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Application of the ICF to the Provision of School-based Physical Therapy Services

Recorded October 10, 2019

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PhysicalTherapy.com Course #3562

- [Calista] Well, our course title again is Application of the ICF to the Provision of School-based Physical Therapy Services, and it is my pleasure to welcome back Dr. Lisa Kenyon to PhysicalTherapy.com. And Dr. Kenyon is also our guest editor for this week, so I really wanna thank her and her help for lining up this series. Dr. Kenyon is an associate professor in the Department of Physical Therapy at Grand Valley State University in Grand Rapids, Michigan. Dr. Kenyon heads the Grand Valley Power Mobility Project, which is an interprofessional research and service project that provides mobility training for children and young adults who are not typically considered to be candidates for power mobility use. Dr. Kenyon presents national and internationally on topics related to pediatric physical therapist practice and has published multiple journal articles and book chapters pertaining to topics in pediatrics. Dr. Kenyon currently serves on the Committee of Content Experts for the Pediatric Specialty Council of the American Board of Physical Therapy Specialties. Thank you so much for presenting for us today in your role as guest editor this week. Dr. Kenyon, at this time, I'm gonna turn the microphone over to you.

- [Lisa] Thank you, Calista. Good afternoon, everybody, and welcome to today's course. Our learning outcomes today are to, after completing the course, participants will be able to identify at least four components of the International Classification of Function, Disability and Health related to children and youth, correctly outline the application of the ICF within the school setting, and correctly organize the components of the ICF within the execution of the elements of the patient-client management model to facilitate service delivery within the school setting. So what is the ICF? Some of you may be very familiar with the ICF. Most programs, most PT education and PTA education programs are now using the ICF. Our program here in Grand Valley adapted, adopted rather the ICF in our neuro and pediatric curricula before our orthopedic faculty adapted it into theirs. And now all of our faculty is using the ICF. If you have

done any reading within the literature within the last five to seven years, you'll see a lot of this terminology from the ICF is utilized in research papers as a way to organize and maybe even provide a theoretical foundation for some of the interventions and studies that are being provided. One of the things that's really nice about the ICF is it provides standard language and a standard framework for the description of health and health-related states. It has a multipurpose classification system intended for a wide range of uses and in different sectors. So what it does is it helps to classify health and health-related domains.

And these domains help to describe changes in body, structure, and function as pertaining to a health-related condition. Also helps describe what a person with a health condition can do in a standard environment, that's capacity, and what they actually do in real life, performance. So when we consider capacity and performance, we'll take a look at that here again in a couple of minutes, but that idea of capacity is maybe in my testing environment what a patient can do. So if they come to me in my school district and I am performing an assessment, an evaluation, an examination, they would be in an artificial setting.

But if I was to maybe observe them in a classroom setting, I would be seeing what they're actually doing, so their performance. The ICF domains are classified from body, individual, and societal perspectives. And the ICF allows us to look at function and disability a little bit differently than other models of disability and enablement have been able to do 'cause the ICF is really more about enablement rather than disablement. The Nagi model of old was a disablement model. So in the ICF, functioning refers to all body functions, activities, and participation. And disability refers to impairments, activity limitations, and participation restrictions. The ICF also includes environmental and personal actually factors that interact with all of these components. And I think that's a unique aspect of the ICF. It allows us to really look at how environmental factors and how personal factors influence a child's performance

within the school setting. The ICF emphasizes health and functioning, not disability. So as I mentioned, this is a radical change in how we think about disability. Previously, disability began where health ended. And once you were disabled, you were in a separate category. And the ICF helps us to get away from the kind of old-fashioned idea. So the ICF looks at function in society and lets us think of heath and disability in a new light. Everyone can experience a health issue and thereby experience some level of disability. So disability in the ICF is no longer something that happens to only a minority of people. We view it more as something that happens to people as time goes on pertaining to a health condition. Right, so many of you might be familiar with the ICF Map. So here on the ICF, if I can find my clicker here, I find that the health condition is at the top of the ICF Map. And that health condition could be anything. It could be cerebral palsy, Down syndrome, but it could also be something like asthma, maybe not something that we necessarily think of as causing issues for people who function in society.

But as an asthmatic, I can tell you that there are certain aspects of my asthma that can result in difficulties with me functioning within society, particularly if I'm having a bad day. So body structures and functions over there on the left hand side relate to issues within the body that are resultant from the health condition. Activity there in the middle, again, results from the health condition. And participation results, again, from the health condition. The contextual factors at the bottom of the ICF Map, look at environmental factors and personal factors. So if we were to kind of break this down a little bit and start by looking at body functions and structures, we would be able to see different aspects of the ICF. So one of the things that sometimes can be confusing is what is a body function versus a body structure? And I think this plays into our reasoning processes, our clinical reasoning processes within the school system and the school setting. And so I think these are important things to differentiate. One of the things about the ICF is the ICF is also used as a coding mechanism. You can code things down to the nth degree. I've not found that coding within the ICF to be helpful. I

find it very helpful to look at the conceptual map. I'm gonna go back a couple slides to just emphasize that. So I like to conceptualize my student's condition within this map so that I can see how I can best provide support to the things that are impacting their condition within the school system. So, again, returning to that idea of body structures and functions, we can see that body functions are physiologic and psychological functions of bodily systems, whereas body structures are anatomic parts of the body, brains, organs, bones, those types of things.

So within the ICF, we can look at body functions, and we can look at body structures. So body functions are like mental functions, attention and thought, sensation, sensory functions, and pain, voice and speech functions, respiration, memory, and emotion. Whereas body structures are more like perhaps the structure of a brain and perhaps the area of the brain where a child may have a deficit, the eye, ear, and related structures and how the structure of the eye may influence how a child is able to use their vision, structures involved in voice and speech, and structures related to cardiovascular, immunological, and respiratory systems. Kind of along this same line of thought, the body functions also look at digestive systems, metabolic and endocrine systems, genitourinary and reproductive systems, neuromusculoskeletal and movement-related functions.

And this is kind of an important and newer idea within our profession of physical therapy. Many of you may have seen our new vision for physical therapy, and that new vision really relates to our unique ability to help patients with problems related to the movement system. So looking at movement and movement function is part of the body functions within the ICF, also functions related to the skin and other structures. Body structures are structures related to digestive. So on the body function, you had the function of the digestive system. Here it's the structure of the digestive system, the structure of the genitourinary and reproductive systems, the structure related to movement, and skin and related structures. Impairments are what we refer to as

problems with body functions or structures that result from the health condition, whatever that health condition may be. It could be problems planning and executing movement, our children who have a dyspraxia, our students with developmental coordination disorder who have difficulty planning movements. I believe that the Tuesday presentation this week looked at the aspects of addressing developmental coordination disorder in the school system. It could also relate to poor cardiorespiratory endurance, balance difficulties, joint contractures, or decreased or absent sensation. All of these things feed directly into our reasoning process and are important for us to be aware of. Coming back to that map again, we can see that our next thing to hone in on relates to activity and participation.

An activity is different from participation, although sometimes in the ICF we meld these things together. An activity is an execution of a task or a function or performing a task or action. It represents integrated use of bodily functions, and these activities can vary in complexity, whereas participation is involvement in a real-life situation and is highly personalized. So what is a participation level issue for one person may not be a participation level for another issue. One of the reasons that I think that the ICF fits so nicely in the school district, in the school-based setting is that the idea of participation. A child's role within the school system is their participation within the school system, within the school setting, within the role as a student.

And it is definitely involvement in a real-life situation, and I really just feel that the ICF fits so nicely with school system practice because of this emphasis on participation. Participation is so important that many medically-based insurance companies are now beginning to look at reimbursement based on improving outcomes in patients' participation. So not really mattering if we change that body structure and function, if we change their range of motion or change their muscle strength, not even caring about their activity, but were they able to participate and fulfill the social roles and functions that they desire to participate in? So within the ICF, activities might relate to

maintaining and changing a body position, walking, self-care, fine motor or fine hand use, or even carrying objects. But participation would relate to involvement in home life, community activities or organization, and socialization with families and friends, or families and friends. So I think there you can really see the individualized nature of things with under participation within the ICF because the community activities or organizations that I might choose to participate in might be different than those that you choose to participate in. And if we were to look at it from the viewpoint of students within our school, there could be different activities within the school that some children wanna participate in and other children don't. That idea of socialization within the school is also very important in learning how to interact and involve with peers. That's a very important aspect of school life.

