



# **Texas Professional Home Childcare Association**

## 2024

### 3rd Quarter Self-instructional Training “Physical and Cognitive Development” 6 training hours

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Master Registered Trainer with Texas Trainer Registry -#1509

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## **Physical and Cognitive Development**

As a result of this training, the participant will be able to:

1. Explain the difference between fine and gross motor skills and how they relate to each other.
2. Explain Piaget's Theory of child development for infants, preschoolers and school age children.
3. Explain how language develops.

### Introduction

As we work with young children we have to remember that they are constantly changing. By understanding the pattern of change that the majority of children process through, we are able to help see red flags when present. We are also better able to provide developmentally appropriate activities, classrooms, and interactions when we understand what the children in our class are able to accomplish. This self-study class focuses on basic physical and cognitive development of children.

### Prenatal Development

From one month to four months of conception the brain had neuron cells emerging at 50,000 to 100,000 a second. These neurons send out long tree branch like fibers, called synapses, which connect with other neuron cells. Once a child is born, they have all of their 100 to 200 billion neurons and each neuron has approximately 2500 synapse. During the middle three months of pregnancy, the brain increases in size about six times. During the fourth week of pregnancy, the embryo's head starts to take shape. The face starts to form including the eyes, ears, nose and mouth. By the end of the fourth month, the infant's face is fully formed. By the time an infant is at the age of being able to survive outside of the womb, typically about 22 weeks after conception, the infant is able to hear through its fully functioning ears. This sweet infant that is born has already been developing physically for nine months before they are actually born. We can't forget the importance of that time.

### *Prenatal Issues*

It is important for expecting women to stay away from massive radiation, either at one time or through repeated exposure. During the pregnancy, if women are exposed to massive radiation it might cause microcephaly (small head) or mental retardation. At this time, there is a correlation between massive radiation exposure and brain damage, but concrete proof has not been established yet.

When expected mothers are exposed to pollutants in their environment there is a correlation to brain damage. These pollutants could be lead, mercury, pesticides, herbicides and cleaning supplies. Small dosages of common substances might be harmless, but for the sake of their unborn child, pregnant women need to remember to not drink well water, wash their fresh foods, and refrain from using chemical cleaning supplies.

When families live in poverty they have a harder time providing nutritious meals and safe water for the expected mother. This malnutrition that the expected mother has may interfere with the child being carried to full term delivery. When a fetus is not able to develop fully in the womb, his brain development is cut short. An infant is unable to develop his brain in the same manner as if he was still in the womb. This inability for full brain development can be associated with multiple brain development complications such as bleeding in the brain and learning disabilities (March of Dimes, 2011).

It is important for expected mothers to reduce their stress by finding healthy ways to relax and rest. When an expected mother is stressed, the tension she has can disrupt proper fetal brain development. An expected mother should lower her stress as much as possible and as quickly as possible after conception. Some conditions that cause stress, such as racism and discrimination, are harder to lower than others but expected mothers should do as much as they can. When a pregnant woman is stressed, the fetus might grow slowly, be born prematurely, and affect the fetal nervous system. An infant being born early or one that is very low birth weight at birth has multiple complications that could occur including failure to thrive and small growth as a child.

Thalidomide is a drug which treats cancer and different HIV health complications. During the critical period of 34-50 days after a women's last period, taking thalidomide can increase the risk of birth defects affecting the arms and legs by 20% or more. Marijuana use by the mother or by others who are around the expected mother can have ill effects on the unborn child. Marijuana use has been linked to infants being born with central nervous system issues and slow fetal growth.

## Physical Development

### *Infants and Toddlers*

As an infant's body grows, their birth weight will typically double by the child's fourth month and triple by the infant's first birthday. As the child develops between their first and second birthday their weight growth will slow down; however is still more rapid than any of their future years of life. When a child has their second birthday they are typically approximately 30 pounds. This rapid

weight gain makes an infant be four times the weight at birth and approximately 20 percent of the typical adult weight.

Infant's height changes very rapidly during their first year of life. By the time an infant reaches his second birthday he will typically be between 32 and 36 inches. This rapid growth in height means that the typical infant will be approximately half of the height they will be as an adult. The infant's height will increase about 30% within the first five months and increased by 50% by the child's first birthday. When an infant is born, his head measures typically 2 centimeters bigger than the infant's chest measurement. Before the child's second birthday, his head measurement will typically be equal to his chest measurement. A newborn's head circumference is typical between 33 and 35 cm but will grow in the first year of life. When an infant is born, their posterior and anterior fontanel is soft and open to allow for movement at birth. Between 6-8 weeks the posterior fontanel will be closed while the anterior fontanel will not be closed until the infant is between 12-18 months of age.

During the infant's first year of life they have multiple first accomplishments. The infant's body changes within this first year with these first accomplishments. The infant starts to grow hair, cut their first teeth, take their first step and say their first word within the first year of life. As all of these first occur, the child's body is going through changes. The child's leg muscles are not strong enough in the first eight months to support his weight, nor are the muscles coordinated enough for the child to have control over the movements. As his body matures he will gain the strength and coordination to take his first step.

As an infant grows, their brain's neurons send out connections that overlap each other. These connections are called synapses. As the child has experiences with their environment and the people in it, the synapses start to form connections between the brain cells. When synapse that were formed already, are no longer needed due to different experiences, they will break away. Though this process happens throughout our life, during the first year the child's experiences set the foundation for ultimate connections to be formed. By the time a child is two years old, they have at least 1,000 trillion brain synapses. The different synapses occur on different areas of the brain depending on the infant's experiences and interactions with others. Since the time in an infant and toddler's life where the brain is connecting so many synapses is temporary and not found at another time in the child's life it is called transient exuberance?

