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## Module 6: The Role of Physiotherapists in Early Intervention -Lead by P5- Gazi University

## Disclaimer

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## ► Unite 1: Positioning and Handling in EI

- The aim of this module is to present general principles about positioning and handling as well as the carrying in early intervention



## ► Unite 1: Positioning and Handling in EI

- Positioning and development
- Handling for EI
  - Handling in different cultures
- Therapeutic equipments for handling
- Positioning in NICU
- Positioning in infants
  - Supine position
  - Prone position
  - Side-lying position
  - Sitting position
  - Standing position
- Carrying



## ► Positioning and handling

### Positioning

- Interactive process (child-environment)
- improves ability to use postural strategies /righting-equilibrium and protective reactions) (apa reactions)
- done with hands, adaptive equipment and environmental settings
- Allows participation in meaningful/functional activities

These two elements should go together!

### Handling

- dynamic process
- guides movement by influencing tone or trigger new automatic movement responses
- results in functional actions



## ► General principles of positioning

- 1) Provides support (the parts of body which can't maintain stability)
- 2) Position for symmetry & skeletal alignment (keep head, neck , trunk, pelvis aligned)
- 3) Offers variety (to stimulate perceptions with view from differentt angle)



## ► General principles of positioning

- 4) Considers safety & comfort - make sure child can remain stable & secure
- 5) Select developmentally appropriate positions/transitions
- 6) Determine if handling interventions are needed to achieve proper positioning and/or guiding the child to move more functional



## ► Positioning and development

- Greater experience in multiple positions in the months after birth is associated with better development in the 1st year for healthy infants and those born preterm and at risk for delays.
- Reduced experience in the months after birth in the prone position, a position that is especially challenging for young infants and that most caregivers avoid or utilize very little, is associated with delayed development in certain skills in the 1st year of life.

Fetters, L., & Huang, H. H. (2007). Motor development and sleep, play, and feeding positions in very-low-birthweight infants with and without white matter disease. *Developmental Medicine & Child Neurology*, 49(11), 807-813.





## ► Positioning and development

There are some aspects related to development:

- Sitting ability has been shown to advance knowledge about object properties.
- Early experiences to advance reach onset also advance future object exploration and means-end problem-solving ability.
- Early experiences in prone improves the future ability to crawl on hands and knees.



Lobo, M. A., & Galloway, J. C. (2012). Enhanced handling and positioning in early infancy advances development throughout the first year. *Child Development*, 83(4), 1290-1302.

## ► Handling for Early Intervention

- The term "handling" has two meanings.
  - First meaning is those behaviors that occur when caregivers are in physical contact with young infants.
  - The second meaning is the therapist's special handling techniques in the treatment for facilitation and integration of movement/function.
- Using handlings through “key points of control” (as head, shoulders, elbows, hips, knees and ankles, for instance), the therapist aims to facilitate the desired muscle action.



## ► Handling for Early Intervention

- Through these “**key points of control**”, it is possible to conduct movements, influence muscle tone, improve postural alignment and postural self-organization, as well as to increase active participation in the proposed functional tasks.
- Self-organization facilitated by handlings using “**key points of control**” induces posture and movement integration, allowing the use of anticipatory strategies contributing for motor learning and motor control improvement.



## ► Handling for Early Intervention

- Typical movements are facilitated and functional movements patterns are integrated to allow appropriated active reactions when the therapist is not controlling the movement.
- The physiotherapist induces an expected motor response by means of the stimulation of sensory pathways, that are the gateways to motor control and motor learning.
- Once achieved, it is aimed to guide the child hands-off.





## ► Handling in different cultures

- Handling should vary according to the age of the baby and the motor development stage.
  - For example, a 3-month-old baby is not recommended to sit or stand up. However, handling varies according to different cultures and accelerates motor development in some cultures.
- Differences in handling practices across cultures have been associated with differences in the development of **adaptive behaviors, motor behaviors, early communication, and cognitive development.**
- For instance, in areas of Kenya, Nigeria, and West India, formal handling techniques to encourage sitting and walking from birth have resulted in infants sitting and walking months earlier than those in Western cultures.\*

Hopkins, B., & Westra, T. (1989). Maternal expectations of their infants' development: Some cultural-differences. *Developmental Medicine and Child Neurology*, 31, 384–390.



