking at how different environments might interact with each other, whether it be social, physical, or virtual environments and whether that makes a difference or has an impact is important. Also, looking at whether certain populations of people, say people who are more resilient or have better self-efficacy—if they’re faced with a more restrictive environment, does that matter for them—and who is more vulnerable to their environment is important. I think those are some things we have to think about. I think also there’s certainly an area of technology that’s growing, and I think that can be really useful for environmental measurement or even intervention down the road. I think that’s an area that really hasn’t been looked at very thoroughly in our work.

Keysor: Excellent. Aileen, how about you? Have you found any new insights yet into adherence? Any ideas of where to go?

Ledingham: I have some ideas, but they’re early ideas. I do believe, along with some of the social media, there’s relationships that people could build up and maybe tap into those relationships to help motivate, to engage, in sustained exercise programs.

Keysor: Good, excellent. Rawan, how about you?

Alheresh: Where do I see the field moving? Well, for me, specifically, being an occupational therapist and having lectured in occupational therapy before, I always taught my students to do certain techniques when people have pain, stiffness, and other symptoms that accompany diseases such as arthritis. Unfortunately, there hasn’t been any evidence based behind some of these techniques and approaches that we do as rehabilitation professionals. I feel like we should definitely focus on that area.
Additionally, I see myself working in the Middle East. They just started doing some incidence and prevalence studies on health conditions like rheumatic conditions. I see myself working in that area to develop that more into the rehabilitation realm.

**Keysor:** Excellent, very good. So you are all getting very close to finishing your degree, although you’re at different stages. Would you tell us a little bit about what the next year is going to bring for you? Rawan, how about you?

**Alheresh:** I’m currently summing up my work here at Boston University, so it’s sad that I’m leaving you guys, but I’m also very excited that I’m moving on to a new opportunity in the Middle East, where I will be involved in teaching occupational therapy for new cohorts of students over there. I’m very excited that I’m going to carry over my skills and what I learned here in ENACT. I’m going to be one of the first couple of people who have rheumatological rehabilitation expertise. I hope to carry that forward to my students.

**Keysor:** Excellent. Aileen?

**Ledingham:** I am going to finish my dissertation and hopefully, move on to full-time employment again. I sort of have a hybrid idea at the moment. I want to get back into the clinical realm of being a physical therapist, and I don’t want to lose my contacts in the research/academic world, so I want to sort of mix those two together and possibly do a bit of teaching. I am open to opportunities at the moment. For the next few months, I’ll be keeping my head down to get the dissertation completed.

**Keysor:** Sounds good. That’s a great plan. And Molly?

**Vaughan:** I’m also working on my dissertation right now, looking at features of the environment that might impact people with arthritis over the long term. Moving forward after that, I hope to continue this line of research. I hope to impact age-friendly community initiatives, so looking at impacting policy and these kinds of things that might play a role in helping support older adults and people with mobility limitations to age in place.

**Keysor:** Excellent, very good. Well, that concludes our panel. I just wanted to thank the three of you. It is wonderful to have all of you in our program. You have brought tremendous strengths to our program and over the years, you have developed an unbelievable amount of knowledge and skill.
It’s been really, really exciting to see you move forward in your careers. We’re very excited to see where you go next. That concludes our panel. I’d like to thank our three presenters for participating. It has been wonderful to hear your progress over the time that you’ve been in the program. You have gained an unbelievable amount of knowledge and skills, and you have brought tremendous strengths to our program here at BU rehabilitation sciences and to ENACT. So if anyone has any questions about our program and our doctoral program of rehabilitation science or our Center on Enhancing Activity and Participation among People with Arthritis, or ENACT, please go to the BU website, which is bu.edu/sargent. You will find all the information about our programs. Thank you.