Infants do not need fancy toys to help their brain grow and expand. The child will make sure to find items to listen to or watch that are easily available to them. This internal drive within the infant is called self-righting and it helps an infant to

remedy deficits. It is this drive that infants have to stimulate their brain that helps it to develop and grow more synapse connections.

An infant's area of his brain that regulates his breathing is called the subcortical area, and it develops first right after birth. As an infant's brain grows through his first two years, the cerebral cortex has structural and functional changes occurring at the same time and dependent of each other. The cerebral cortex allows for cognitive and perceptual development to occur not only during the first two years of life, but throughout life. The prefrontal cortex is the area of the brain that regulates impulse control, planning and anticipation is the last part of the brain to develop. During infancy it is inactive and creates the situation where an infant is unable to stop crying due to being told to. For an infant to stop crying because he was told to requires the infant to be able to make a decision, which he is unable to due to his prefrontal cortex not being developed.

When an infant is born, the movement that their limbs have is not controlled, but more reflex movements. As the infant grows, they develop control over their movements. By four months of age, the child can reach for an object but unable to grasp it. Their fingers have not gained control of when to close so they typically close too late or too soon. An infant is able to have better control over their limb movements to grasp objects. As the infant continues to grow and develop their movement control toward the end of their first year, they start to develop the ability to use the pincher grip, using their forefinger and thumb to grasp tiny objects.

An infant's senses develop quickly within the first few months of life. When an infant is first born, his eyes are open but he is unable to see clearly and his vision is blurry. Within the first few weeks of life, infants are able to use their near vision better so that a person or object that is 8-15 inches away from the infant is within their vision field. By two months, the infant's visual cortex are more developed so he can see clear and be able to be tentatively involved in looking at his caregivers. By three months old the infant is able to look at more details then before. They can focus on specific areas of their caregiver's face like the eyes or mouth. The three month infant shows a preference for photos that have full featured faces instead of ones that only has certain face features. Three month old infants also show an interest in patterns, colors and movement as they watch in their environment. An infant is able to focus both eyes, called binocular vision, at about 14 weeks of age.

## *Preschool*

As a child grows between two and three their ability to move, twist and have control over their limbs improves. The child between 3 and 6 no longer needs to have their legs apart for balance when standing upright. The child is able to walk with their toes forward and with their feet closer together. These changes occur during the second year of life and by three years of age, their body becomes more streamline and is not as top heavy as during infancy.

Children between two and six physically continue to grow; however this growth becomes slower than in infancy. By two years of age, a typical child weights approximately 20 pounds and is between 32 and 36 inches in height. When a child reaches the age of six years old, they typically weight about 47 pounds and is typically three and half to four feet tall. A child that is able to have quality nourishment will gain approximately 4 1/2 pounds per year between the ages of two and six.

With the child's slower growth rate a decrease in the child's appetite occurs during the two to six year old age period. This lower appetite means that parents and caregivers must make sure to provide even more quality of food and nutrition. With sugary food, children are being left with improper consumption of many minerals, vitamins and nutrients like calcium, zinc and iron.

When a child is two years old, their prefrontal lobe is very immature in development; however as a child grows between three and four, the prefrontal lobe starts to develop into maturity but not completely for many years. The prefrontal lobe controls reasoning, planning, delay in gratification and impulses. The development of this area of the brain shows researchers solid reasons as to why two year old children typically are involved in temper tantrums, while by the age of four years, children are able to have much better emotional regulation.

A two year old brain weighs approximately 75 % of an adult's brain; however a five year old brain weighs approximately 90% of an adult's brain. The growth period between two and five allows for a fatty coating, called Myelin, coats the axons and helps to speed up the signals between the brain neurons. The ability to speed up the signals that are developing in the child's brain helps their ability to speed up their through process, especially when a situation arises for the child to use multiple thoughts at one time.

## *School Age Children (Called Middle Childhood)*

Children will gain on average, five to seven pounds of weight each year during their middle childhood years. On average, boys typically weigh a pound or two more than girls at the beginning of the middle childhood years. Between the ages of 7 and 11, this typically balances out and by the end of the 11th year, boys and girls weigh approximately the same.

As children move from the early childhood years into the middle childhood years their coordination, speed, accuracy of movement and strength increases. During the middle childhood years, children are able to have more muscle control and better balance than they did before, partially due to the physical growth in height and weight. With this increase in muscle control, they are able to refine both gross motor movement and fine motor movement better than in previous age ranges.

Children in the middle childhood years do not grow in height as rapidly as in their earlier life. Typically, children in the middle childhood age range grow two to three inches every year. By the end of their 11th year, the typically child will be approximately five feet tall.

Physical maturation and puberty start to occur in many children during the middle childhood years. Typically, girls start their onset of pubertal changes between 8 and 14 years, while boys begin between 9 and 15 years of age. Girls might start to have growth spurts, enlargement of breast tissues, and menstruation a couple of years later, while boys will start with increase in testicular size and a growth spurt.

As the child grows between 7 and 11 years of age, their brain is able to be interconnected well, which helps them to have a reduction in reaction time (Berger, 2009). This reduction in reaction time helps the child's eye-hand coordination

With the developing brain during middle childhood, children are able to practice activities and information until it becomes a routine. This brain develop is called automatization because the child is able to create an automatic response through these activities and information repetition sequences. This ability is very important during the middle childhood years because it helps the child to accomplish multiple skills and abilities. When the child's brain is able to automatically accomplish simple and repeated task, the child is able to concentrate more on harder, newer task they are still challenged by.

