Motor Interventions in Early Intervention

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- [Fawn] Our course today is "Motor Interventions in Early Intervention, "An Introduction to Gross Motor Skills "for Infants and Toddlers." Our presenter today is Jessica McMurdie. She is a seasoned pediatric OT with two decades of experience working with children and their families in hospital, school, birth to three, and outpatient settings. She holds dual degrees in Spanish and occupational therapy from the University of Washington, and a specialty certification in sensory integration from the University of Southern California. She's the owner and clinical director of Stepping Stones Therapy Network, a successful pediatric OT practice in the Seattle area. She is nationally award-winning small business owner recognized as an emerging leader by the American Occupational Therapy Association and the US Small Business Administration. She's a contributing author to the best-selling book, "The OT Manager," as well as the founder of the popular online pediatric OT site "Play it Forward Therapy." Welcome back, Jessica, so happy to have you.

- [Jessica] Thank you, Dawn. I'm super excited to be here today, and I wanted to thank all of you for joining me. Let's dive right in. In this course, my hope is that you'll go from feeling unsure of where to start teaching gross motor skills to feeling better prepared and more confident. You'll learn a simple, yet strategic therapy framework to support the developmental progression of the key mobility milestones for infants and toddlers. After this course, you'll be able to identify obstacles to motor development, identify guidelines for therapy when teaching gross motor skills and mobility to infants and toddlers, and identify activity ideas to promote the achievement of developmental milestones.

So a little bit more about me. Like Dawn said, I'm a clinic owner in Seattle, Washington. One of my greatest projects so far has been launching my website playitforwardtherapy.net, and my hope is to use this website to really convey the value of occupational therapy and to provide ideas and inspiration for other OTs as well as parents and teachers. Another thing that's near and dear to my heart is advocating for

our profession as therapists, and I've had the chance to testify in Olympia at our state legislature just to help make sure that our clients are not facing obstacles to get the special services that we provide. So I'm super excited that everyone's here today. I love being an OT, and I'm really looking forward to sharing with you what I know about early intervention. I do have 20 years of pediatric experience, and I also had a chance to see on the polls where everyone was calling from. We have so many people from all over the US as well as even other countries, too. So I'm glad that we could join here, and I'd also love to continue these clinical discussions. This is definitely an introductory course. And so at the end of the presentation, I'll give you some more information of how we can continue to have clinical conversations as well, as well as answer any questions that you might have.

This next slide is a handout, and you'll find this helpful for you as you go through this presentation. Like I mentioned earlier, this is an introduction to gross motor milestones, which is a huge topic. And so what I've created for you, especially for ot.com participants, is a step-by-step guide to infant mobility. It's from newborn to walking, and this handout includes the major milestones and the key transitional movements to get to the next phase. It also has detailed and clearly outlined to systematically guide your therapy sessions. So when I started 20 years ago, I really wish I had had something like this. So hopefully I'm saving you 20 years in figuring out what step goes where and just being really clear on mobility milestones. I know as an OT, when I came into the profession in early intervention, I hadn't had, honestly, a whole lot of training on mobility and how to help infants and toddlers with their gross motor milestones. And so this is something that I hope that you will find helpful and it'll provide a lot more details. And the presentation is gonna be an overview, so I'm hoping that this handout will really be a good supplement for your learning and for your knowledge. The Pediatric Intervention Framework is a framework that I use to help guide my clinical reasoning and how I approach sessions. So you're gonna start with the targeted skill or activity. And, of course, wanna ask, what is the purpose of this activity? And

positioning, so what are some strategies for positioning? As well as practice. What are some ways that you can integrate this session or the therapy milestones that you're working on in your session to everyday routines? The next part of the framework is play. And when working with infants and toddlers, as a matter of fact, in pediatrics in general, play is such a huge component. It's definitely one of the primary roles and one of the domains that OTs need to address. And it's one of the most challenging, exciting, and fun parts of being able to work with this age group is really embedding our therapy sessions with play to make things motivating and to make activities or skills that are really hard for kids or that they don't wanna do, fun. So that's the key element. And the other component of the Pediatric Intervention Framework is progress. So making sure that you are tracking progress and that you're writing goals that are SMART goals. So specific, measurable, relevant, realistic, achievable, and timely. So as we go through the slides and each of the motor milestones, you're gonna see some of these highlighted, and that refers back to this Pediatric Intervention Framework.