Some of those things that you can learn in the school cafeteria, for example, are valuable life lessons about participation. We're gonna revisit the idea of performance versus capacity because I think that this is something that we oftentimes get a little confused about when we're doing our examinations, regardless of the setting. In both the activity and participation domains, both performance and capacity should be considered when we're looking at a child and their ability to function within the school setting.

So performance, remember, is what a person does in the environmental context in which they actually live, so this is kind of their real-life situation, versus capacity, which is the ability to execute a task or action if the environment were uniform or standard, so like in testing situations. So again, capacity would relate to those issues if I had a child maybe come, maybe I took the child out of the classroom and did a standardized test the with them, or I looked at their gross motor function and the ideal testing environment without any other students around, without any other educational demands, and all the child had to do was focus on their gross motor skills. Whereas performance might be what they actually do in the classroom, at recess, while they're

at their specials, library, art, all of those things. So we should be looking at both capacity and performance. On the ICF, the gap between performance and capacity reflects the difference between the influence of real-life, real-world environments and a uniform environment. Many of us have seen that our children, our students might be able to do something in the context of a quiet environment, but not so much, can't do it quite so well in the context of a real-life environment. This was something that was really brought to life for me in a little boy I saw who he was getting ready to go into kindergarten, and his goal was to be able to go up the playground slide ladder and slide down the slide. And we worked on this and really went out and practiced on the playground and all of these things. And he could do it if there was nobody else around, but you add just a couple of children, and he was unable to process everything that was going on. He became unsafe. And it just really wasn't working for him. And then if you added the whole kindergarten and grades one and two during recess, it was just way too much.

So we had to kind of look at that difference between performance and capacity for him and find ways to help him improve his ability to perform the task he wanted to do in real-life environments. So the ICF has four activity domains or chapters. They're learning and applying knowledge, general tasks and demands, communication, and mobility. So we actually have a vital role within many of these activity domains, but particularly probably within mobility and general task and demands. The participation domains or chapters within the ICF relate to self-care, domestic life, interpersonal interactions and relationships, major life areas, that's kind of a catch-all, lots of executive function things, but also community, social, and civic life. Activity limitations are difficulties performing age-appropriate tasks or actions, again, based on the influence of a health condition. Participation restrictions relate to problems involving real-life situations and involvement in real-life situations. So it could be interpersonal interactions and relationships, relationships with family or social relationships, major life areas like play, attending preschool, regular school, vocational training, and maybe

employment, also community, social, and civil life, those recreational and leisure activities. Because participation is multidimensional, addressing an activity limitation doesn't mean that participation restrictions are automatically alleviated. This is a very important fact. So I think that we can look at this in regards to the idea that just because a child's able to use an assistive device, maybe a walker, maybe Lofstrand crutches, maybe bilateral canes at home as a primary means of mobility doesn't necessarily mean that the child is able to use the device at school.

The reverse is also true, right? I've worked with many children who in the school they were motivated by the people around them, the activities they wanted to do to kind of perform at a higher level in the school environment, but when they were home, they were much more ready to have somebody else push them around or somebody carry them and things like that. That's an example of a family dynamic that might influence a child's function. But this all goes to demonstrate the influence of environmental and personal factors. In the example there that I just gave, environmental factors, the busyness of the school environment, the having all sorts of people in there, the attention demands versus home, but also personal factors, like a child really wanting to be more independent at school and be just like other children in the classroom versus at home they may be willing to take a more passive role because maybe that's the role that they've taken within their family.

Looking again back on the map here, our ICF Map, we've covered that idea of body structures and functions, activity and participation, and so now we're gonna be looking at the contextual factors, the environmental factors and the personal factors. And identifying these factors, I believe, is part of clinical reasoning that can really influence how we consider and address children within the school system. So if we look at environmental factors, environmental factors are composed of the physical, social, and attitudinal environments in which people live their lives. So this could be products and technology, the natural environment as well as human-made changes, supports and

relationships, attitudes, services, systems, and policies. Whereas when we look at personal factors, they're more specific to the individual person, the person's life, background, or living situation that are not necessarily related to the health condition or disorder, but can impact the health condition or disorder. And we can look at things like gender, ethnicity or cultural background. And by cultural background, we really should look at the culture of the family, not just the culture of a group. Lifestyle, habits, coping styles and strategies, as well as past and present experiences. If you think about a student maybe that you've worked with who is really fearful of falling, maybe they had the ability to walk up and down the hallway using their assistive device and could arrive at their classroom in a timely fashion and things like that, but maybe the thing that was affecting them wasn't their activity level issues, it was personal factors related to the fear of falling. I've seen many children in school settings as well as outpatient settings where fear and fear of falling were limiting the child's ability to express their true motor function and skill. So when we stop to look at the ICF in pediatrics, now the is an ICF-CY. It's the International Classification of Functioning, Disability and Health in Children and Youth.

But if we look at kind of the generic ICF to envision it in pediatrics, I often envision it as we have all of these things that are already influencing the person because of their health condition, but in pediatrics I think that we have contextual factors, environmental factors, personal factors that are so influenced by factors that are not necessarily related specifically to the health condition, nor can they be directly attributed to the child themselves. And I think the family kind of acts as the overwhelming contextual factor of childhood. And when you look at things here, the family dynamics plays in, family values, family's concerns and family's goals all play into our reasoning practices and where the child is going to be functioning in relation to their health condition. For example, we've probably all worked with children who, and I can remember this young lady from middle school that I worked with years ago. I think she was in seventh grade, and very bright young lady, had spastic diplegic cerebral

palsy. And she used Lofstrand crutches to ambulate, and she was independent in ambulating in all settings, but it took her a little extra time, and her cardiovascular endurance was not all that great. But the parents really wanted her to be ambulating at all times during school, and so they had written into the IEP that she would walk between all of her classes and that she would be allowed to be dismissed a few minutes early from a class so that she could get to the next class before it started, but if she didn't make it in time, she had a grace period at the beginning of her classes.

And that really reflected the family's values of walking. As a school team, we felt that this child was missing a lot of instructional time, so when we came back for a revision for our next IEP meeting, we were prepared to talk to the family about the amount of time that the child was missing from their instructional activities. And this young lady was very, very bright, a very stellar student, but between being exhausted because of her ambulation activities and her leaving early from each class and arriving late at each class, she really wasn't being given a good foundation for her academic skills. And we were able to use this as a way to help the family see that, yes, walking's important and we're gonna fit that into the day, but maybe functional mobility and exercise should be looked at a little differently or even practice walking should be looked at a little bit differently.

So when we envision the ICF in school-based practice, we can see that the educational setting influences the, and the educational team influences the child greatly as well. Of course, the parents and the child, if they're old enough, are part of that educational team, but the goals, values, and concerns might be different. I was speaking with a therapist from an area where they have a lot of children who are from Amish families, and she was working with a family to determine if that educational setting was right for the child or if something else would be better 'cause the child was attending a traditional Amish school. And here what was really amazing to me was just differences between the educational settings, and probably the differences between

your school districts and my school districts here aren't quite as drastic as that idea of the Amish school setting and a traditional American setting. But it really kinda brought home to me the differences between things and how the goals are different. The values were different. The concerns were different. And how we as therapists have to work within that educational setting and those concerns and those values. Here in Michigan, we have a lot of center-based programs where all the children within the school have need for special education and there's no opportunities for mainstreaming. So within a lot of our educational settings, a lot of our school districts, a lot of our intermediate school districts, the emphasis is on providing center-based activities for a large group of children with greater concerns, greater educational needs, whereas mainstreaming is not necessarily considered within our culture a concern. I can go back and forth on that 'cause I think there's value in mainstreaming. But, again, understanding that the culture within the educational environment is so important. One of the things that I wanted to introduce briefly are some concepts pertaining to changes and how we are envisioning pediatric rehab.