## ► Handling in different cultures

- Non-Western caregivers using similar formal handling techniques have infants with better head control at 1 month and advanced sitting and standing at 6 months of age compared to infants born to mothers not using such practices.\*



Institute of Medicine (US) Committee on Palliative and End-of-Life Care for Children and Their Families; Field MJ, Behrman RE, editors. When Children Die: Improving Palliative and End-of-Life Care for Children and Their Families. Washington (DC): National Academies Press (US); 2003. APPENDIX D, CULTURAL DIMENSIONS OF CARE AT LIFE'S END FOR CHILDREN AND THEIR FAMILIES. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK220821/>

Hopkins, B., & Westra, T. (1989). Maternal expectations of their infants' development: Some cultural-differences. *Developmental Medicine and Child Neurology*, 31, 384–390.

## ► Handling in different cultures

- The traditional method widely used in Turkey is swaddling. Swaddling is the ancient practice of snugly wrapping your baby in a thin blanket or sheet, to help his/her feel safe and secure. Many cultures have used swaddling for centuries, as a way of helping babies feel more settled, and as a method to help them sleep.
- But there are some risks of swaddling. Swaddling the baby may affect his/her mobility and development. If his/her legs are held together and straight down, he/she's more likely to develop problems with her hips (hip dysplasia).





## ► Different ways of Swaddling



## ► Therapeutic equipments for handling and positioning

- Bolsters
- Balls
- Boxes
- Wedges
- Nests
- Strollers
- ...all the equipments at home...



Therapeutic imagination is also one of the key elements of equipments for handling!

## ► Positioning in NICU

- The NICU environment is extremely different from that within the uterus.
- Preterm infants are noted to be physiologically hypotonic and they are subjected to the effects of gravity and immobilization on a firm surface for prolonged periods.
- Poor positioning can lead to positional disorders, such as muscle imbalances and the development of a 'flattened posture', which have potential to impact on future development.

Downs JA, Edwards AD, McCormick DC, Roth SC & Stewart AL (1991). Effect of intervention on development of hip posture in very preterm babies. *Archives of Disease in Childhood*.66. 797-801.

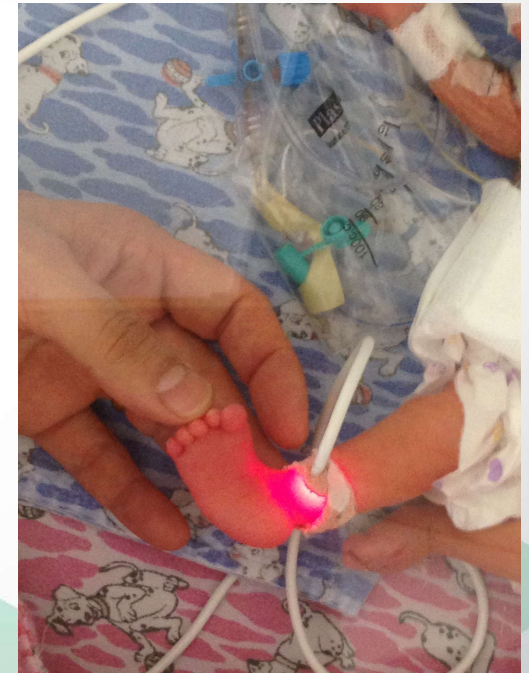
<https://www.slhd.nsw.gov.au/RPA/neonatal%5Ccontent/pdf/Nursing%20Guidelines/Positioning.pdf>



## ► Positioning in NICU

- Correct/Effective positioning of infants may reduce these disorders without harmful effects.
- The benefit of correct positioning is the enhancement of infant comfort and reduction of stress in infants.

Madlinger-Lewis, L., Reynolds, L., Zarem, C., Crapnell, T., Inder, T., & Pineda, R. (2014). The effects of alternative positioning on preterm infants in the neonatal intensive care unit: a randomized clinical trial. *Research in developmental disabilities*, 35(2), 490–497. doi:10.1016/j.ridd.2013.11.