The primary areas of intervention for an OT in early intervention are cross training. So OT and PT are often called motor therapists, and we are responsible for working on gross motor skills and mobility as well as knowing how to help kids with their fine motor skills, sensory, and adaptive. So these are the primary areas of intervention for an OT working with infants and toddlers. The acquisition of motor skills follows a very specific pattern of development. From head to toe, cephalocaudal, and also from the center of the body to the outside, or proximal to distal. So cephalocaudal, an example would be that head control. It's a prerequisite for other motor skills. So lifting the head, it strengthens the neck and the back, and it allows the infant to prop and to move on its arms and legs. And good head control is also prerequisite for rolling, sitting, and walking because all of these milestones are dependent upon voluntary changes in head position. An example of proximal to distal is core strength and shoulder stability. So it's really important for the child to have good core strength and shoulder stability

because this supports the development of more fine, fine motor skills and dexterity skills.

Let's talk about some of the risk factors for motor delays. The first one is medical and birth history. Medical problems might include prematurity, prior hospitalizations, chronic infections, ear problems that will impact balance. Neurological problems, such as cerebral palsy and hemiplegia. Retained primitive reflexes, visual impairment, as well as hypotonia, or low muscle tone. Some children might have lower muscle tone in different parts of their body, so they might have lower muscle tone in the arms, which might make it difficult for them to prop on their arms or they might have lower muscle tone in their legs, which will make walking more difficult. And this is commonly seen in children with Down syndrome. Decreased strength and endurance, as well as increased joint flexibility, so having joint laxity. The ligaments holding the bones together have a lot more slack, and in cases of decreased joint stability, you'll often see kids with flat feet, sometimes dislocation of the shoulders or hips. The other aspect is short limbs or having an arm or a leg length discrepancy.

In this first slide, we have Baby M who you will see throughout this presentation. She's our little case study, and when she was first born, she was born prematurely. Her mom went into labor at 29 weeks when she was delivered. She had an APGAR score of one out of 10. So a refresher on APGAR, A is for appearance, P is for pulse or heart rate, G is for grimace, which is reflexes, A is for activity for muscle tone, and R is for respiration, so breathing rate and effort. And then on the bottom slide, we have another baby just demonstrating one of the reflexes, the asymmetrical tonic neck reflex. When working with infants who are premature, it's really important to make sure that you adjust for the baby's age for prematurity. There are two important dates to consider. The first is birthday, and the second is their expected due date. You wanna take the age of the infant in weeks and subtract the number of weeks born early.

So, for example, if you have a 16 week old that was born four weeks early, the adjusted age is 12 weeks, or three months. Even when I see kids in the outpatient clinic, older kids are somewhat behind with certain milestones, and even if they've caught up in physical size that's typical for their age, they still might be experiencing some delays. So even though we're working with older kids, it's always important to go back to their birth history and their medical history to shed some light on some things that might be impacting their development. In this case, prematurity. It's also important to read your assessment manuals to make sure at up to what age you should be adjusting for prematurity when scoring the assessment.

Next, we're gonna talk about sensory processing and how it influences motor skill acquisition and temperament. So a very quick review. The vestibular system, your receptors are in your inner ear, and they sense balance, position in space, and movement. Your proprioceptive system, the receptors are muscles, in the muscles and joints, and they detect deep pressure input, which is important for body awareness. Now a child's sensory profile can also impact temperament. Temperament in terms of, is the baby motor driven or are they more of an observer? So it's important to think about how sensory processing impacts their approach to motor skill acquisition. The first one is motor driven. Does the baby seek vestibular input and/or proprioceptive input? They might have difficulty grading force of movement. These are the kids that are often described as extremely active. Or are they an observer? Do they tend to avoid vestibular input or have an impaired sense of balance? If this is the case, they might tend to be more cautious or a little bit more fearful when attempting movement or new milestones. So I'm gonna show you a video now. This is Baby M, who you saw coming out as a premature infant and as you're watching this video, I would like you to ask yourself, what is her temperament? What do you think her sensory profile is? So we will start the video in just a moment.

- [Woman] Come here. Come here.

- [Jessica] Okay, so that was Baby M. And so what do you think? Go ahead and you can type your answer in. Is she an observer or is she motor driven? Yes, she's definitely motor driven. And I want to share with you a little bit how her medical history could impact this type of behavior. So first of all, it's very cute. However, it's not typical what she's doing, to continually fall back and roll over and over and over. So if you think about her birth history, when she was in the womb, her mom was on bedrest for almost two months. And normally, when babies are in the womb, they're getting a lot of sensory input from the mother, and they're getting a lot of vestibular, they're getting a lot of proprioceptive information. And so sometimes, if kids do not get that in the early phases of development, you will see it come out later. And so I think this is an example, and it makes sense for her sensory profile of maybe why she was doing this. So we're gonna move on to the presentation.