The F-words of pediatric rehabilitation will help us to change the way we respond to differences in childhood function. And these relate to work by Dr. Rosenbaum and Gorter and are really becoming more pervasive in our thought process. If you ever get a chance to hear Dr. Rosenbaum speak, I highly recommend that you do so. I've heard him several times, and it really makes me think every single time. So I really encourage you to look more into this. But in the traditional biomedical perspective, kind of the perspective that I certainly was inculturated into when I went to PT school nearly 35 years ago, we focused on fixing things. We were fixing impairments. We were fixing moving patterns. And by association, we were trying to fix the children, and that's not always possible. And our emphasis was often on treatment and focusing on disabilities rather than the child's abilities. In fact, oftentimes when you talk to families, families will emphasize what their children can't do because that's what the medical model, the biomedical model is encouraging them to do. So if we can think about things a little

differently and kind of look at pediatric rehab no matter what the setting, whether it's in a school setting or in an outpatient setting, looking at the six F-words, function, family, fitness, friends, fun, and future. And there's so many ways here, I think, that school practice comes into play. So function is what people do, right? So function within the school system would be what students do. It represents the ICF domains of activity and participation. And as rehab professionals, we've traditionally been placing our emphasis in ameliorating impairments in body structure and function. And I think that when I was in PT school, we assumed that if we improved that range of motion, if we improved that strength, that the child's gait function would improve and their ability to participate in school activities would improve, the motor basis for the school activities would improve.

But this is often not the case. Function is influenced by a lot of factors, and it's really impossible to think that addressing one or two impairments is gonna result in an improvement in function. So we need to focus on age-appropriate tasks that match the changing needs of childhood. So if we are still focusing on things that are not age-appropriate, then we may not be optimizing a child's function. And this will help create success in natural environments, such as the school setting. If we look at what a child needs to do as they are progressing through the different stages of the school system, we can see that all students might benefit, all children that we might be seeing in the school system, might benefit from this idea of focusing on function.

Dr. Rosenbaum says that in order to really focus on function, we need to rethink our conception, our concept, rather, of intervention. And we also need to rethink ideas about children becoming lazy or dependent on adaptive equipment or technology. And we have to reevaluate these ideas because they're not supported by the evidence. Let me give you an example. One of the areas of research that I focus on is power mobility. And so I had a child that I was working with who was gonna be in the school system, and he was gonna be bringing his new power wheelchair. And we were working directly

with the educational team about this. And the therapist team within the educational team was really excited about this. The family was really excited about it. But there were a few teachers within the team who were concerned that by having the child in a power wheelchair that the child might become lazy or they might become dependent on the power wheelchair and wouldn't develop their gross motor skills any further. And we had to as therapists provide some education here about the concepts that providing adaptive equipment does not make a child lazy, does not make a child dependent. For instance, with power mobility, there's no evidence to support that if we provide children with augmented mobility through power means that they are not going to gain gross motor skills that they would otherwise have developed. So there's no evidence to this fact. And this really needs to be something that we rethink. We also, according to Dr. Rosenbaum, need to rethink how we limit typical childhood experiences for children who have mobility and other limitations. Dr. Rosenbaum talked about how children that we might work with, students that we might work with are deprived of typical childhood experiences, like exploring and taking risk or talking back or getting into mischief.

These are all things that typically-developing children do that change the dynamic between the child and their parents, but also between the child and other adults around them and have growing independence. Again, a example from power mobility. I remember trialing a power wheelchair with a child, and his mom and I were working with him within the school setting. It was a vacation day for the rest of the students, so we came in to just kinda look at things and test things out 'cause it was a trial wheelchair. And we went into different areas of the school, trying to look at this environmentally. And one of the things we did was have the child ride into an elevator, ride up to the next floor, and get off the floor. And when mom and I got off the elevator, we were gonna go to the right because we wanted to look at a setting that the child might be in that was to the right, but the child decided that he wanted to go to the left. And it was so interesting to see the dynamic here. His mom was like, "What are you

doing? "You have never disobeyed me." He never had the means to disobey. And boy was he excited. He was just tee-heeing and laughing. And of course we had to make sure that he knows that he has to follow directions and all of those things. But think of how many times a typically developing child might not follow our directions or might not do what they're told the first time. And oftentimes we expect that children that we work will, the students that we work with will do these things on first command. We also need to support the parents in allowing their children to interact with the environment to the greatest extent possible.

And even if this means a trade-off of quote-unquote standard, normal function in favor of exploration, life experiences, and opportunities to learn. This is again just a kind of a keystone to Dr. Rosenbaum's thoughts. The next F-word of childhood disability has to do with family. And it's the essential environment of every child. The ICF element represented by family is the primary contextual factor of childhood. Fitness is another concern here. Children with mobility differences or chronic illnesses are less fit than their peers and less fit than they should be. And with the idea that just like we're beginning to think about emphasizing health in the general population. I've worked with a couple of school therapists who set up some health and wellness programs related to obesity, for example, in their school districts.

And we need to emphasize health promotion and wellness for our children with cerebral palsy, our children with spina bifida, our children with Down syndrome. And oftentimes we can work with other members of the school team, the educational team to be able to really emphasize these fitness components that we're trying to emphasize with other children as well. That idea of friends and fun can kind of be lumped together. Social development is an essential aspect of personhood, let alone childhood. And we must do what we can do to facilitate a child's friendships. We need to consider environmental factors and identify environmental supports, things within the educational setting that will support a child's ability to have friendships and then also

help to problem-solve environmental constraints, things within the environment that constrain or limit a child from being able to develop friends or have fun. I do think that this is something that is a key element that we again can emphasize in a school-based setting because in the classroom, the children are learning to work with their peers. They may or may not be friend to the level of a strong friendship, but usually any student within a classroom isn't necessarily friends with everybody else within the classroom, but there's a peer relationship there, right? And so facilitating these ideas of friendship and fun are important. Also within the F-words of childhood disability, that idea of future. And I think this is where the school setting is maybe got a leg up on the medical, traditional biomedical setting 'cause school is all about preparing a child for that next step for the future. And the goal of childhood development, whether it's a typically-developing child or a child with cerebral palsy or Down syndrome, the goal is to develop so that you can be what you wanna be in the future. So every child, whether they're typically developing or have developmental issues, is in a constant state of becoming.

And we need to think about the future in a positive way right from the start and encourage families to do so too. We shouldn't ignore the realities presented to us by the child's activity limitations or participation restrictions, but we need to help children to be as independent as possible within the school setting because that is how they're going to best prepare themselves for their future. So when we look at using the ICF within the Patient/Client Management Model outlined by the "Guide to Physical Therapist Practice," we'll see that there are several ways that it can be used. Now, if you kind of think back on the Patient/Client Management Model, that model has to do with examination, evaluation, and diagnosis, prognosis, and intervention. And each of those things are key within all physical therapist practice settings, including the school-based setting. Now, sometimes people will say, "Oh, well, "it's not applicable in a school district." I would say that there are differences in ways that we need to align with the practice setting, but the Patient/Client Management Model represents all

physical therapist practice, regardless of setting. So I do think that there's a lot that we can glean from looking at the ICF within the Patient/Client Management Model. So when we're performing an examination, we really need to consider all domains of the ICF. As PTs, we historically have only focused on the impairment level, but ultimately what we wanna do is impact the students at a participation level. So some of the things that we can do is think right off of what are things that are gonna help the child to participate in school, and how can someone focus our examinations? When we look at the activity level within the ICF, there are several test and measures that we can use. We'll go through some of these activity level measures, and then we'll look at some participation measures as well.

So there are a number of tools out there that are great for the school setting. I've just picked out some that are kind of my favorites or that I know a lot of school system therapists who have found them to be helpful within their practice. So one of the things is to first consider what are the mobility demands within a school setting? And this is gonna of course vary by the setting that you're in, if you're in an elementary setting versus a high school setting versus maybe a middle school setting, whatever.