## ► Positioning in NICU

### *Supine*

- A 'nest' is used around the baby to maintain the shoulders and hips in the mid position. The knees and elbows supported off the cot surface to reduce hip and shoulder abduction.
- The nest should provide postural stability yet not restrict the baby's movement.

Hallsworth M (1995). Positioning the pre-term Infant. *Pediatric Nursing* 7:1, 18-20.





## ► Positioning in NICU

### *Prone*

- The baby is positioned with some pelvic elevation so that the legs are weight bearing through the anterior knee and lower legs and the hips are not flexed more than 90°.
- A 'nest' is used to maintain hips and knees in the mid position and therefore prevent excessive hip abduction and to provide containment. Arms are kept adducted near the body with hands near the mouth to encourage hand-to-mouth orientation.

Hallsworth M (1995). Positioning the pre-term Infant. *Pediatric Nursing* 7:1, 18-20.

Morris K & Burns Y (1994). Reduction in craniofacial and palatal narrowing in very low birthweight infants. *Journal of Paediatrics and Child Health* 30, 518-522.



## ► Positioning in NICU

### *Side lying*

- This position is used once the babies are physiologically stable.
- Side lying encourages flexion and symmetry.
- The trunk should be supported perpendicular to the mattress.



Turill S (1992). Supportive positioning in intensive care. *Pediatric Nursing* 4:4, 24-27.

## ► Positioning in NICU

### *Side lying*

- A rolled blanket or something similar behind the baby will provide boundaries and provide proprioceptive input to the baby.
- A rolled nappy or something similar between the legs will maintain the position and maintain neutral lower leg position.
- Hands should be brought together or to the face/mouth.

**(Midline orientation)**



Hallsworth M (1995). Positioning the pre-term Infant. *Pediatric Nursing* 7:1, 18-20.

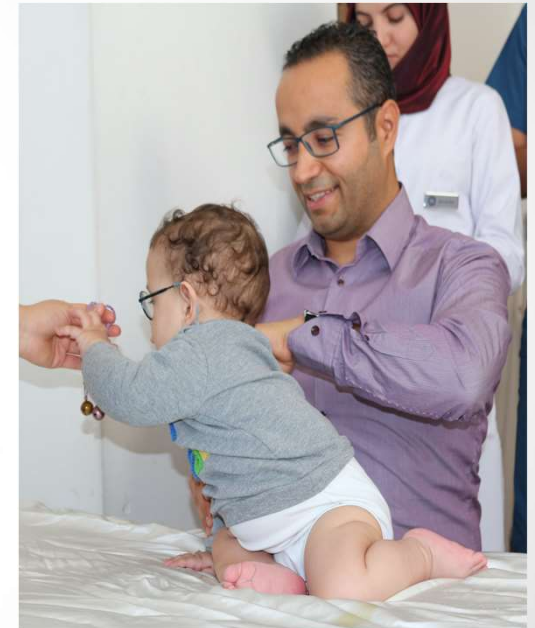
## ► Positioning in infants

- Without support, gravity tends to cause preterm babies shoulders and hips to flatten onto the bed, often called 'frog leg position' and 'W arm position'.
- This excessive abduction and rotation of the hip and shoulder joints can result in poor or delayed development and mobility problems in the future, including the ability to crawl, stand, walk and fine motor skills such as hand-mouth co-ordination.
- Babies usually feel more secure and are more physiologically stable if they have boundaries (nesting) placed around them, as they are used to an enclosed womb.



## ► Positioning in infants

- In addition they gain comfort from being able to grasp their hands together, suck their fingers or hold onto bedding.
- Often babies need assistance to find a position in which they are able to do these things.
- Positioning with a better alignment may also be preparatory for functional activities.





## ► Supine position

### Advantages:

- Infant can see the environment,
- Easy for visual fixation,
- Strengthens neck/abdominals,
- Position of rest/comfort,



## ► Supine position

- It is easy to observe the baby and provide nursing care.
- If the baby is maintained in a supine, midline position then gravitational pressure is more evenly distributed, leading to a more rounded head shape.
- This position is recommended to reduce the risk of sudden infant death syndrome.
- It is also possible to use modified supine positions.