And let's talk a little bit about the developmental progression of gross motor milestones. So what I did is, I broke this up into different phases. Phase one is tummy time, side lying, and back lying. Phase two is rolling. Phase three is sitting and really important transitions. Phase four is crawling. Phase five is pulling to stand, standing, and cruising. Phase six is walking, and phase seven is post walking skills, like running, jumping, ride on toys, stair climbing, and ball skills. So this talk today is gonna cover phases one through six. So if you need tips for phase seven, stick around to the end and I will tell you again how we can connect as far as learning more about the toddler mobility phase. Let's first talk about tummy time.

So a little bit of history for tummy time. In 1994, the American Academy of Pediatrics introduced a Back to Sleep campaign. And this was really to help prevent SIDS, which is Sudden Infant Death Syndrome. And so the campaign was really to educate parents about safe sleeping and to put infants on their back when sleeping. And I think this was crucial for preventing accidental deaths with infants. The interesting thing is it also

affected tummy time. So I think some parents, they might have been more hesitant to put their child into tummy time. And tummy time is definitely good, especially during waking hours and during supervised playtime. There was a study from AJOT in 2002 that highlighted that when parents did not put infants on their stomachs for supervised playtime that it impacted the rate of acquisition of motor skills. Another study found that there were significant improvements in Bayley-3 scores for infants with Down syndrome whose caregivers initiated tummy time early. In summary, when babies are sleeping, back to sleep. They need to be on their backs, but when they're awake, it's important to have supervised tummy time and to practice a few minutes and a few times a day.

So for the next couple slides, I'm gonna talk to you about some strategies and some ways to encourage tummy time. First of all, tummy time comes in typically between zero to three months in terms of being comfortable in prone. And the purpose is to develop head control, and we want to increase their tolerance for the prone position, and head control is an important precursor for rolling, crawling, and the timely acquisition of motor skills. Here's an example of a little one who is on an incline. She's on a little wedge, and I also want you to notice her leg position. So we really don't want frog legs. We want legs straight. And a little bit of history about this little one. She is almost two here, and she had a significant history of hospitalizations and major surgeries as an infant. And so the time when she normally would have been experiencing prone and tummy time, she was in the hospital, much of the time on her back. She also had a lot of invasive things as far as feeding and tubes and G-tubes, and so there are a lot of sensory issues around feeding as well. But what this meant was, because she wasn't used to being on her tummy and she missed out on those experiences, it was really delaying her acquisition of other motor milestones. So even though we're almost two, we had to go back in time to work on helping her become more comfortable on her tummy. And the other aspect of being comfortable on her tummy was just making it positive as well. She definitely wanted to make, wanted to

move, but we had to make sure that she felt like it was a positive experience and that she was having fun because she had so much negativity surrounding positions while she was in the hospital. Another strategy that we used with this little one is semi-reclined on her parent's chest while they're reclined or lying on the couch.

Some other alternate positioning is to be a little lap buddy. So you'll put the baby face down on a caregiver's lap with their head a little bit higher than their body, and you can pat their bottom, or face to face. So if baby's lying on the floor, they love looking at you. And that's so important for engagement as well. You can just be eye level and make eye contact and sing songs. Another positioning strategy is the airplane carry. So the baby is face down and cradled by the caregiver's forearms. As far as equipment for tummy time, there's a lot of things that you can do. You just use what parents already have at home. One of those is using a blanket rolled up to support baby's chest or a semi-inflated beach ball could also work or a wedge, like you saw. That's actually a move and sit cushion for a chair that I used, but you can also make your own little incline by putting a really firm couch cushion with a pillow under it as kind of a ramp as well.

So tummy time practice. So working on baby push ups. So weight bearing by propping on arms or hands as well as diapering and dressing. So it's super important to think about practice and how you can integrate these into the parents' daily routines. This is an exciting time in family's lives, but it can also be stressful. And so my two cents is, if you want to really help facilitate practice and home programming at home, you wanna make it feel, to the parents, that you're not adding just one more thing to their to-do list or making sure they're not feeling stressed about, gosh, when am I gonna practice this? So an example would be to always do it during diaper changes because diapering happens several times a day, and so the parent would just roll baby onto their tummy and then roll them over, and then change their diaper, or it could be after diaper changing, but it's a really great way to gradually increase the time that they

tolerate tummy time, and you're embedding it during a really natural routine and in their natural environment.