With the middle childhood child's brain having neurological advances, the child is able to organize and process multiple pieces of information in different areas of the brain at one time. The brain develops Selective Attention, which is the ability for the child to concentrate on specific information, while ignoring other information at the same time. This ability allows a child to be able to concentrate on specific information in school while listening to lectures and taking notes, but being able to ignore the possible distractions in the classroom.

## Cognitive Development

### *Infants*

Sensorimotor Intelligence -- In the first month of life, the foundation for an infant to learn is developed through senses and reflexes. This first stage of life is called the stage of reflexes. This is when the child's sensorimotor intelligence starts to develop as reflexes start to begin being deliberate which will then bring about perception and then cognition (Berger, 2010). An infant in the first stage of reflexes has many reflexes that often adults do not realize. Some of these reflexes include breathing, eye blinking, rooting, and swallowing, which all are required for life (Worth Publishers, 2002).

Between the infant's 4th and 12th month of life, they are involved in learning through not just their own body but also through the involvement with other people and the environment. As the infant starts to interact with others and the environment, they will start to react to what they are involved in. When an adult starts to move a toy in front of the infant, they will react to the interaction by smiling and moving their arms. The infant is actively involved in proceeding with interactions with others (Berger, 2009).

As an infant becomes 10 months old and older they will start to have a goal-directed behavior that incorporates their interaction within their environment (Berger, 2009). An infant might be in interactions with a primary caregiver and some toys. If the infant is unable to manipulate the toy as they wish, they might become frustrated and turn to the caregiver. This goal directed action is the start of logical thinking for the infant. At six months, an infant cannot logically think of how to gain a toy out of a clear plastic container with a screw on lid. As the child works through the secondary circular reaction stage, they will learn to not become frustrated with the clear plastic container, but instead logically think of how to get the toy out (Woolfolk, 2007).



Information Processing -- An infant's first year of life is full of learning how to store events that they have participated in through memories. As the infant's brain develops they are able to process and store this information into a memory that they can recall at a later date. Rovee-Collier was able to demonstrate the way a three month old infant could process his experience of kicking to create a mobile to move within his sight (Berger, 2009). The infants first kick movement was not a purposeful movement to make the mobile move. After the infants were able to see the movements of the mobile, they were able to use that information to remember to kick again so they could view the mobile movements.

As the infant grows, their ability to process information becomes more effective. They are able to take in more information and demonstrate their advances and growth more easily. These changes and develop advances each week as the child matures. A young infant is able to output his information through the use of demonstrating object permanence. Object permanence is the realization and ability to act on this realization that objects exist even when the infant is unable to see them. An older infant is able to demonstrate their ability to process information in a more systematic and effective manner. The older infant might see gold fish in a bowl, remember that the goldfish is for feeding, grasp some from the bowl and eat it to relieve his hungry (Berger, 2009).

Once an infant reaches the age of 9 months, they are able to process information they have seen, remember that information, and repeat the action in a very similar manner. Older infants are able to watch an adult or older child play with a specific toy that the infant had never played with before. Later that day or the next, if the infant is given that toy, they will play with it in the same manner that the adult or older child did earlier (Berger, 2009).

*Language Development* -- Between the infant's age of 4 and 8 months, a brain neuron is assigned to every sound they hear. This does not mean a new neuron is formed, just that the sound is assigned to neuron. The more language an infant hears, the more neurons will be assigned a sound. These neurons will start to form the connections that will form the child's language maps and development (Bitsis & Schafer, 2011).

An infant begins to use babbling to repeat specific syllables. Babbling occurs with all children, without regard to their physical ability to hear clearly or to be able to hear at all. This phenomenon is experience-expectant since all infants go through this process. As other people respond to the babbling, the infant will either continue or stop it. Due to the fact of deaf infant's not being able to hear the adult's responses to the infant's babbles, the infant will stop repeating the sounds. Babbling begins to turn into the infant's native language sounds typically at the end of the first year. The infant has moved from internal experiences of

making sounds to being able to imitate the accents, consonants and pattern of language that they have heard during their interactions with others (Berger, 2009).

When an infant is between 6 and 15 months of age, their language development becomes very rapid. They are able to understand approximately 10 times more words than their physical body is able to produce. To help with communication, an infant at this age can sign a word and understand the meanings, even though the infant is unable to physically producing the sounds (Berger, 2010).

### *Preschool*

Piaget Theory -- According to Piaget, children between 2 and 6 gradually become able to think in a symbolic manner through the use of their developing language skills (Woolfolk, 2007). Children in the preoperational stage are able to use words, gestures, signs and images to relay their desires and in communication. The preoperational child is able to put meaning to symbols such as pictures, drawings, language, and even dramatic play to represent objects and events (Morrison, 2009).

According to Piaget, children between 2 and 6 begin being able to think logically but only in one direction or to use one-way logic (Woolfolk, 2007). Children in the preoperational stage are unable to reverse the steps in a task or be involved in a situation that involves multiple different steps. The child in the preoperational stage typically judges things on their look and are only able to focus on the before, during or after aspect of a task so that they are unable to think about how the process changed or changed an item (Marion, 2011).

According to Piaget, children between 2 and 6 are unable to understand another person's point of view (Woolfolk, 2007). Children in the preoperational stage are egocentric and only see the world through their point of view, their experiences, and in regard to the effect of the world on the child. Gestwicki states "When children argue and disagree with peers, this conflict jars them into noticing that others hold different worldviews from their own" (2011, p. 38). As children play, they are able to learn about their peers' desires and learn how to work with them.