But inherently, at some point, students are required to move within the classroom, move within the school building, and even outside of the school building. And there have been some nice studies looking at typically developing children, and first-graders move a lot. I was surprised at this. First-graders move among activities and locations 15 to 20 times per day on average. This is typically-developing children. We also know that from research that kindergartners spend about 25% of their day moving within the classroom, so a lot of mobility. So it makes sense that we as therapists are focused on school-based mobility demands. So there are a number of test and measures that are really great for us to be able to use within the ICF to reflect these activity level functions. One of the ones that I really like is the Timed Up and Go 'cause it's really easy. It's easy to administer. It doesn't require any special training or specific

equipment. But the Timed Up and Go is used to assess functional ambulatory mobility and dynamic balance. It's been used with typically-developing children, so there are some norms out there. But it's also been used with children with cerebral palsy, spina bifida, acquired brain injury, and other developmental disabilities. And again, it's really easy to administer. It doesn't require a lot of equipment or any specific training. And it's something I think that many of us are familiar with because it's such a commonly used measure in adults. Classically, administering the Timed Up and Go involves measuring the amount of time it takes for an individual to go from sitting in a chair, to standing up, to walking three meters, to turning around, walking back to the chair, and sitting down in the chair. In children, however, the administration protocol has been adjusted. Some protocols use a chair with arms.

Some use without arms or without a backrest. Or some children have had shoes on or shoes off. Other protocols look at using orthotics versus no orthotics. But I think here is where we can adjust the TUG to kind of fit with the parameters of our setting. If the child's gonna be getting up out of a classroom chair that doesn't have any arms, you probably should use one that doesn't have any arms. If the children are more on stools, so without any backrest, then maybe we should look at that. If they're gonna be wearing their shoes or if they're gonna be wearing their orthotics, it's really important to mimic the natural circumstances of their environment.

Most often, the TUG when it comes to children, authors will suggest that it be explained and demonstrated to a child before actual administration. So the psychometrics of the TUG in children are phenomenal. So psychometrics are those things related to liability and validity that are really important. Excuse me. Excuse me, just had to get a quick drink there. And this is really important, I think. Reliability and validity of test measures is important in any setting, right? But in the school district, sometimes we're being asked to differentiate if a child's performance is typical of other students or not typical of other students. And it's important for us to know that our

measures are valid and reliable so that we can think about reliability amongst ourselves, so inter-rater, intra-rater reliability, my ability to be reliable with myself, and inter-rater reliability, my ability to be reliable with my colleagues. But also the idea of test-retest reliability. The TUG scores are also found to moderate strongly with the Gross Motor Function Measure-88. For those of you who may be familiar with the Gross Motor Function-88, you know that it was a measure developed for children with cerebral palsy. It looks at change in gross motor function over time. It's been validated for use with children with cerebral palsy and Down syndrome. Traditionally, it's been used for other populations as well. But it is a tool that has been found to strongly correlate with TUG scores. So that's often nice when we can see that a child's motor function correlates with something like the TUG. So the TUG has also been found to discriminate between different levels of ability in children with cerebral palsy. So in cerebral palsy, we can use the Gross Motor Function Classification System to differentiate between a child's abilities.

And the TUG is able to discriminate between children at that GMFCS level I, GMFCS level II, and GMFCS level III. If we think about it, that allows us to differentiate between children who are ambulating well in all environments, not having any trouble keeping up with their peers, that level I, that level II where they're maybe using an assistive device in some select environments or they're having difficulty with uneven train or stairs or whatever, or even III where they're consistently using an assistive device in all settings. There are reference values available. And cut scores based on z scores are also available for children of various ages. And I find these very helpful in the school setting 'cause, again, oftentimes I have to look at is a child's performance, is their child's score different from typically-developing students? And there's even a modified TUG for preschool-aged children that is gaining some popularity. These are all active links for you in your handouts. I provided an active link for you for the reference data for school-aged children. Another similar type of tool that I like, but I thin I like it even more, is the Timed Floor to Stand-Natural. It was adapted from the original Timed Floor

to Stand, and it was originally adapted from the TUG. But what it does is it measures the efficiency of floor to stand transfers within the home or school environment, and it reflects typical school behaviors in which students are not allowed to run, they must move at a natural pace, and are expected to stand up upon the teacher's request. And again, there's an active link to the measure for you. But it's reliable and valid, and it has acceptable intra-tester and intra-rater reliability and good test-retest reliability, as well as good face validity. Face validity is the lowest level of validity, of course, but it's important when we're doing activities within a natural setting for our coworkers, for our other educational team members to see that the tests and measures that we're using have relevance within the school. And so I think this one is a great one. I've never had a teacher, for example, not understand why I was doing this because it's something that they're asking the children to do every day.

So you only need a timer and a couple pieces of tape placed three meters apart. There's different prompts for different ages, but essentially what you're doing is when you tell the child to go, the child's supposed to stand up, walk to the line, turn around, and walk back to the starting line and sit down. Usually the idea is a specific sitting position. In all the tests, it was legs crossed or crisscross applesauce. And the idea of walking, don't run. I find that this is sometimes a problem for students I work with, is they wanna run with their assistive device or they want to run instead of just walking. But I find that in typically-developing children that I see in the schools as well.

The student may transition from sitting into standing in any manner, which is really nice. But for a trial to count, both feet must pass the second line, and the student must sit behind the start line with legs crossed. So you redo a trial if the child runs, trips, or falls during the trial. Again, there's been some nice reference data developed for students five to 14 years of age. There's a series of studies, I believe. They were a series of studies 'cause they're all inter-coordinated, performed in the New York City Public School System, that are quite interesting and provide a lot of the reference data that

we're referring to today. But again, this is an active link for you all. Other select timed functional tests that might be helpful within a school setting are Timed Up and Down Stairs Test for our children who are going up and down stairs, Five Times Sit to Stand Test, and even the six-minute walk test or the related two-minute or one-minute test. These have all been found to be valid and reliable with different pediatric populations, so students with cerebral palsy, for example, and, again, can give us some ways, particular with the six-minute walk test, there's some standards, some reference measures available not only just to compare children who have, who are typically developing to our students who may have some developmental issues, but it also allows us to look at expectations within different classification levels.

So, for example, within cerebral palsy, we can look at reference values for children who are at the highest level of function, GMFCS level I, versus GMFCS level II or III. And there's even some very limited data on children using a six-minute walk test with a gait trainer, but that's still, I think, in the developing stages. There's also a six-minute push test which looks at manual wheelchair mobility and times a child's manual wheelchair skills. I find that one very helpful for my children with spina bifida. But data on that one and reference data is a little harder to come by. It's still being developed.

One of my favorites is the Functional Mobility Scale, or FMS. What I really like about this tool is it looks at a child's abilities with three different walking distances. So how does the child walk, and what kind of equipment do they need and help do they need when they're walking five yards versus what do they need at 50 yards or what do they need at 500 yards? And the ratings here are between one and six where one is uses a wheelchair, may stand for transfers or step with assist of another person, all the way to six, where the child is independent on all surfaces, uneven ground, curves, crowded environments, et cetera. So I can really look at this, and I think this is important in a school setting because I really do have to contend with a child being able to walk in different distances for different participation activities within the school. This can be

completed by a parent, but it also can be completed by a teacher. I've used it most frequently with teachers. But I would really love to see a study comparing the responses of a parent and the responses of a teacher 'cause, again, I think there's so many dynamics that come in play. Watching your child walk 500 yards, so the length of five football fields, that parent might not have that opportunity very often, where a teacher often will be able to see a child walk long distances, maybe to specials or to move from outside the building to a far distant classroom, things like that.

Also think that, again, the child's personality and role within their family versus the child's personality and role within their peer group at school can make a difference of these things. We used the FMS in a home-based treadmill training study and found that it was not only a great tool for us to use in the study. We really, all of us involved in the study started to use it clinically more than we had before. And in our study, we found that clinical significance from intervention at the 50-yard distance. So it has some really nice properties to it. And again, this is one of those free measures. I like free. They're right in my price range. And this is a direct link for you. And they have really nice pictures too, the graphics on this, and it's just a front and back little thing. Great directions on it.

And I've even sent it home in a backpack for students before. Sometimes I find that it's more difficult for me to find good measures of the activity level for children that I'm seeing who are perhaps more involved. So one that I have liked is the Chailey Levels of Ability. It was developed in England, so some of the terminology is a little different. For example, it documents the stages of motor development in prone, supine, floor sitting, box sitting, and standing. Well, box sitting is what you and I might refer to as bench sitting. But I really like it because, again, I've had some trouble finding things that are appropriate for my children who are more severely involved. It uses an observational scale, and it matches the components achieved with a provided list. So you have a list of things that you are looking for, criteria that you are looking for, and you match up

what you see with the child, and you record the highest corresponding level of ability. And all indicators, all components, rather, within a specific level must be present. And some of the components may be observed, but are not essential when scoring a level of ability. So when we look, for example, at a level two, for a child to be at a level two in this box sitting, sitting on a bench, the child can be placed in the sitting position on the box or bench. The child needs support, that is, they need to be held to stay in position. The trunk can be brought forward over the sitting base, but the pelvis is posteriorly tilted, the shoulder girdle is retracted or in neutral, and the back's rounded. You'll get that C-curve to into gravity there.