The next step is pivoting on their tummy. So this is when they're lying on their stomach and if you put toys in a circle or you have them chase a little toy, they're gonna pivot on their tummy to get the toy. Back lying. So this is from newborn and up, and the purpose of back lying, or supine position, is the most common position for play and for sleeping. It's important because it develops baby's core strength. It strengthens shoulders and arms, and it helps them reach up against gravity to play and to reach for toys. As far as positioning strategies for back lying you want to make sure you're using a soft surface. So a bed is too soft, so a carpeted surface. Using a blanket or a towel rolled up under their shoulders, this will really help them to be able to reach, and if they have a shoulder that's not preferred, you can help bolster their shoulder. And you also wanna encourage the baby to turn their head to the non-preferred side by positioning toys or to position the baby so she must look towards the non-preferred side to watch the activity. So an example would be if, in the crib, you put baby's head on one end of the crib, and when you come in, she's gonna be looking for mom or whoever's coming in, she's gonna be turning her head to one side. So then if you rotate and alternate that, her head to the other side, she'll be turning her head to the opposite side as she's looking towards the door.

So, again, just embedding these positioning strategies into their everyday routines. I'm gonna address something that we also see in early intervention, which is plagiocephaly, which is flattening of the head. And to help prevent plagiocephaly is to have plenty of tummy time, and you want to reduce the amount of time that your baby lies in a car seat or a car swing or a baby carrier, and there is something called CVS, which is container baby syndrome. So basically, the baby is going from container to container, and that is contributing to flattening of the back of their head. It's important to be able to rotate their sides during feeding time, and this can also help prevent

torticollis, which also frequently happens in conjunction with plagiocephaly. It's important to put your baby in different positions in their crib and, like we mentioned before, should be back lying to reduce the problem of SIDS. So some practice are to encourage lifting arms up overhead to reach. So overhead mobiles and play gyms are perfect for that. And this is a picture that one of the moms sent to me, and it's actually at the doctor's office waiting for the doctor, and babies love mirrors, so here's Baby G, and she is demonstrating back lying. And she's working on her stomach muscles by bringing her feet to her hands and eventually into her mouth as well. And it's also easier to practice without a big bulky diaper on or clothes on. So it's fun to practice on a changing table as well.

Again, some play ideas, overhead play gyms. You can put little foot jingles with bells or cute little socks, as well as playing foot play, like This Little Piggy, and just helping baby be aware of her toes. And this really helps give her a sense of body awareness, and the mouth is almost like the third hand. So it provides a lot of sensory information as well. So when babies are touching their toes or put their feet in their mouth, they're getting a lot of information about their own body and where they are in space. The next phase is side lying, which comes in around three to five months. And the purpose is to strengthen the spine and to be able to balance the stomach and the back muscles for core strength, and it is a precursor to rolling. And you wanna allow the hands to touch each other because it makes it easier to reach for toys because when kids are in back lying, they're actually working against gravity. When they're in side lying, they're not working against gravity so much. Side lying positioning, you wanna practice positioning to the right or the left side. So if baby prefers one side, start practicing on that side first just to make them feel more comfortable. And you can use a rolled up blanket propped up against their back to support side lying or you can put baby up against the back of a couch. And when you practice, you wanna set toys up for playing with their hands. And you can help kind of reach and roll them in side lying. So kind of rolling a little bit at the hips or the shoulders, help them reach and roll for a toy. And

you wanna make sure that their toys and their books are at eye level. Here is a video. There are a series of a couple different babies are that are demonstrating these skills. If you would like to rewatch the videos, you can go to the YouTube channel, which is Play It Forward Therapy, and I also have these videos posted as well. So let's take a look.

- [Man] Is that your baby?

- [Jessica] Okay. And now we're gonna head back to the slides. Moving on to rolling, which comes in about four to six months, and this is baby's first means of independent mobility and exploring the environment. And it also stimulates the vestibular receptors, which is definitely important for balance, position in space, and body awareness. For positioning, you wanna make sure that baby is on a firm, but soft surface, and to start with side lying. So as occupational therapists, we're very good at grading. So you wanna be thinking about how you would grade an activity, and one thing would be to start in side lying rather than starting with a whole entire roll. And typically when practicing belly to back is easier, and you wanna make sure you put the baby on tummy and rolling to back and vice versa before and after diaper changes. And for play ideas, you can help move a favorite toy slowly to help the baby visually track, and again, the head is really important. So if they're following something with their eyes, then their head is gonna turn and you can use the head as a leader to initiate rolling. Sitting comes in around seven to nine months, and sitting really enables a new perspective, and it allows baby to use hands in new ways.