Symbolic play begins in the preoperational stage according to Piaget. Children are able to pretend that one object is another during their play. For example, children can pretend a play banana is a telephone, a baby doll is a little brother or legos built together become a car that is pushed across the floor (Seefeldt & Barbour, 1998).

Vygotsky's Theory -- According to Vygotsky, children learn through their environment and the interactions that they have with others in their life. As individual people provide not only environmental activities for the child but also interactions with the child, the child's development is influenced by what they experience and the cultural aspects of those interactions are very important (McLeod, 2007). Children are able to learn because they are able to think with guided participation from the people, both adults and older children, through being presented with challenges, having assistance by other without the task being taken over by others, having instructions provided and being encouraged to complete new task (Berger, 2009).

According to Vygotsky, children have a zone of proximal development (ZPD) where the learning and development of the child is able to take place (Marion, 2011). The ZPD is best described as a line where on one end is what the child is able to accomplish already within a specific task, and on the other end is what a child is able to do with the help of an adult. Teachers will need to offer more help through scaffolding as a child is learning a new skill, task or behavior. Through scaffolding, a teacher helps and encourages a child's participation in the task, so they can build new developments within it to build on at a later date (Darragh, 2010).

According to Vygotsky the language that is built within the cultural environment is a very important tool used in a child's development due to scaffolds being used to help children and with cognitive development, therefore advancing thinking abilities (Berger, 2009). When young children think internally they are able to develop new thoughts and ideas, even if they are unconscious of this occurrence while preschoolers are able to use this internal dialogue selectively and with directions. Language is also use by children from 2 to 6 years of age in social settings, where either informal or formal learning occurs.

Language Development -- Children between the ages of 2 and 6 are able to increase their vocabulary at a rapid pace. The typical 2 year old child knows approximately 500 words, whereas the typical 6 year old child knows more than 10,000 words (Berger, 2009). The increase in vocabulary words accounts for the mastery of thousands of nouns and the ability to use verbs, adjectives, adverbs and conjunctions by the age of six. Two year old children will pretend to read books with the vocabulary words that they have, while a four year old child is able to have the vocabulary to read environmental print like their own name and logos they are familiar with in their environment (Roskos, Tabors & Lenhart, 2009).

Children in the early childhood period are language sponges that are able to take in many new words per day and store them for future use (Roskos, Tabors & Lenhart, 2009). The child between ages of 2 and 6 are in a language sensitive period because they quickly learn not only vocabulary but also grammar and pronunciation (Berger, 2009). During this language sensitive period, children are able to increase their language from the two year olds very short and basic sentences to a six year olds ability to carry on conversations with others, the ability to talk often to anyone and anything, and the ability to understand other's desires and instructions more easily.

### *School Aged (Middle Childhood)*

Piaget's Theory -- Piaget's Stages of Cognitive Development continues while the child is between the ages of 7 and 11 years. Piaget named this stage of development "Concrete Operational" since the child is able to now take hands on problems and issue to solve in a logical fashion (Lutz, & Huitt, 2004). With the child's new ability to think logically, their need for egocentricity declines because they are able to see different perspectives and think from different angles. This period in the child's cognitive development is based on the child's ability to understand identity, compensation and reversibility (Woolfolk, 2007).

According to Piaget, a child between the ages of 7-11, is able to understand that an object can be changed to look different; however still contain many of the same properties and characteristics (Woolfolk, 2007). For example, a child between the ages of 7-11 can be shown two equal size balls of clay and be asked if they are the same size. The child will answer yes. If the adult flattens one of the balls, without taking any of the clay away, the child is still able to say that the amount of clay is the same.

According to Piaget, a child between the ages of 7-11, is able to reverse the steps from a hands-on problem (Woolfolk, 2007). Taking the same example as in #2, the child would then be able to form a ball out of the flatten clay, and put it back beside the other clay ball to show that the amount of clay is the same.

According to Piaget, a child between the ages of 7 and 11, is able to understand the ways to conserve, to classify, and to seriate the concrete information they are given (Morrison, 2009). This ability to be able to create a specific organization regarding information allows the child better abilities to express and manipulate the information at a later date.

Vygotsky's Theory -- Vygotsky's Theory of how children learn helped to shape the education system. He believed that children in the middle childhood age range were able to easily understand and put into practice information that had

before been very hard for them to understand (Berger, 2009). Rote memorization, was prevalent during Vygotsky's Theory development, created a situation where as the child was unable to apply the information to practical experience. His views on the education system in regard to how children acquire and use information helped to reform education.

Vygotsky's Theory that children learn through their involvement in sociocultural contexts continues into middle childhood. During this time, children need quality teachers that are able to provide crucial instructions for the child (Berger, 2009). Gestwicki (2011) reminds us that Vygotsky emphasized "at about age seven, changes are made by adults in the expectations, demands, and social structures that influence children's thinking" (p. 396). These important interactions between adults and children help to shape the child's learning and ability to use that learned information.

Vygotsky's belief that it is more important to concentrate on the process of learning instead of the end result is an important aspect to remember during the middle childhood years (Lutz, & Huitt, 2004). His views on the zone of proximal development still occur during the middle childhood years with the interactions of others helping to guide the child's development (Berger, 2009).

Information Processing -- As the child develops between 7 and 11 years of age, they are able to receive, analyze, and express that information to another person in a manner that everyone can understand. This ability is called Information Processing and occurs while the brain is continuing to develop, mature and dendrites grow (Berger, 2009).