And that's a level two. Well, contrast that to a level seven where the child is able to stand in standing where the child is able to stand independently by releasing hands from support for a few seconds, able to leave the position without support, meaning get down onto the ground or sit down onto a chair. Standing base as wide or slightly wider than the pelvis, arms in medium to high guard position, and there might be toe grasping. So, again, I just feel like, and these are available at the different levels for each of the different tasks. Let's just go back and look here for the different tasks. So it's prone, supine, floor sitting, box sitting, and standing.

And I find that even my children who are really involved, I can get a really good idea of their abilities in prone or supine and even be able to mark some progress using this measure, which is really nice. Because things like the Gross Motor Function Measure, for example, great tool, I really like it, but for my children who are more involved, I find it very difficult to show substantial progress. On individual items I can show progress, but it's hard to show overall progress. So this is just a tool that I found that I really enjoy. Again, this is an active link, and it's available free of charge. When we look at the GMFM, the Gross Motor Function Measure-88 and the Gross Motor Function-66, we're not really gonna go into 'em in great detail today, but I did wanna let everyone know about a new app version that can help us to better use the Gross Motor Function

Measure-88 and the Gross Motor Function Measure-66. So like we mentioned earlier, the Gross Motor Function Measure-88 has been validated for use with children of cerebral palsy and Down syndrome, but we often kind of use it with other groups of children because it is a nice tool. It has not been validated for other populations, but it is a great tool. But the GMFM, the Gross Motor Function Measure-66 is only for children with cerebral palsy. And if you're familiar with the GMFM-66, you need to use the Gross Motor Ability Estimator, which is a computer software program, to score the GMFM-66 'cause what the GMFM-66 does using the Gross Motor Ability Estimator, it helps us to compare a child with cerebral palsy to other children with cerebral palsy within the standardization base. But with this app, you can enter scores for either the 88 or the 66. You can also use this with the shorter versions of the GMFM-66, so the GMFM-66 Item Sets or the GMFM Basal and Ceiling versions.

Again, these abbreviated versions are only for children with cerebral palsy 'cause they reflect the 66. But they significantly reduce the number of items that have to be administered, so you don't have to administer all 66. You can measure a smaller amount of items. I particularly like the Item Set, but literature suggests that many therapists like the Basal and Ceiling version because as therapists we're familiar with getting a basal and ceiling level off of tools such as the Peabody, for example, the Peabody Developmental Motor Scales Second Edition.

But this app allows us to get all sorts of information about prognosis, all sorts of information about where the child is functioning, item map scores, and everything. And it is relatively inexpensive. $99 Canadian for a single use license. And it looks to me like it's a perpetual license. It's fairly new, so I'm not 100% sure about that. And there's also going to be options for other group licensees and things coming out. And again, this is just a wonderful tool. Lets you get some spider charts, some prognostic information. And it does it all for you at the touch of a button. And it doesn't have to be on your smartphone or a iPad. I have it on my laptop. So it's a really nice tool. But it is

coming soon for Android and iOS. And here's the link there for that measure. And I wanna disclose I have no financial relationship with CanChild group that developed this. I just really appreciate the CanChild ability to contributed to evidence-based practice in pediatrics. So when we're looking at participation level measures in the school setting, again, there's a number that we could choose from. And we're just gonna look at a few select measures today. So current participation tools measure a variety of factors. They measure an extent to which normative expectations are met within a specific role that a child might assume in the school. They would be measuring the expectations, the normative expectations of the child in the role of a student. They might look at the frequency or quantity of participation. And they may also look at the extent to which an individual is self-directed in his or her participation versus independent in their participation. Couple of things that we're gonna look at today, although, again, there are numerous measures, are the School Function Assessment, or SFA, and the Miller Function and Participation Scales. Let's start with the School Function Assessment.

The School Function Assessment is one that you may be aware of. It assesses performance of functional tasks that support participation of students with disabilities between kindergarten and sixth grade. So typically when we are looking at a test or measure in peds, we're used to looking at the age range of the tool. This tool encourages us to not consider the child's age range, but rather look at the child's grade. And so it can be really nice to use as a guide for collaborative program planning within the school setting. It's a judgment-based, criterion-referenced questionnaire that has three parts. Part one is participation. Part two is task supports. And part three is activity performance and physical tasks. So really only part one addresses participation directly, but task supports can help us with our problem-solving and so can activity performance and physical tasks. Hope you enjoy the picture of my doggy there. So within the participation, part one of the SFF, SFA, excuse me, the School Function Assessment examines the student's level of participation in six different settings, the

classroom, playground and recess, transportation, bathroom and toileting, transitions, and mealtime or snack time. Participation is rated on the scale using a six-point Likert scale from one, extremely limited participation, to six, full participation. Task supports examines the amount of assistant and the adaptation needed for, by the student with physical tasks. I think this is really important. When I'm working in the school system, I really like this idea of being able to objectify some of these things. So you can look at this within travel, maintaining and changing position, recreational movement, manipulation with movement.

Think of how many times we're moving and manipulating an object. Using materials, setup and cleanup, eating and drinking, hygiene, and clothing management. Task supports within part two are rated using a four-point Likert scale from that one, extensive assistance or adaptations, or four, no assistance or adaptations. Within part three, the activity performance physical tasks, they examine the student's ability to perform common school activities in different settings. This is 21 separate scales. You don't have to use all of them. And the activity performance functional tasks are measured or scored, rather, using a four-point Likert scale from one, doesn't perform, to four, consistent performance.

The School Function Assessment is designed to be completed by at least two different professionals who interact with the child on a regular basis to determine typical performance. I always found that it took me awhile to administer, and I, again, needed to really ideally be with another professional and really be talking through or, even better, the whole team. But it takes awhile to complete, awhile to administer. I have recently talked to one of my students that I work with on a post-professional basis, so she's a school physical therapist in a more rural school system, and she found that the SFA was really helped support her school-based activities and her function as a school-based PT and also helped to enhance the collaboration amongst the educational team. And she felt like the investment of time was well worth it and really

enjoyed using it. So I think that this could be one of those things, just like anything, where it's great for some activities, but maybe not so much for others. It has been used in a lot of good studies lately. The PT COUNTS study, the multi-site study looking at the effectiveness of PT interventions in the school system, utilized the SFA. Again, the reliability and validity are reported in the manual, but independent research has not explored the psychometric characteristics of participation within the, using the SFA. There are some limitations to it. The age range is restricted to younger children, so those from kindergarten to sixth grade. It doesn't even include adolescents, let alone those up to 21. It requires, like I said, a lengthy time for administration and two professionals working together. And it's less sensitive for older students and those with lower functional movement abilities.

Again, I always found that my children who were more involved, and particularly more involved as they got older, those are the children that I often had a lot of difficulty finding good measures for, good test and measures for that were valid and reliable, but those that were sensitive and responsive and that actually reflected the school setting. Other limitations within the SFA are measures the participation within different general educations, like the playground, so different general educational settings, playground, mealtime, classroom. But it doesn't really measure specific aspects of the participation that may be really meaningful to a child in their role as a student, such as engaging in play or a group activity. Think of how many times we might put students into small groups for something or teachers might put students into small groups for something, or socializing or forming friendships. So that is a definite limitation within the School Function Assessment. The Miller Function and Participation Scales, or the M-FUN, is another tool. It's a developmental assessment tool. And again, it's for children within a narrow age range, two years, six months to seven years, 11 months. But it is designed to determine how a child's motor competency affects their engagement in home and in school activities, as well as in their overall social participation. So this is giving us a little bit more of a global view of a child's participation. There are two major

components within the M-Fun, a norm-referenced Performance Assessment and a criterion-referenced Participation Acception, a checklist, with three different areas, Home Observation, Classroom Observation, and a Test Observation. Now, the idea that there has some norm-referenced components to it is really great 'cause, again, in the school system, I'm often asked to indicate that a child's performance deviates from those of the typically-developing child, typically-developing student. So the idea that there's norm-referenced criterion here is really great. But the criterion-referenced checklist can also be very helpful 'cause it can provide a way to guide some observations and to really get an idea of participation within different settings.