So here we have Baby G. She's a little super sitter. And it's important to note that learning to sit, it happens gradually. So it starts with supported sitting, then babies will go from pull to sit, to sitting independently, and transitional movements to move in and out of sitting. Sitting also is a time to look for protective extension and righting reactions. So like we saw in the video of Baby M on the bed, she wasn't too worried

about protective extension or necessarily righting reactions because she actually loved the sensation of falling. So it's also something we definitely want to look for when babies are sitting on the hardwood floors. Are they able to reach out to catch themselves? Are they able to weight shift? So that should be coming in naturally as well. Supported sitting, here is Baby M. So she generally, I believe, was about six to eight weeks behind in terms of her development. Here she is sitting in the corner of the couch. And you wanna start by supporting baby high, so at the trunk level, and as baby develops strength and head control, you're gonna be gradually lowering your hands for support. And supported sitting, great way to start is at the corner of the couch or on your lap or on the floor between your legs.

So if you're sitting in long sitting, you can be reading them a book and that way, their back is supported against you. Sitting is really important for feeding and safety when feeding. Babies must have good head and postural control for sitting prior to using a high chair or starting solid foods. This is really important. Equipment, you can use a rolled-up towel to bolster baby on the sides of the chair. And this will especially help support baby's posture when placed in larger high chairs that are meant to be grown into. Equipment that comes in handy is using a cushion or a soft tray in front of baby while supported in sitting. You can place the toys in the cushion in front of baby so her hands could be somewhat propped in front. You wanna place cushions around baby in case baby falls over so she'll have a soft place to land. And again, this is sometimes if the weight shifting and righting reactions are not quite coming in when they should or practice sitting in a laundry basket. So we have Baby G, we have squigs, which are little suction cup toys, and beads that she is working on pulling when she's sitting in the laundry basket. And then on the lower corner, we have baby in a boppy cushion. And another thing to always integrate, especially if you're doing home visits is to really integrate siblings and being social 'cause sometimes, if there's siblings, kids can be super motivated to sustain a position longer if brother or sister are in the room or if they're being entertained. Practice, so when it comes to practice, babies will first learn

to pull to sit, and baby's gonna be grasping your thumbs. Wanna make sure that you're not grasping their wrist because then you're pulling baby up. So make sure baby grasps your thumbs so they are definitely using some stomach muscles to come up into sitting. And if that's too hard, you can start by putting baby semi-reclined on their back on a pillow and then gradually take away the recline and start from pulling to sit from the floor.

Supported sitting, you can practice this during bath time in a bath chair, in a laundry basket like you saw, or getting dressed while seated in your lap is also good for practicing dynamic sitting. A really key part is the transitional movements. So being able to move in and out of sitting. Again, practicing on a changing table. And baby should be able to transition from tailor sit, which is sitting crosswise to side sit, which is what this baby's doing in the slide, to quadruped, or four point on hands and knees, to crawling. And side sitting is really necessary to be able to transition to tummy and hands and knees. And you want to avoid leaning forward into the splits position to transition to tummy. So I'm gonna be showing a video coming up, and you will see Baby M trying to transition from sitting to four point by doing the splits. And you can decide whether or not that is successful for her or not. Dynamic sitting is also important.

Here we have a picture of this little one putting duckies into a little bowl, and I know that she tends to prefer one side, and so I've put those on one side, and I'd like to encourage her to cross midline to put the babies into the bowl on the other side. And also you need to keep in mind that mobility skills are gonna overlap so much with the other milestones, like cognitive skills. So cognitive skills of being able to put things in and out of containers is definitely something that was happening in conjunction with the sitting skill. So it's important to know where the baby is at cognitively as well. Here is a slide, and I think you'll find it somewhat amusing, so I'm gonna play it for you guys here.

- [Announcer] Get ready. You know what to say. On the count of three! Here we go, one, two, three! And they are off! Hanson, he's done, I'm done. Oh my goodness, Charlene's passionately making her way across the racetrack. She is strutting her stuff, giving us a few poses as she goes along the way. Maxwell's not out of it, he just wants to lay down. And Paxton, he's not too sure, but. Oh, oh! And good night, everybody!

- [Jessica] Okay, and now we're gonna head back to our slides. So that video was taken when I was on a cruise, and I suppose that's what we do for entertainment when we're at sea and we have nothing else to do is we race our babies. So I found it pretty amusing, but the big takeaway that I wanna mention is that development is not a race. It's important to just let your child move and learn at their own pace. And it also is a great introduction to our next phase, which is crawling, which we will talk about more as well. So crawling comes in around eight to 10 months, and the purpose is independent mobility. It requires really good upper body and arm strength and good head control, and babies will start commando crawling by pulling their body forward using their arms and their feet and legs are on the floor. And this is a precursor to crawling on hands and knees, which is also known as creeping, which is a reciprocal coordination of the left and right sides of the body. Practice for crawling. Positioning is important. We wanna practice reaching while in quadruped to work on weight shifting, and sometimes babies will do movements where they're rocking back and forth, or they might start going backwards instead of forwards a little bit, and so you can position toys in front of them to help them reach and practice weight shifting.