## ► Supine position

### Challenges:

- Difficult to raise arms against gravity,
- Increases extensor tone,
- Minimum demand for head control,
- Encourages shallow breathing,
- Elicits Asymmetric Tonic Neck Reflex





## ► Supine position

- Increased energy expenditure and less effective ventilation often leading to higher oxygen requirements.
- Head flattening will occur if the head is always to one side.
- If not supported correctly limbs will 'flay' out and this can result in poor muscle tone.
- Gastric emptying is delayed.
- Infants have the least control of their movements, having to fight gravity for all movements.

## ► Prone position

### Advantages:

- Facilitates hand strength & trunk extension,
- Practices head control,
- Stretches hip/knee flexors,
- Leads to higher level motor skills (elbow propping, crawling, reaching)



## ► Prone position

- Particularly beneficial for babies with respiratory compromise as it improves oxygenation, ventilation (higher tidal volumes) and lung compliance.
- Believed to be due in part, from the mattress surface bracing the chest wall and compensating for weak muscles.
- Also the prone position inhibits other body movements that might disrupt breathing.



## ► Prone position

- **Gastro-oesophageal reflux is reduced and gastric emptying is optimised.** These may lead to an improved sleep state as the baby is more comfortable and consequently there is a decrease in energy expenditure.
- **Heat loss is minimised and metabolic rate is reduced,** babies tend to sleep more often and have lower levels of apnoea of prematurity.
- Hand to mouth behaviours is encouraged.
- It is also possible to use modified prone positions.

## ► Prone position (continued)

### Challenges:

- Trouble breathing if unable to turn head,
- Difficulty reaching, pushing up or using vision if unable to lift head or prop on arms,
- Gravity has the greatest effect as it pushes the limbs to the sides, shoulders become elevated (W-arm position).

## ► Prone position

- The head is always to one side so bilateral head flattening and facial moulding are encouraged.
- The hips are forced into abduction and rotation (frog leg position) as lower limb flexion and elevation under the pelvis cannot be well maintained.
- The baby's chest cannot be seen, so there is increased risk of delay in recognising upper airway obstruction.



## ► Prone position

- Not safe if umbilical lines are in situ as the insertion site cannot be closely monitored for oozing or bleeding or dislodgement of the lines.
- The baby cannot be positioned midline (head, spine and neck in alignment), which is necessary for developing physiological flexion.
- Without appropriate support the baby's head and neck will be over rotated, causing marked discomfort and muscle imbalance.



## ► Prone position

- Although there is discussions about putting the child into the prone position for sleeping; it is generally recommended to use prone position and its variations in day time to improve motor development. There are also some structured training for the children and the parents.
- “Tummy time” is one of the programs that you could see. Here is the link:

<https://pathways.org/print/tummy-time-brochure/>

de Luca F, Hinde A Effectiveness of the ‘Back-to-Sleep’ campaigns among healthcare professionals in the past 20 years: a systematic review BMJ Open 2016;6:e011435. doi: 10.1136/bmjopen-2016-011435

Wittemeier KDM, Mulder K. Time to revisit tummy time: A commentary on plagiocephaly and development. May 2017 Paediatrics & Child Health 22(3). DOI: 10.1093/pch/pxx046



## ► Side-lying position

### Advantages:

- Minimizes excessive tone,
- Easy to align arms, hands, head in midline with gravity elimination,
- Little or no ATNR,
- Promotes independent play & eye hand coordination
- Minimizes hip and shoulder abduction and rotation and allows the baby to lie in a flexed position, closest to the foetal position maintained in the womb



## ► Side-lying position

- Gravity tends to draw the arms and legs towards the midline.
- Beneficial for self comfort and fine motor skill development as the baby can easily hold its own hands and explore its face, body and surroundings.
- Babies often feel more secure and able to self-regulate, meaning they are most likely to reach an awake-alert state and able to interact & bond with their parent/carer.



## ► Side-lying position

- Right lateral position increases gastric emptying, as the stomach empties to the right and is aided by gravity.
- Left lateral position reduces gastric reflux, because the oesophagus attaches to the top of the stomach at an angle. Gravity will mean the stomach contents have to flow upwards, making reflux more difficult.
- Modified side lying positions can be used.