The M-FUN Performance Assessment tasks were developed to identify underlying neuromotor foundational abilities, visual motor, fine motor, and gross motor skills, but it does not target developmental skill acquisition. The M-FUN checklists were developed to measure the child's participation at home and at school. So again, this can be a really nice tool to get a more global view of a child's participation. Just like with the School Function Assessment, the Examiner's Manual for the M-FUN reports reliability and validity for the Performance Assessment components, but the M-FUN does not provide any reliability or validity statements about the participation assessment, those checklists.

And there has not been any independent research published on the reliability and validity of the M-FUN, just that which is provided in the Examiner's Manual. Lucy Miller, who created the M-FUN, reports that the Home Observations checklist, the Classroom Observations checklist, and the Test Observation checklist all measure a child's participation either at home or at school. So again, that nice global view of things. There are some limitations. You can't use it for children older than seven years. And also, by age seven, children typically become more self-defined in their participation choices. They like what they want and they want what they like, and yet we're not able to capture that one with the M-FUN. Checklists provide a comprehensive overview of

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the child's function, but it's not necessarily a measure of full participation. It's a nice global screening, if you were, but certainly not a global participation thing. Some other participation measures that you could use would be something like the Canadian Occupational Performance Measure. I really like the COPM. Now, the COPM is a interview-based tool where you can identify the child if the child is old enough to participate in it, or if not, the parent or even the teacher's perceptions of the child's performance. And so through this interview, you can focus the interview on different aspects of the child's function. As a PT, I often focus in a lot on mobility. And I can identify the parent or the teacher's concerns and perceptions of things that are challenging for the child. And I have the teacher or the parent rate these things and determine what are the most important problems that the child is experiencing.

These are called occupational performance problems because it has to do with the children's occupations in different settings. And then the parent or teacher rates their perception of the child's abilities in terms of performance, as well as the parent's or child's satisfaction with the child's performance. And then when I re-administer it, I can see the parent or teacher's perceptions and how they've changed. One of the other nice things about this measure is that there is a clinical significance rating here.

So everything on the COPM is rated from a scale of one to 10. So one in performance is really unable to do it, where 10 is doing something well and being very high level. In satisfaction, it's one would be not satisfied, and 10 would be fully satisfied. So what I like about the idea of this clinical significance is an increase of two points in either performance or satisfaction constitutes clinically meaningful, clinically relevant change in whatever setting I'm in. And I really like this because it can really personalize and individualize things for a child. Of course, again, you may be catching activity-level things as well. But it's a really great tool. Another tool I really like is Goal Attainment Scaling. And if you participated earlier this week in the conference, we had a great session about Goal Attainment Scaling that I encourage you to look into. The Goal

Attainment Scale can, some further information here, can be found. However, again, I really encourage you to look into the session done earlier this week. And here's some information or a link for the COPM. Again, all of these are live and active link. The COPM is one that requires payment. The SFF and M-FUN are also measures that you purchase. This is my grand-dog, and I hope you enjoy looking at him there. He's awfully cute. One of the things that I get quite a few therapists contacting me about are children with autism spectrum disorders and working with students with autism spectrum disorders.

So I thought would look kind of briefly here at select measures for school-based practice that specifically target the child who has an autism spectrum disorder. So some of these are measures that could be great for other students, as well as children with ASD. So one of the measures that I really like is the PEDI-CAT, the Pediatric Evaluation of Disability Inventory Computer Adaptive Test. Really like that. That can be filled out by an adult who's familiar with the child, so a parent. Could also be filled out by the therapist. So I as a therapist can use this. One of the education-specific tools that I like is the SATIRE, the Scale for the Assessment of Teachers' Impressions of Routines and Engagement.

And it provides insights into motor expectations for the school day. It's been validated for children with autism spectrum disorders, but, gosh, it just really seems like a tool that would be great to use for any of our children. The PEDI-CAT is a for-purchase tool. You can purchase a version for your computer, your laptop, or your iPad or iPhone. I'm not sure if there's an Android version of it yet. It has three different domains, so a social cognitive. Sorry, it's four different domains, so social cognitive, mobility, and daily activities and responsibility. The responsibility is a new addition from the original PEDI. And for those of you who are familiar with the original PEDI, the PEDI-CAT is an entirely different tool. And the Computer Adaptive Testing is an option called the SPEDI-CAT. I kinda like the idea of a SPEDI-CAT. And the SPEDI-CAT can administer as few as 15

items within each domain. You can also select to just do individual domains. But these are some nice tools for children with autism that have appeared in the literature specifically for children with autism, but might also be nice for children with other conditions. So another test and measure that has been mentioned in the literature as appropriate to use for children with autism spectrum disorders is the Test of Gross Motor Development, Third Edition. Some of you might be familiar with the Test of Gross Motor Development, Second Edition, the TGMD-2. This is a new test that is relatively new to the market, and it has all new normative data representative of the U.S. population, which is really great. One of the, I loved the TGMD-2. I really did.

But one of the criticisms of it was it was normed in a small New England town, i.e., Portland, Maine, and so it may not have been representative of the U.S.population. So the psychometrics of the test were always being called into question. The new version, this TGMD-3, has normative data that represent the U.S. population. Normative information are stratified by age, relative geography, gender, race, ethnicity, household income, and parent education level, which I think is great for when we wanna kind of look at how a child is doing who might be at risk. And items were added to each subtest to eliminate ceiling effects.

There's little or no bias in regard to gender, race, or ethnicity in this new version. And as I mentioned, the psychometrics are drastically improved. But one of the unique features about the TGMD-3 that was not present in the TGMD-2 was the TGMD-3 allow us to differentiate between children with cognitive impairments or children who have an autism spectrum disorder from children who are typically developing. And there are Gross Motor Index cut scores provided for each of these populations. So not only can we say yes, this child is functioning differently than their peers, we could say they're functioning like other children with autism spectrum disorders or they're not functioning like other children with autism spectrum disorders. Very few tools that I've come across specifically are created with children with cognitive impairments in mind,

and so that's another thing that I really like about this new version of the Test of Gross Motor Development, Third Edition. So some other special considerations within a school-based setting. One of the things that the competencies for school-based PTs outline are that examination and evaluation in schools should consist of, amongst other things, some formal naturalistic observation to determine level of participation and necessary assistance and adaptations, all of course within the school setting. So this idea of naturalistic observation kind of leads us to the idea of an ecological assessment. And an ecological assessment is really an analysis of a student's learning environment and his or her interactions within and across settings within this environment. And of course within that learning environment, there could be many factors, right?

So you could have one classroom. You could have a special classroom. You could have the library. So there's a whole bunch of different environments there. But one of the ideas within ecological assessment that I think is really relevant is that effective intervention starts by understanding the student and the student within his or her environment. A lot of concepts related to ecological assessment really come to the forefront as the popularity of ABA interventions have grown. I think we as therapists can really glean a lot from concepts of ecological assessment and incorporating ecological assessment or naturalistic observations within our examination procedures.

And really what we're looking for when we're doing these observations in the natural school setting of ecological assessment, we're looking at what does the student need to be successful in their learning environment? And that's gonna form the basis of our intervention. So some of the things involved in an ecological assessment are exploring the ecosystem of the classroom or other settings within the school. You can use various sources of information. So you will always use direct observation and task analysis, but you could also talk to different people within the educational team, the classroom teacher, the school aide. Those types of people can be very informative. The

bus driver is one I always found to be very informative about difficulties that a child was having getting on and off the bus. Their perceptions were always very different from those of the teachers who might be observing the child getting on the bus and getting off the bus, or the parents who might be observing it at the other end. The school bus driver was the one who saw both. Some things to consider when we're looking at our naturalistic observations. What's the spatial density? Could we have the seating arrangements a little differently? Of course, we'd have to work with the teachers about this.