Some atypical movement patterns that we sometimes see are bear walking, so legs are completely straight or knees are locked, bottom scooting or crab crawling, so crawling to the side, as well as asymmetrical leg movements. So this might be baby's dragging one leg or really leading with one leg much more than the other. The other component of crawling is climbing practice. So being able to climb off and on furniture safely. And

one way to practice this is to go up and down the stairs safely, supervised, very carefully, of course. And you wanna start two to three steps below the landing for climbing up, and then for climbing down, you'll practice two to three steps from the floor going backwards. So you wanna put the toy just out of reach to encourage moving. And really good play ideas are using balls or bead necklaces or Slinkies even that slide down from the top surface to the floor. Here is a video of babies crawling. So let's take a look. You'll also see Baby M and her attempts to crawl as well. Okay, and back to our presentation. So some of the things that you probably saw were trying to go to four point from doing the splits. So not moving out of midline and not demonstrating really good trunk rotation to the side to move into side sitting. There was also a little one who had a discrepancy in terms of which leg she was leading with. So you saw a little bit of the scoot and the drag, not only in crawling, the other one was literally on her bottom, in scooting as well. So putting together obstacle courses and tunnels and working on tall kneeling. These are some activities that can help with that.

The next phase is standing and cruising, which comes in around 10 to 11 months. So these steps are pulling to stand, sit to stand, standing, and cruising. The transitional movements to standing are sitting to tall kneeling, tall kneeling to half kneel, and half kneel to pulling to stand. One thing that I recommend is if you're thinking technically, what does all of this look like? Really think about what the position is and try it yourself. So that's one of the good ways to think, gosh, well, how would I get from the floor to pulling up? So just stop and do it yourself. And that really helps clarify transitional movements as well if you do it yourself. Standing equipment. Sit to stand, you'll wanna use a small bench or a toddler chair or a footstool. And furniture, a helpful tip is to take cushions off the sofa to make a little bit lower, and often that will give baby a little bit of an edge to pull to stand from the floor to edge of the couch. Also low play tables with rounded corners are excellent. Or you could even use a storage bin with a lid. You could use cardboard boxes or a laundry basket. And one tip for equipment is, if you want to make it sturdier or more stable, just fill it with toys or heavier things to prevent

it from tipping over. Practice standing, it's important to strengthen the legs. So doing baby squats by doing consecutive squats to strengthen the muscles for standing. And a lot of this is going to really depend on how you position toys to get the number of reps in that you want, but you also wanna make sure that you're listening to baby's cues, if they're showing signs of fatigue.

So again, it's offering that just right challenge to strengthen their muscles, but not pushing to the point of getting really frustrated or overly tired. You want to encourage bending of the knees, which allows for movement at the ankles. This is really important for learning to walk to have mobility at the ankles. Practice sitting to stand from sitting on mom's lap, or pulling to stand from sitting on a small chair or a bench. Also standing at the surface and letting toys roll off to be picked up from the floor. So balls, beads, toy cars. So baby's playing at the surface and, uh-oh, something rolls onto the floor. We gotta pick it up. So again, just making things natural and naturally occurring. Gosh, the toy fell down, I really want that toy, so I'm gonna squat down to pick it up. Standing with support is the next phase. So some tips for standing with support are to stand with baby's back against the couch or a wall, to stand while holding on to the couch or the edge of a surface, and once baby's stable, you wanna encourage trunk rotation. And you'll do this by helping them reach for a toy held out to their side. First, baby's gonna practice standing with two hand support, and then to one hand support. Plantigrade to standing. We have supported plantigrade. So plantigrade is almost like a bear walk position, when you're on all fours. And a supported plantigrade would be if baby's on hands and knees, but hands are propped on a pillow. And then they can go from supported plantigrade up into standing, and then ultimately, without the pillow to move from plantigrade from the floor to standing. Cruising is the next phase of development, and it's really important during this phase to practice the weight shift. And as far as positioning goes, you want the cruising surface to be at height, at the armpit level.

And, again, this also requires strategic placement or positioning of your motivators as well. One thing you also want to look out for are just the position of the feet. You wanna look if there's any overpronation. You want to see also if they are not liking to cruise or refusing to stand on certain surfaces. So some kids, if they have some tactile sensitivities, they may not want to be standing on a carpet, or they might prefer the hardwood floor. So think about that when you're setting up the environment to practice any of these skills. Some standing play ideas are in front of a mirror, babies love looking at themselves, a play kitchen, sitting to stand by putting hats or necklaces on other people while they're seated on a bench, singing songs, and blowing bubbles. These are classic tried and true. Believe me, I've been doing this for a long time, and if you do any of these things, they'll definitely be motivated to do it. And you will see some of these ideas in an upcoming video as well. And here's a video. So let's play the video.