One aspect of information processing is that of memory. Memory is divided into working memory (short term) and long term memory. A child between 7 and 11 will continue to have an improvement of their working memory (Berger, 2009). Each year that the child grows, their ability to recall more in-depth information from a short distance increases. As a child moves through the 7-9 years of age, he is able to move the in-depth information from short term memory to long term memory, they are able to remember clues which trigger the organization of remembered information and create a loop so they are able to express the memory to others. As a child moves through the 9-11 years of age, they are able to create and organize their own memory aids and clues as they develop their own organizational skills in memory.

During the middle childhood years, children acquire the ability to focus their own attention through the development of their control processes (Berger, 2009). This ability allows the child to follow in cultural and individual determined issues and activities that are considered important to focus attention on. With the ability to

focus their attention on their own desired issues or activities, the middle childhood's interest start to become more apparent and consume more of the child's daily interactions (Eccles, Fall 1999).

Language Development-- As the child grows from six years of age to the end of their eleventh years, their vocabulary doubles (Herr, 2002). With the ability to read, children in the middle childhood years are able to learn multiple new words each day, and are able to process those words to fit into their world.

During the middle childhood years, children start to understand metaphors, jokes and puns (Berger, 2009). As each year passes the ability to understand more in-depth and thought provoking jokes are accomplished. With each passing year during middle childhood, the child's they build relationships with their ability to understand metaphors, jokes and puns. This ability to communicate and share with others helps children to build solid friendships (American Academy of Pediatrics, 2007).

As the child moves through the middle childhood years it is important for positive interactions with others to continue to occur for language development (Fischer, & Bullock, 1984). Children in the middle childhood years do not learn grammar or a second language through watching the television but rather must be stimulated through social interactions with other humans. Through these interactions with teachers, children will be able to become fluent in formal language coding and the logic of grammar (Berger, 2009).

### What are Motor Skills

Motor skills are motions carried out when the brain, nervous system, and muscles work together. Fine motor skills are small movements, such as grabbing something with your thumb and forefinger. These motor skills use small muscles that are found in your fingers, toes, wrists lips and tongue. Gross motor skills are bigger movements, such as running and jumping. These motor skills use large muscles that are found in your arms, legs, torso and feet.

Motor skills are actions that involve the movement of muscles in the body. Motor skills usually develop together since many activities depend on the coordination of both gross and find motor skills. The gross motor skills develop over a relatively short period of time. Since this is a short period of time, most of it develops during childhood.

## Fine Motor Development

Small muscles are the muscles of the hands, wrists, toes and even the eyes.

Between the ages of two and six, children are able to develop better eye hand coordination like being able to string beads. As the child's fine motor skills develop, they will be able to string smaller beads with smaller thread. They are also able to have control over the crayon markings that they put to paper. Before the age of two, children move the crayon back and forth over the paper but without direction. After age two the child is able to control their fine muscles and move the crayon to make distinct markings on a page. By the time of age six, children are able to control their fine motor skills to create a picture by drawing circles, lines, and shapes (Morrison, 2009)

Fine motor development becomes more controlled and directed between the ages of two and six years. A two year old is able to hold a pair of safety scissors and move the blades back and forth, young three year olds can cut paper, older three year olds can cut five inch squares of paper in half, four year old children can cut following a predetermined line but not on the line, five year old children can cut directly on a line, and six year old children can cut predetermined shapes and curves (Herr, 2002). The six year old is able to control the muscles needed for better defined fine motor skills like being able to have control over their wrist movements. It is important to remember that we must remember to look at each child as an individual because between 2 and 6 years of age their motor skills vary. A three year old child might be able to pick up a pair of scissors and cut straight while a five year old might still become very frustrated over her ability to make the scissors do what she wants (Seefeldt & Barbour, 1998).

By the end of the two year old year of life, the majority of children have achieved mastery of most large motor physical abilities (Gestwicki, 2011). For example, as the child moves from two to three years of age they will be able to kick a ball that is stationary while as they move on into the fifth year of life they will be able to kick a ball that is moving (Herr, 2002). As children move through their fifth and six years of life they will start to achieve mastery of coordination and agility with the large muscle control (Gestwicki, 2011). As children develop their skills between two and six, their coordination and agility will improve each year as they build on the developing skills they have already mastered.

There are many different activities that you can do with young children to help their fine motor skills. So many that I cannot list them all here. Instead, I decided to give you some websites that you can check out and see for yourself. If you do not have internet connections, give me a call and we can discuss some.

1. <http://pinterest.com/rdcrabbs/fine-motor/>
2. <http://handsonaswegrow.com/30-kids-activities-materials-for-promoting-fine-motor-skills/>
3. <http://www.prekinders.com/fine-motor-skills/>
4. <http://www.ot-mom-learning-activities.com/fine-motor-activities.html>
5. <http://www.notimeforflashcards.com/2012/08/15-fine-motor-activities-for-kids.html>

### Gross Motor Development

Gross motor skills are important for major movement functions such as walking, maintaining balance, coordination, jumping, reaching and many others. Gross motor abilities share connections with other physical functions in the body. Gross motor skill development is governed by two principles that also control physical growth. Head to toe development refers to the way the upper parts of the body develop first before the lower parts. For example, an infant is able to hold their head up first and then put weight on their feet. All children develop from head to toe. The second part of the principle of gross development is trunk to extremities development. All children gain control of their torso before their hands. For example, when you lay a 3 month old infant on the floor for tummy time, they are able to lift their head and flap their arms and legs around. They have balance and control over their core and torso but not over their limbs. All children develop from inner to outwards. Head control is gained first, followed by the shoulders, upper arms, and hands. Upper body control is developed next, followed by the hips, pelvis and legs.