But if we rearranged the seating a little differently, would the child be able to better use their walker within the classroom, better able to use their wheelchair? One of the things that I found when I started to do some research related to manual wheelchair skills in children was that our expectations for the ability of a child to turn their manual wheelchair on a dime within some of our environments is phenomenal. We expect them to turn their chair within a very tiny radius in the home setting and in the classroom settings and naturally in the community settings. If you've ever been to a department store, you know how challenging it can be to spin on a dime in a chair and get things in.

So these can have a great impact on the child's ability to learn and interact. We can look at visual stimulation, noise, student-to-student interactions, even things like lighting and teacher and staff to student interactions. So not just the teacher, but any other adults in the classroom, the classroom aides, or here we call them non-certified teachers a lot. Other areas I know where I've worked, they call them paraprofessionals. But that idea that the people who are interacting with the student is very important. Under this idea of ecological assessment, there is a specific measure called VECTOR for children with autism spectrum disorders. The Vanderbilt Ecological Congruence of Teaching Opportunities in Routines, or the VECTOR, Classroom Version is just a 10-minute observation of 10 different routines within a classroom. It's scored using a

five-point scale. And its use guides environmental changes to help optimally engage the student and, again, helps to see what the child needs to most effectively learn. It's appropriate for early intervention settings, preschool and kindergarten, as well as first grade. So only for our younger children, but, again, something specific for children with autism spectrum disorders because, again, that's an area, I think, where more of us as PTs are being asked to participate in educational programming for these children, programming that will help the children with the autism spectrum disorders to maximally benefit from a free and appropriate public education. So we've talked a lot about examination, but one of the things that I think the ICF can really help us with is envisioning our interventions. And we can do this in several ways. So if we think back to the ICF Map, remember, we could look at contextual factors, environmental factors, and personal factors which influence the expression of the health condition in body structures and function, but primarily in activity and participation within a school district is where we would be focusing when we're looking at intervention.

So if we look at personal environmental factors, you can identify barriers or facilitators during the examination process. So on the personal side, maybe you could identify something that's a barrier, or maybe you could identify something that's a facilitator. For example, we talked about fear of falling as a personal factor on the ICF that could be a barrier to movement. But you could also have a personal factor like a child's motivation or the child's perseverance or persistence that can really facilitate acquisition of gross motor function. So that is one way that we could look at it. On the environmental side, maybe there's a barrier. Maybe it's not something that's addressed by the ADA, but maybe it's a barrier nonetheless. Maybe it's the fact, like we were just talking about, that there's not enough room for the child to effectively turn their wheelchair within the environment. I find that children who have larger base power wheelchairs particularly find this to be problematic. And so if we kinda look at how much space does the child need to turn the wheelchair and thinking is there a way we could set up the classroom so that the child could most easily do these things? Or is

there another way to address these things? And again, if we identify these things during examination, we can then also address them in our intervention. A facilitator for environment might be something like a quieter environment, or it could be something like having access to assistive technology. Knowing how to use assistive technology would be a personal contextual factor on the ICF. So again, that's another example. Barriers might be not having access to the assistive technology or not being able to use the assistive technology, where facilitators would be having access to the assistive technology and knowing how to use the assistive technology or having instruction provided in how to effectively use the assistive technology.

And when we think about assistive technology, oftentimes we think of big, huge things like a big, huge power wheelchair, but really assistive technology is anything that helps people in their daily lives. And so as we're sitting here right now, I'm wearing my reading glasses. My reading glasses are a piece of assistive technology. When I was preparing to do this presentation, I put it in my calendar because that helps me plan and organize my day and my activities, and that's an example of assistive technology that I use to help me function. So it's not always high-tech stuff that we're thinking about when we're looking at assistive technology. Tomorrow in the conference series, Dr. Laura Cohen will be talking about equipment in the school-based setting, and I'm sure that she will look at some of these personal and environmental factors of having the equipment versus knowing how to use the equipment 'cause also not only the child has to know how to use the equipment, oftentimes it's the people within the classroom that need to be able to use the equipment.

I've had many a time where children didn't use adaptive equipment assistive technology that they had because the adults in the classroom didn't know how to use that. And if I as the therapist didn't ask a question about that equipment, the equipment might just sit and gather dust. When we're looking at intervention, we should capitalize on facilitators and overcome or modify barriers. And these are things

that are all of course identified during our examination process. So one thing that we can do is I've just kinda put a simple chart here. But we can have a chart where we kinda think of an environmental factor. Is it a facilitator? Is it a barrier? If it's a facilitator, how can we capitalize upon this facilitator? If it's a barrier, how can we overcome this barrier? Or how can we modify it so that the barrier isn't so great? And in this way, we can use our clinical reasoning skills. We could do the same type of activity with personal factors and identifying if they're facilitators or barriers and how we might be able to capitalize it or how we might be able to modify or overcome the barrier. When we are looking at different models of service delivery within the school district, the direct model, I think, in many school districts is losing a little bit of momentum. I'm seeing much more of the integrative model, the consultative model, or one of the newer models to me 'cause we used to put mentoring under consultative, is that idea of mentoring. But I think when we look at all of these types of things, we can see that the direct intervention according to the laws and the ideas within schools, direct intervention should ideally occur in natural school environments.

Just being in the classroom or other natural school environment isn't enough. We have to adjust our intervention to the unique opportunities afforded by the school environment. We have to identify facilitators in the personal and environmental context. We have to identify barriers in the personal and environment context and find ways to overcome barriers and kind of use the facilitators to help the child to function and improve function within the school setting. One of the things that I always found really helpful within my direct school intervention was to use common objects within the environment and really integrate myself into classroom routines where I could be the most helpful. For example, working with a young child who was working on some sitting skills and being able to sit during circle time. That was a great way for me to do some activities with her. And when it was her turn to get up and place something on the felt board or whatever, I could help her to do that, and then I could transition slowly to a more consultative and even mentoring role as others within the setting could take

over that, and eventually she was able to just do it with supervision from the classroom teacher, and supervision from the classroom teacher while the teacher was doing other things. So it was a really great example of how we can do these things. We must practice skills with other children present in the natural environment. My example at the beginning of this session about the little boy who wanted to go up and down the ladder or up and down the slide. He wanted to go up the ladder and down the slide of the kindergarten slide out on the playground.

That's an example of if we hadn't come into the natural environment, we might not have understood safety concerns. We might not understand that he was so distracted by other children that he was no longer safe to perform the activity. And we might not have understood how to involve contextual factors within the ICF to help him to improve his abilities to be safe and to execute gross motor skills within a natural environment that inherently involved other children. So just a few thoughts about goals and objectives here. So one of the things that I think is really important within school is that our interventions are really driven by the goals or objectives on the student's educational plan and how physical therapy can support the child's educational goals and objectives on the IEP.

So if we really start to think about it, I think we would notice that if we want to promote participation, we should use participation-based goals. This was one of the concepts looked at in a study by Effgen and I believe you pronounce her name Kaminker, that they felt that goals should describe functional skills within the context of participation within the school environment. And in there, in different studies, it was found that the use of IEP goals pertaining to PT practice that specified educationally-relevant context is not something that we should take for granted because in one study they found that only 72% of IEP goals pertaining to PT practice. Excuse me, I said that incorrectly. So they found that 72% of IEP goals pertaining to PT practice did not specify an educationally relevant-context. So that means that there's just a little bit of, over 1/4,

like 28% of IEP goals that were specifying an educationally-relevant context. So not only does this go to good practice, but we're more likely, other studies have found, that if there is a participation component to a goal, being able to perform something within an educationally-relevant context, we're more likely to practice within that context and therefore the child's more likely to achieve that goal and be able to be successful within the educational realm, within the educational practice. Only about 15% of IEP objective were participation-based in a study by Wayne Stuberg and Delong. So again, that idea that we need to be considering the ICF when we're writing goals with our team.

And our team, our educational team may not be familiar with the ICF, but we can certainty talk about school-based environment, educationally-relevant context, participation within the school. I think those are all universal concepts that we are all striving for when we're working with students in our school-based settings. Goals reflecting participation are more likely to improve participation. That's almost one of those no-brainer movements here. It makes sense that if we are focusing our goals on participation that we're going to improve participation. And if we reflect a functional skill within a context of participation within the school, the child's overall participation in the school environment will improve. And isn't that really our goal as PTs within the school setting? Our goal is to help the child participate in their education, maximize their ability to participate in their education.