- We gotta give him the food in the basket. Can you give him the food in the basket?

- [Girl] Food.

- [Blonde Woman] Yeah, you wanna give him the food? Look. Give him the food.

- [Woman] So hungry.

- [Blonde Woman] He's so hungry you gotta feed him the food. Food, feed him the carrots? Feed him the... Wanna feed that to him?

- [Woman] Ooh, uh-oh, it fell. Can you go get it?

- Can you get the apple? And give it to the puppy? Puppy's hungry, can you feed the puppy? There you go, mm. Good job. Oh, let's feed him the apple again. Can you feed him the apple again? Mm.

- [Jessica] Okay, we're gonna move back to our slides. So you could see from the video that practice standing, we definitely integrate it with play. And when I'm running sessions, I typically like to show the parent first how I'm doing it, give some examples, and then I really like them to be involved so they can come away from the session feeling confident, like, oh, gosh, we practice this in OT. And so when they go home, they'll have that sense of accomplishment. They'll have a sense of knowing what it is and how they can help their child practice. And we also noticed that this little one, she had some really nice skills. She demonstrated walking backwards a little bit. She demonstrated some plantigrade transitions, some belly crawling. When the little fruit fell on the ground, she belly crawled to get it, pushed up into plantigrade, and then into standing. And puppets, so the more entertained a child is and playing with, then the longer they're gonna be able to stick with the activity. And I think that this mom did a great job of really engaging with her child, which is so important as well and something we definitely wanna encourage, too.

So moving onto the next slide is walking, which typically comes in around 12 to 15 months. And walking independently gives baby a new sense of independence. And practice, this is the continuum of how babies will practice walking. First, they'll start with two hand support, then one hand support, walking with a push toy, walking while holding an object, walking on flat and even surfaces, and then progressing to uneven surfaces. For positioning, you wanna start with baby's back supported on a wall to take a few steps towards you. And some babies might need to practice knee walking first because that will help them become more comfortable with reciprocal leg movements when walking upright. So some examples, I've seen babies pushing a cardboard box or babies pushing the laundry basket, and they're essentially knee

walking. So they're getting the same alternating movements, but they're not so high up off the ground. And this really sets an important pattern for movement. So then when they do start walking on their feet, they're a little bit more comfortable with what that feels like. Walking to something that's motivating. So practicing walking to the high chair when it's time to eat or walking to bath time at the baby spa. Or in terms of playing, babies love just your enthusiasm. So big hugs, pretend play, singing songs, blowing bubbles. All these things are gonna go a long ways in encouraging little ones to walk. Walking with a push toy is another phase. So you wanna start on carpet first to slow it down, and it really helps avoid sliding in all directions. And you can weight it down as needed. You are gonna see in an upcoming video, there is a can of tomatoes taped to a little push toy to weight it down while baby's walking on carpet. Without the can of tomatoes, it just moved too fast, and when baby tried to pull to stand, it got away from her. So we just literally duct tape a can of tomatoes to weight it down.

Another thing you'll see, too, is using a baby carriage or a baby stroller and pushing a push toy or a laundry basket. And you'll see Baby M in these videos, too, as she has progressed, slowly but surely. Post walking skills are running, ride on toys, stairs, ball skills, and jumping. So this is what we would be seeing after kids are confident walkers, the next phase in gross motor skills and mobility. So here is our next video. Let's play this video.

- [Mom] Hi, babe. Come walk to Mommy.

- [Woman] Are you walking your babies? Hi, baby. Yeah.

- [Woman] Put your groceries back in. Good job. Where'd your broccoli go? Where's your cake, put it in.

- [Jessica] Okay, so in that video, you saw some different phases of walking. Some really nice skills of being able to pull to stand using a push toy, being able to lower into sitting, being able to walk with one hand support and then two hand support. So there's lots of different ways that you can practice walking that once kids master, they're usually extremely motivated to walk because it's definitely a wonderful, newfound sense of independence, a huge milestone. Let's summarize the gross motor milestone markers. So primitive reflexes, their presence in integration. This is a whole 'nother course into itself, but you should be aware of the primitive reflexes, what they are, when they should occur, and when they should be integrated. Zero to three months, prone to supine, hands to midline and mouth. Four to six months, we see side lying, rolling, reaching, and transferring toys. And seven to nine months is the typical phase for sitting independently, belly crawling, transitional movements in and out of sitting. Eight to 10 months is when crawling on hands and knees and pulling to stand come in. And 10 to 12 months is typically standing and cruising along furniture. And 12 to 15 months is when we see walking independently and squatting to pick up a toy.