## ► Side-lying position

### Challenges:

- May be difficult to maintain position without equipment,
- Requires careful head positioning to maintain cervical alignment,
- Head flattening is exacerbated as weight is always placed on the side of the face.
- If the baby is relaxed or unable to move independently their lower arm and leg could feel 'squeezed' and/or receive pressure injuries if left in the same position for a prolonged period.

## ► Sitting position

### Advantages:

- Improve head/trunk control,
- Improve upper body balance,
- Expansive perspective of environment,
- Hands are free
- Better base of support
- Better visual field
- Opportunity for midline play & advanced eye-hand coordination,
- Appropriate active/functional activities (to improve postural control) should be checked according to the child needs





## ► Sitting position

### Challenges:

- Use **abnormal postures** to compensate for poor trunk control (if the child is not ready for sitting),
- Compromised circulation in weight-bearing body parts if unable to weight shift,
- May **cause increased contracture** in hip/knee flexion



## ► May use some supports for sitting

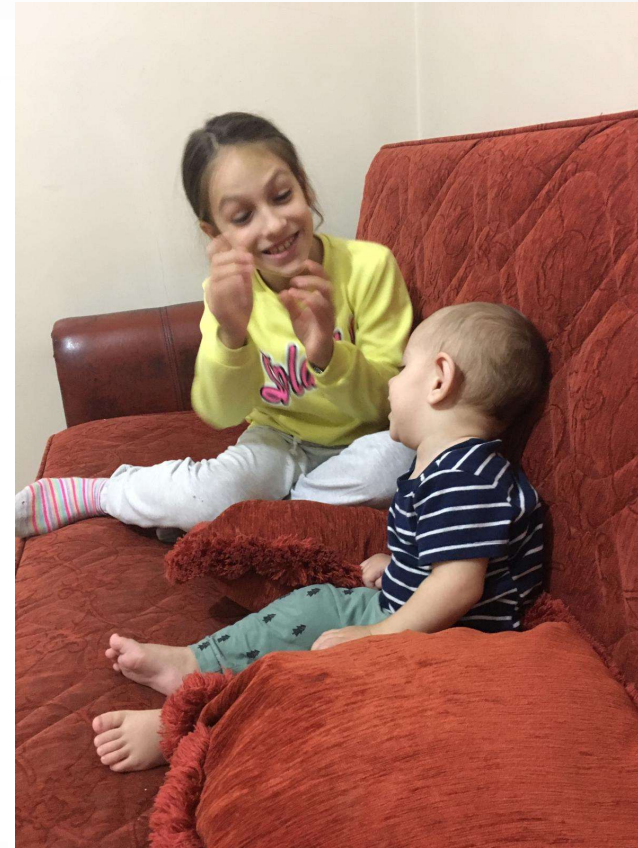


- Having difficulty playing with the toy
- Better sitting, playing, manipulating with a little children's stool

- Pelvis and lower trunk should be organised in the base of support. The collar may also help to be more vertical in the daily living activities



## ► May use some supports for sitting



- For a better interaction with the environment

## ► Standing position

### Advantages:

- Full weight bearing for musculoskeletal improvement,
- Optimum range of motion,
- Better circulation,
- Upright view of environment,
- Activates balance receptors in soles of feet,
- Facilitates controlled use of neck/facial muscles for eating/speaking



## ► Standing position

### Challenges:

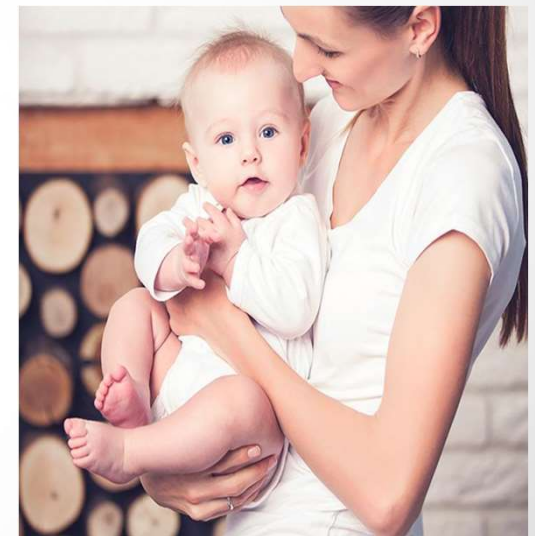
- May get fatigue quickly,
- Better postural alignment should be considered,
- Sometimes assistive equipments are needed,
- Modified standing positions should be considered,
- Appropriate active/functional activities (to improve postural control) should be checked according to the child needs.