And the education is so much more than academics, right? And those may or may not come into IEP goals depending on your school district, depending on the culture within your school, like we were talking about at the beginning. However, these are things that might be very helpful for us to think about. So just kind of to simplify it there, goals reflecting participation in studies have been found to actually result in increased participation, right, or at least help us focus on increasing participation. So if we were to look back at our objectives, we would want to be able to identify different aspects of

the ICF, so we would want to be able to distinguish between components of the ICF related to body structures and functions, activity, and participation. And if we were to kind of look at this a little bit more clearly, just kind of break it down as part of the recap here, our summary, we would want to see that we were able to look at something and say, "Is this a body function, "or is this a body structure?" So if you were to kind of look at things related to body function, you would be looking at function related to a sensory system as a idea of body function within the ICF, but function related to changing body position is related to the activity level. Some things like about impairments 'cause, remember, impairments were related to difficulties with body structure or function as a result of the health condition. So if we were to look at an impairment, we might think about something like difficulties with balance rather than difficulties with walking or reading, which might fall into the activity level of the ICF, or difficulties with interpersonal relationships, which would fall into the participation level of the ICF. We would wanna be able to distinguish between environmental factors and personal factors.

And if we could kinda think back to those six Fs of childhood disability, six F-words of childhood disabilities, we would remember that the most influential environmental factor during childhood is the family. And we need to be thinking about what we can do at school to promote friends, fitness, and fun as well. But that primary environmental factor of childhood is family. Fitness kinda reflects more of that body function domain within those six F-words, but fun and friends probably reflect the participation domain. We can look at different tests and measures within different aspects of the ICF. So from the activity domain, we learned things like the Timed Floor to Stand-Natural, the Timed Up and Go. We looked at the Functional Mobility Scale. We looked at a bunch of different activity level measures. We also looked at a couple of participation measure. The School Function Assessment has a component of participation and can be used for children in kindergarten to the sixth grade, whereas the Miller Function and Participation Scales, or the M-FUN, was for children who were two years, six months,

through seven years, 11 months. And then, again, we can use activities related to identification of barriers within environmental factors and personal factors and identification of facilitators within personal factors and environmental factors to help us with our examination because identifying those, maybe through ecological assessment and other activities, and then being able to look at modifying or utilizing these things to help us. So if we were able to modify or eliminate a barrier through our intervention, that would be great.

But we can also use factors that are facilitatory to help maybe motivate a child or help a child to do more within the school setting. And in this way, I think that the ICF again just fits so nicely with school system practice. And I find it's a great tool for those of you who might be working with students in clinical education experiences within the school setting. Students oftentimes struggle, or at least the students that I work with in our classroom settings, they struggle with knowing that difference between a traditional outpatient model of practice and that more educationally-based school model of practice. And I find the ICF is a great way to try to illustrate the differences, how the contextual factors come into play, how the environment comes into play, and how participation takes on a whole new meaning when the purpose of school is to promote every child's participation in their role as a student, in their role as a learner, in their role as learning about life. Wondered if people had any questions at this time. I'm not seeing any in the question and answer pod.

- [Calista] And just a reminder for everybody, to use that question and answer pod, place your cursor in that open text field, type your question, and then hit the Enter button. We do have a question regarding the quiz question number 10.

- I'm not sure I can--

- Do you need me to read that to you?

- [Lisa] I have it up.

- [Calista] Yeah.

- [Lisa] So am I permitted to specifically address questions relating to the quiz?

- Sure, yes. Yeah.

- Okay, just wanted to make sure, I didn't wanna do anything bad. So the question is, "According to the International Classification "of Functioning, Disability and Health, "examination should include identification "of barriers and facilitators "in which of the following areas?" So if we were to think about this, this is where we were looking at those contextual factors within the ICF, the personal factors and the environmental factors. So the answer would be in the personal factors and environmental factors. And the idea of body structure and function would be a little more towards impairments. Environmental factors is only one part of the personal factors and the environmental factors. So that's where we would get at the contextual part. I hope that addresses your question. Okay, it looks like it does. Any other question? Ooh, I see one about the Functional Mobility Assessment. So let's see if I can, Functional Mobility Scale. Let's see if I can bring that up. I'm having a little trouble here with that. So the question asks--

- [Calista] Yeah, if you could--

- [Lisa] Yeah, the Functional Mobility Scale, "Is it a charge or a free measure?" is the question. The Functional Mobility Scale is free. I like free. I use a lot of free. I see one about the differences between eight and nine. Let me see if I can bring that back up. I wasn't aware. I've done a lot of these, and I didn't know that we could go over

questions. I'm kind of excited about this. Okay, so between eight and nine. So question eight was about the School Function Assessment, and it was designed to use with children in a specific grade level, and it was designed for children who were in kindergarten to sixth grade, whereas the M-FUN, the Miller Function and Participation Scale, was designed for the children two years, six months through seven years, 11 months. So hopefully that helps for question eight. The School Function Assessment is for kindergartners to sixth graders, while the M-FUN, the Miller Function and Participation Scales, is for children two years, six months through seven years, 11 months. Let's see here. Are there any other question? And I've got some questions here about reviewing question two and three. I will, let me see, bring that up. So let's see. So question two asks, "Which of the following terms relates "to an impairment as defined by the ICF?" So a impairment is something that relates to a body structure or function. So the answer the would be A, difficulties with balance. Difficulties with interpersonal relationships would reflect a participation restriction where difficulties with reading and difficulties with walking would reflect difficulties in the activity domain. Under question three, "Which of the following terms refers "to an environmental factor as defined by the ICF?" Environmental factors had to do with things that were available within your environment. So in this case, assistive technology would be the correct answer because gender, lifestyle, and past experience are all personal factors, not environmental factors. Let's see if we can get back on here. Two, three, oh, and five. Let me go see if I can find question five here. So within the International Classification of Functioning, Disability and Health, fitness would reflect the domain that is pertaining to body function between cardiovascular fitness, remember, cardiovascular endurance and the concept of fitness in general 'cause fitness is more than just cardiovascular, is related in body function. Should I just go down more of the questions, Calista? Looks like we have a question for about number seven.

- Seven, yeah. Go ahead and preview number seven.

- [Lisa] So the Functional Mobility Scale best reflects the activity domain. We looked at it under the select test and measures, would be the activity domain, because the Functional Mobility Scale looks at walking ability in three different environments. But just because you can walk in the environment doesn't mean you participate. So there's just a difference between the activity domain and the participation domain. And the Functional Mobility Scale is solely looking at activity. Is that all the questions?

- [Calista] That looks like the last one.

- [Lisa] All right. I think we went through every quiz question there.

- [Calista] All right, I think that's it for today. Well, thank you so much, Dr. Kenyon. Oh, we have one last one.

- Oh, question six. I think that was the, maybe we didn't get to them all. Question six is, "Which of the following test "and measures best reflects the activity domain "of the International Classification of Functioning, "Disability and Health?" Well, the Pediatric Balance Scale. We know balance is a body function. The Hamstring Length Test is gonna relate to range of motion, which again is more about body function, body structure type activity. Ashworth is gonna relate to tone, so again, that body structure and function level, where the Timed Floor to Stand-Natural is in the activity domain because it's an activity, a task that children do. I hope that helps. Don't see any other questions there. And the, oh. Yes, I did live in Knoxville, Jennifer, and really appreciate the question. I've got a thing here, "Best test for the activity domain." The activity domain, are you talking about the specific test question? 'Cause I'm not sure I could answer a question about the best test in general for the activity domain. So, "Which of the following tests best reflects "the activity domain?" That was question six, and we decided that that one was the Timed Floor to Stand-Natural. Hopefully that helps. Does

that answer your question, sir? I'm not seeing any other response from that person. All right. Thank you very much.

- [Calista] Thank you so much, Dr. Kenyon. I think we'll go ahead and wrap it up for today. And thank you, everyone, for attending. And hope to see everyone back tomorrow as we wrap up the week. And if anybody missed any one of the courses prior, hopefully you guys will be able to check those out on our site as they come on our site as a recorded event. Have a great day, everyone, and thank you again, Dr. Kenyon.

- [Lisa] Thank you.