Encouraging the development of gross motor skills in childhood requires a safe, open play space for the children to be able to move around without restraint. It also requires peers to interact with one another and adult supervision to keep everyone safe. Helping a child succeed in developing his gross motor skills requires patience on the part of the adult. A child does not learn to write his name overnight and he won't learn to kick a ball over night either. The adult needs to also offer many opportunities for the child to practice the desired skills. Each child reaches gross motor developmental milestones at different rates. Each child needs the freedom to acquire their individual gross motor skills at their own pace and without comparison to other children.

You might have children in your care that you have concerns about allowing them to move freely on the playground due to physical abilities. If the doctor has



filled out the Texas required Health Care Professional Statement and says the child is healthy enough for outside play, then please provide specific play for the children. No matter how proficient the child is at any given skill, always encourage and motivate him or her with a new challenge and with plenty of positive reinforcement for their efforts. Remember that each individual child's has their own unique strengths and weaknesses. I believe that in life, we all need to learn to improve our weak areas and enjoy our strengths and talents. No one is good at everything. The object of providing activities to develop gross motor is to help the child develop each area to his or her unique potential, not to over-stimulate or try and develop super babies.

### *Examples of how to develop Gross Motor Skills*

There are a number of activities that you can do to help children develop their gross motor skills:

1. Play on the playground twice a day. The outside play in itself promotes a child to run, jump, climb and move his or her body freely
2. Have outside games for the children to join in if they would like. Have balls on hand for throwing, kicking, and catching. Balls such as baseballs, footballs, and soccer ball help a child to not only develop their large muscles but also their hand-eye and foot-eye coordination.
3. Walking on a narrow but low board or even a piece of duct tape on the floor. After a child has mastered that you may have them walk backwards, sideways or holding bulky objects in each hand.
4. Playing hopscotch, jump rope, kangaroo hop will help a child to learn how to balance.

Skills in using large muscles develop through vigorous, active play like the following:

1. Riding wheeled toys
2. Running
3. Digging
4. Balancing
5. Pulling objects
6. Lifting objects
7. Climbing
8. Pounding

9. Swinging
  1. Throwing and tossing
  2. Dancing
  3. Sweeping

### *Physical Maturation*

Physical maturation is an orderly process in which children develop control over their large muscles before they can control their small ones. Development proceeds from the upper portions of the body toward the lower portions and from the inner body to the outer body. Children can move their chest and arms before they can pick up objects. This is because both large and small muscles grow stronger and develop only as a child practices using them. It is only by first developing large motor skills that a child can go on to learn small motor skills. Listed below are some general characteristics of large muscle development from infancy to five years. Remember, the pattern can vary from child to child.

### Infancy through Age One

The first gross motor skill infants learn is typically to lift their heads and shoulders. This occurs before they are able to sit up or turn over. Once a child can lift his/her head it is usually followed by head control. Children are not born with head and neck control; most infants can lift their heads to a 45 degree angle by the age of four to six weeks. One of the most important and major task of gross motor development is movement of the body. An infant typically progresses from rolling over, to creeping on their stomachs, to crawling and then finally to walking. The following is a simple checklist regarding gross motor development for children from birth to age one. Remember that each child is an individual, but typically a child is able to do the following by the months indicated.

\_\_\_Lifts head while lying on stomach (age 3 months)

\_\_\_Bring both hands together (age 4 months)

\_\_\_Rolls over one way (age 5 months)

\_\_\_Keeps head level with body when pulled to a sitting position (age 6 months)

\_\_\_Rolls over both ways (age 7 months)

\_\_\_Sits without support (age 8 months)

\_\_\_Gets into a sitting position from stomach (age 8 months)

\_\_\_ Stands holding onto someone or something (age 10 months)

\_\_\_ Pulls up to a standing position from a sitting position (age 10 months)

\_\_\_ Can walk holding onto the furniture (age 12 months)

### Age Two

The toddler or two year old child, is very busy and active. By this age the children have mastered a variety of gross motor skills. They can walk and run with ease, climb up and down stairs holding onto a railing, and many more things listed below.

\_\_\_ Walks and runs on full feet

\_\_\_ Pulls toys with strings

\_\_\_ Climbs on furniture to look out the window and can get down

\_\_\_ Climbs stairs holding on with two feet on each stair

\_\_\_ Assist in dressing

### Age Three

Gross motor skills continue to develop during the third year of life. They are working on walking with good posture and without watching their feet. They can walk backwards, sideways and run with enough control to stop suddenly or change directions with ease. The three year old can hop, stand on one foot and negotiate the climbing of multiple levels. They can walk up stairs with alternating feet on each step. They have the muscle development to ride a tricycle and throw a ball easily. They still have a little trouble catching it because they usually hold their arms out in front of their body no matter what direction the ball is coming from.

### Age Four to Five

The preschool child can typically balance or hop on one foot, jump forward and backwards and even over objects. The preschool child can climb and descend stairs alternating feet. They can bounce and catch balls and throw with some accuracy. The preschool child is learning to skip and usually develops that by the time they enter public schools. Children this age have gained an increased degree of self-consciousness about their motor activities that leads to increased

feelings of pride and success when they master a new skill. The problem with the preschool age is they have feelings of inadequacy when they think they have failed or another child can do something better than they can. This can lead to them trying daring activities beyond their abilities so they need to be monitored.