## ► Carrying

- To pick up or lay down the baby use the side lying position (alternate sides).
- Picking up over the side is better for the cervical spine and upper trunk and promotes the righting, equilibrium and sense and initiates grasping and turning.
- Baby can be carried either in the lateral position or vertical position. In vertical position, holding the baby from the lower parts of the body will promote the trunk control.



## ► Carrying

- Carrying the baby in the lateral position either turned towards you (for pacification, left picture) or looking into a room (for stimulation, middle picture).
- He/she can lay on your arm either on its stomach (like an airplane, right picture) or on its back.



## ▶ Carrying for different purposes



**Actively bringing head toward vertical midline with caregiver's support flexion**



**Providing prone position and upper extremity flexion**



## ► Carrying for different purposes



For more information to the lower extremities/hip and activating upper trunk



## ► Unite 2: Arrangement and Enrichment of the Environment for Creating Opportunities for Babies in Their Natural Context

The aim of this module is to present about the arrangement and enrichment of the environment for creating opportunities for babies in their natural context as NICU, nursery, outpatient clinics and school



## ► Unite 2: Arrangement and Enrichment of the Environment for Creating Opportunities for Babies in Their Natural Context

- Environment and development
- Natural environment
- Home environment
- Different environments for infant
  - NICU environment
  - Nursery environment
  - Outpatient clinics environment
  - School environment
- Environmental Enrichment
- Materials and equipments used for environmental enrichment

## ► Environment and development

- The characteristics of the task and the specific environmental context are as important as the contributions from the nervous system and the body systems.
- It should be fit with the child's and parent's needs.
- The environment, including the people in it, is a powerful incentive and disincentive for movement in individuals with and without neuropathology.
- For example, infants who sleep in the supine position, as recommended by the American Academy of Pediatrics task force on SIDS, were less likely to have rolled over at 4 months of age and had lower developmental scores at 6 months of age than infants who slept in prone.\*

Jantz, J. W., Blosser, C. D., & Fruechting, L. A. (1997). A motor milestone change noted with a change in sleep position. *Archives of pediatrics & adolescent medicine*, 151(6), 565-568.

## ► Environment and development

- This does not mean, however; that therapists and parents should oppose the 'Back to Sleep' movement, because the differences in developmental scores at 6 months were undetectable at 18 months of age.
- Studies of the relationship of the home environment and infant motor development found that more supportive and stimulating home environments correlate with higher infant motor development scores.

Howle, J. M. (2002). *Neuro-developmental treatment approach: Theoretical foundations and principles of clinical practice*. NeuroDevelopmental Treatment.



## ► Natural environment

- During the early 1990s, state early intervention agencies interpreted “natural environment” as the everyday places and times “the child lives, learns, and plays” and the everyday activities and family routines in which a child participates.

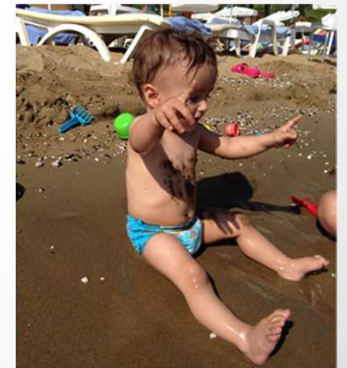


Nwokah, Eva & Hsu, Hui-Chin & Gulker, Hope. (2013). The Use of Play Materials in Early Intervention The Dilemma of Poverty s. 5. 187-218.



## ► Natural environment

- Therapists and intervention professionals have developed numerous models and approaches to integrate a child's individual goals and objectives into routine activities. Prior to changes in early-intervention laws, parents and care givers brought their children to a center, school, or clinic.
- Under the traditional child-centered approach, the professionals (using the play materials at the site) “treated” the child while parents sometimes lingered in a waiting room until the therapist finished.