So again, these are typical milestone markers. So when I worked in early intervention, a good rule of thumb was, if a baby or an infant, toddler was kind of plus or minus three months from the typical, then that meant they're either delayed or there was something going on. Even if a baby starts a milestone much earlier than usual, that's not necessarily a wonderful thing because it makes you wonder, what other key milestones did they miss? So if they start walking at eight months, for example, or nine months, were they maybe not in crawling long enough? Did they actually go through that milestone? So that's why the developmental sequence is really important and these milestone markers are just a really good snapshot overview. Summary of learning today. We talked about motor development. We talked about the Pediatric Intervention Frameworks. So the purpose, positioning, practice, play, and progress. So using these principles to think about your treatment sessions. We talked about the developmental

progression of gross motor milestones. And I'd love to have continued clinical conversations with you.

There are a couple ways you can connect with me. You can text me your email address at 425-215-1971, or you can email me, jessica@playitforwardtherapy.net. And this is the same cheat sheet that I had mentioned to you at the beginning of the session. This is what's gonna break down things in increments from the major milestones to all the transitional movements in between. And again, that's something that I wish I had when I started, and so I hope that you will find it helpful. I love early intervention. I love working with infants and toddlers. Actually, I love working with all kids in general, and I would love to connect with you. If you have questions, if there are other topics that you want to hear about, then please let me know. I'm happy to share with you and to connect with you. And so now I think we have some time for questions, just a few minutes, so I will, I'll let you guys ask some questions. So thanks again for being here, and I just commend you and thank you for all the work that you're doing with infants and toddlers and kids and grown ups, too. Just thank you for being OTs and for helping to improve the lives of others. Okay, I'm ready for some questions.

- [Fawn] All right, thank you. The first question is from Makayla. What are your thoughts on a neurotypical child who skips over crawling? Do you ever find that some children skip this skill due to the desire to walk or do you feel that it is an essential skill that has to be taught, even if a child is now walking?

- [Jessica] I think it is an essential skill. It definitely happens when kids will skip crawling, and the interesting thing is, in my private practice, we will get referrals for handwriting or kids with fine motor delays, and then looking back at their developmental history, a lot of them, it turns out, they never crawled. And so they didn't really have the chance to develop that shoulder or scapular stability and that core strength and weight bearing on their hands. And so sometimes with our gross

motor play, we will go back to that phase of crawling. So we'll go back to weight bearing. We'll go back to crawling through a tunnel because I think it is important to be able to develop that. Okay, next question.

- [Fawn] Yeah, the next is, any advice on low arousal infants?

- [Jessica] You know, I think that's a really good question for low arousal, and the fact that you're thinking about what their sensory profile is. The first thing for infants and toddlers or just kids in general who are low arousal is just finding what is their just right state, and what are their preferred sensory inputs. The typical ones that really are alerting for kids and just people in general are the vestibular, so movement. But you also have to be cautious with not overdoing it, so that just right challenge as well as proprioceptive. So bouncing, rocking, that can really help wake up the alert system. Also just being super excited and engaged as well. Some kids, they may have low arousal levels, but they're still very social and they will perk up if you're really engaged and singing with them. So that can help as well. Thank you.

- [Fawn] Okay, and another one is, do you have any recommendations on how to help little ones who have had torticollis and then show asymmetry in hand use as older infants and toddlers? Do you have any recommendations?

- [Jessica] The first thing I would wanna rule out is just to make sure, and to see how resolved that torticollis issue was. So if you're not sure about it, I would refer on to their pediatrician or even a physical therapist just to make sure that they're still not having underlying problems with tightness in their neck. That's definitely important to resolve first. Again, I think being really aware of positioning and where you put things, reaching, and again, thinking of ideas that the parents can embed in their everyday routines because it's gonna be the repetition every day that's gonna help as well as sleeping positions as well, too. That's a good question. It looks like we're just about

out of time. I'm really glad that you guys were here today. So again, don't forget to download the cheat sheet. I think this will really, really help you, and feel free to connect with me later if you have further questions or if I wasn't able to get to them. So thanks again for having me, and I hope to connect with you soon. Bye bye.

- [Fawn] Thank you so much, Jessica. I hope everyone enjoyed today's presentation. She has another one in the library, so please check that out as well. I hope everyone has a great rest of the day, and you join us again on Continued and occupationaltherapy.com. Thank you!