### *Large Muscle Development*

There are many different values that go along with the development of large muscles of children. It is necessary for a young, growing child to develop basic physical abilities so that he can move around in his world with reasonable ease and efficiency. As a child practices individual motor skills, he is building self-assurance. A child is trying and testing himself as he manipulates the blocks, swing, hammer and saw. As he builds on milestone, another one will start to form. A healthy child enjoys practicing until he masters a skill. He is building a positive self-concept as he learns more and more new motor skills. Example: After a child has mastered the art of riding a tricycle, he goes fast on it, cuts corners, rides close to objects and then he gains more confidence to ride a two wheeler.

Vigorous physical activity stimulates all vital body processes such as circulation, respiration, appetite, and elimination. A child's eating habits are likely to improve with large motor development. Rest is usually more welcome when a child gets adequate physical activity. Large muscle activity provides a release from tensions that children build up during prolonged sitting, thinking and being quiet. Outdoor large muscle activity has special advantages. It affords children the opportunity to feel free and enjoy fresh air and sunshine. Children usually talk, shout, laugh, sing, run, and jump with less restraint outdoors than they have indoors.

Have you ever had another adult tell you that when they get mad, they go for a run or walk out with weights? That is because negative and hostile feelings can be drained off through large muscle activities. Motor expressions offer the simple, most direct means for children to drain off feelings. That is why hitting, pushing, and biting are common among young children. Vigorous physical activities such as pounding, throwing a ball hard against something, or running are more acceptable outlets for feelings. Outlets that hurt other children are not acceptable.

### What do they learn from gross development?

Developing large muscle coordination leads to improved small muscle coordination. For example: The handling skills acquired in bouncing a ball have a definite carry over value in handwriting, turning pages, tying shoes, and buttoning coats. Another example is to hit or kick a moving ball, the hand must follow the

eye just like in copying a letter the hand must reproduce what the eyes have seen.

Physical development and mental development are related in many ways. An active body is a tool that children bring to the preschool situation to help them learn. A child develops his kinesthetic sense by using his large muscles, and developing the kinesthetic sense is a foundation for learning concepts. Kinesthetic sense means that ability to feel, sense and know the position and movement of your body. Close your eyes and move your right hand around. Without opening your eyes, you can tell how your hand and fingers are position. Bring your thumb and forefinger slowly together. Can you predict exactly when they will touch? YES YOU CAN! You can because you have a well-developed kinesthetic sense which the young child has not yet developed fully. A child's kinesthetic impressions are formed as he uses his body to know what it feels like to slide down, lift a board or throw a ball. A child experience and learns about distance and depths as he jumps from a step and figures out where he will land. In this way a child is developing and testing depth perception. Kinesthetic perception is refined as a child reaches out and touches jumps, climbs and rolls over.

A child uses his whole body to explore the world, to experiment with and manipulate his environment. Physical activities are then translated into learning. Example: A child who is playing with blocks arranges and rearranges them, succeeds and fails in his building efforts and is learning about size, shape and quantity as he works out his plans for building. Body movement is the foundation for learning specific concepts. Body movement contributes to sensory perception, imagery and thought. As a child moves their body, their sensory perception changes. Each human being organizes his experiences into his own patterns. Large muscle activity allows experience in concepts such as high-low, fast-slow, and long-short. Climbing through objects (which are in the shape of circles, squares, and triangles) gives children experiences in forming concepts about shape. Children learn about space by fitting themselves into it. They also learn about space by putting blocks into a wagon or by fitting boxes into each other.

Children with good motor development are often more receptive to learning. The coordinated child can accomplish his tasks without paying too much attention to the individual movements involved in the task at hand. For example: A teacher gives a verbal direction such as "Kimberly please move to the block area and bring me a red block". If Kimberly has to concentrate on how to move to the block area, she might forget what object to find. Physical competence encourages intellectual confidence.

## Working Together

Fine and gross motor skills much work together for the overall development of the child. Motor skills work together as a child grows, explores, learns and developments. For example, when a child is sitting at a table coloring they are using both motor skills. They use their torso to help them balance while using their hands and fingers to move the crayon back and forth over the page. If a student is unable to maintain the correct upper body support, it will affect his ability to write or draw. When students have poor gross motor development, they will have difficulty with activities such as writing, sitting up in alert position, watching classroom activities, writing on the blackboard and many more. For these children, simple daily activities become physically challenging and draining.

## Summary

The most important part of helping children develop motor skills is to have fun with them. Let them see you move, manipulate objects and have fun with them. Remember that children learn best through modeling adults, so go have fun with them! As children play, they are developing both their motor skills and their cognitive development. Provide multiple opportunities daily for children to have interactions with you, their environment and with each other. Be involved, and help them to discover something new everyday.

## References

- Berger, K. S. (2009). *The developing person through childhood* (5th ed.). New York, NY: Worth Publishers.
- Bredenkamp, S. (2009, July). *Developmentally Appropriate Practice*. [DVD]. Laureate Education
- Copple, C., & Bredenkamp, S. (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- Herr, J. (2002). *Working with Young Children*. Tinley Park, Ill: The Goodheart- Wilcox Company,
- Heward, W. (2009). *Exceptional Children: An Introduction to Special Education*. Upper Saddle River, New Jersey: Pearson
- Laureate Education, Inc. (Producer). (2010). Learning about children [DVD]. Early childhood development. Baltimore, MD: Author.
- March of Dimes. (2011). Your Premature Baby. Retrieved November 3, 2011 from [http://www.marchofdimes.com/baby/premature\\_indepth.html](http://www.marchofdimes.com/baby/premature_indepth.html)

Morrison, G. S. (2009). *Early Childhood Education Today*. (11th ed. ). Upper Saddle River, New Jersey: Pearson

Organization of Teratology Information Specialist (2010). Thalidomide and Pregnancy. Retrieved on October 30, 2011 from

<http://www.otispregnancy.org/files/thalidomide.pdf>

Smidt, S. (2006). *The developing child in the 21st century: A global perspective on child development*. New York, NY: Routledge.

UCSF Benioff Children's Hospital (2011). Birth Asphyxia. Retrieved on October 31, 2011 from

[http://www.ucsfbenioffchildrens.org/conditions/birth\\_asphyxia/](http://www.ucsfbenioffchildrens.org/conditions/birth_asphyxia/)

Woolfolk, A. (2007). *Educational Psychology* (10<sup>th</sup> ed.). Pearson Education, Inc



## Physical and Cognitive Child Development Assessment

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1. Once a child is born, they have all of their 100 to 200 billion \_\_\_\_\_ and each neuron has approximately \_\_\_\_\_ synapse.
2. By the time an infant is at the age of being able to survive outside of the womb, typically about \_\_\_\_\_ weeks after conception, the infant is able to hear through is fully functioning ears.
- 3 When expected mothers are exposed to pollutants in their environment there is a correlation to \_\_\_\_\_.
4. When families live in \_\_\_\_\_ they have a harder time providing nutritious meals and safe water for the expected mother.
5. When an expected mother is stressed, the tension she has can disrupt proper fetal \_\_\_development.
6. Marijuana use has been linked to infants being born with central nervous system issues and \_\_\_\_\_ growth.
7. During the infant's \_\_\_\_\_ of life they starts to grow hair, cut their first teeth, take their first step and say their first word within the first year of life.
8. As an infant grows, their brain's \_\_\_\_\_ send out connections that overlap each other. These connections are called synapses.
9. An infant's area of his brain that regulates his breathing is called the \_\_\_\_\_ area, and it develops first right after birth.
10. An infant's \_\_\_\_\_ develop quickly within the first few months of life.
11. The child between \_\_\_\_\_ and \_\_\_\_\_ no longer needs to have their legs apart for balance when standing upright.

12. With the child's slower growth rate a decrease in the child's \_\_\_\_\_ occurs during the two to six year old age period.
13. A two year old brain weighs approximately \_\_\_\_\_% of an adult's brain; however a five year old brain weighs approximately \_\_\_\_\_% of an adult's brain.
14. Children will gain on average, \_\_\_\_\_ to \_\_\_\_\_ pounds of weight each year during their middle childhood years.
15. Physical \_\_\_\_\_ and \_\_\_\_\_ start to occur in many children during the middle childhood years. Typically, girls start their onset of pubertal changes between 8 and 14 years, while boys begin between 9 and 15 years of age.
16. With the middle childhood child's brain having \_\_\_\_\_ advances, the child is able to organize and process multiple pieces of information in different areas of the brain at one time.
17. In the first month of life, the foundation for an infant to learn is developed through \_\_\_\_\_ and \_\_\_\_\_.
18. As a child becomes \_\_\_\_\_ old and older they will start to have a goal-directed behavior that incorporates their interaction within their environment.
19. An infant begins to use babbling to repeat specific \_\_\_\_\_.
20. Babbling occurs with \_\_\_\_\_ children, without regard to their physical ability to hear clearly or to be able to hear at all.
21. To help with communication, an \_\_\_\_\_ can sign a word and understand the meanings, even though the infant is unable to physically producing the sounds.
22. According to Piaget, children between \_\_\_\_\_ and \_\_\_\_\_ gradually become able to think in a symbolic manner through the use of their developing language skills.
23. Children in the \_\_\_\_\_ stage are unable to reverse the steps in a task or be involved in a situation that involves multiple different steps.
24. As individual people provide not only environmental activities for the child but also interactions with the child, the child's development is influenced by the \_\_\_\_\_ and the \_\_\_\_\_ aspects of those interactions are very

important.

25. According to \_\_\_\_\_ the language that is built within the cultural environment is a very important tool used in a child's development due to scaffolds being used to help children and with cognitive development, therefore advancing thinking abilities.

26. The typical \_\_\_\_\_ year old child knows approximately 500 words, whereas the typical \_\_\_\_\_ year old child knows more than 10,000 words.

27. Piaget's Stages of \_\_\_\_\_ Development continues while the child is between the ages of 7 and 11 years.

28. Vygotsky's Theory of how children learn helped to shape the \_\_\_\_\_ system.

29. Vygotsky's belief that it is more important to concentrate on the \_\_\_\_\_ of learning instead of the end result is an important aspect to remember during the middle childhood years.

30. Each year that the child grows, their ability to recall more in-depth information from a \_\_\_\_\_ distance, increases.

31. During the \_\_\_\_\_ years, children acquire the ability to focus their own attention through the development of their control processes.

32. As the child grows from \_\_\_\_\_ years of age to the end of their \_\_\_\_\_ years, their vocabulary doubles

33. \_\_\_\_\_ skills are motions carried out when the brain, nervous system, and muscles work together.

34. Fine motor skills are \_\_\_\_\_ movements, such as grabbing something with your thumb and forefinger.

35. Gross motor skills are bigger movements, such as \_\_\_\_\_ and jumping.

36. Name 5 fine motor skills:

37. Name 5 gross motor skills:

38. Developing \_\_\_\_\_ muscle coordination leads to improved \_\_\_\_\_ muscle coordination.

39. \_\_\_\_\_ development and \_\_\_\_\_ development are related in many ways.

40. A child uses his \_\_\_\_\_ body to explore the world, to experiment with and manipulate his environment.