## ► Natural environment

- In the 1990s, a family-centered approach emerged, which refined the interpretation of natural environments.
- This new, participation-based approach called for a parent or care giver to assert the family's priorities, values, and routine activities and for a therapist to devise strategies for a child to learn the family's preferences by using natural materials and toys and/or natural materials available at home.

Nwokah, Eva & Hsu, Hui-Chin & Gulker, Hope. (2013). The Use of Play Materials in Early Intervention The Dilemma of Poverty s. 5. 187-218.



## ► Natural environment

- Parents and therapists, in this new approach, work together as a team, and all regard the parents as the experts on their own children.
- These family-participant approaches emphasize using materials already present in a child's environment.

Nwokah, Eva & Hsu, Hui-Chin & Gulker, Hope. (2013). The Use of Play Materials in Early Intervention The Dilemma of Poverty s. 5. 187-218.



## ► Home

- Of the various factors that constitute the environment, the home is a primary medium for motor learning and development. The quality of family environment seems to be directly associated with the motor performance of the family members.
- A longitudinal study in Germany also showed the positive influence of home environment on preschool children's cognitive–motor ability when parental education was considered.

Hua, J., Duan, T., Gu, G., Wo, D., Zhu, Q., Liu, J. Q., ... & Meng, W. (2016). Effects of home and education environments on children's motor performance in China. *Developmental Medicine & Child Neurology*, 58(8), 868-876.

Biedinger N. The influence of education and home environment on the cognitive outcomes of preschool children in Germany. *Child Dev Res* 2011; **2011**: e1–10.



## ► Home

- The possession of stimulating objects within the home, such as toys and other play materials, is a critical indicator of the quality of home environment.
- Toys/equipment were observed to have a positive association with motor skill proficiency when adjusted for children's age.



Haydari A, Askari P, Nezhad MZ. Relationship between affordances in the home environment and motor development in children age 18–42 months. *J Soc Sci* 2009; **5**: 319–28.



## ► Home

- Physical and social aspects of the home environment are important factors influencing infant development.
- From an evidence-based perspective, a strong relationship between the home environment and intellectual development has long been established.
- From a theoretical perspective, an existing relationship between the home environment and infant motor development supports the dynamic systems framework.





## ► Different environments for infant and child

- Infants and children are not always present in their natural environment. Some different environments for infants and children are listed below:

- NICU
- Nursery
- Outpatient clinics
- Preschool



## ► NICU

- Although the NICU is necessary to support vital functions, reduced spontaneous movements and excessive sensory stimuli exposure in the NICU may cause adverse consequences in the normal sensory and motor development of the infant.



Celik, H. I., Elbasan, B., Gucuyener, K., Kayihan, H., & Huri, M. (2018). Investigation of the relationship between sensory processing and motor development in preterm infants. *American Journal of Occupational Therapy*, 72(1), 7201195020p1-7201195020p7.

## ► NICU

- Infants staying in the NICU long term are deprived of a natural sensory environment and must cope with excessive sensory stimuli, painful invasive procedures, and life-supporting medical equipment.
- Incomplete sensory development due to preterm birth and NICU-related excessive sensory stimuli affect central nervous system (CNS) organization and may cause alterations in sensory processing functions.



Celik, H. I., Elbasan, B., Gucuyener, K., Kayihan, H., & Huri, M. (2018). Investigation of the relationship between sensory processing and motor development in preterm infants. *American Journal of Occupational Therapy*, 72(1), 7201195020p1-7201195020p7.

## ► NICU

- The sensory environments of the NICU and uterus are substantially different.
- Infants in the NICU are exposed to many stimuli, a situation that would not occur in the uterus. Because the soft tissues around the uterus absorb sounds and light, they protect the fetus from light and high-frequency and -pitched sounds.
- Exposure to the intense, unusual, and timely inappropriate stimuli in the NICU may lead to significant changes in the normal sensory development pattern.

Celik, H. I., Elbasan, B., Gucuyener, K., Kayihan, H., & Huri, M. (2018). Investigation of the relationship between sensory processing and motor development in preterm infants. *American Journal of Occupational Therapy*, 72(1), 7201195020p1-7201195020p7.





## NICU

- The more developed tactile and vestibular systems of the preterm infants in the NICU receive less stimulation, but the comparatively less developed auditory and visual systems receive much more stimulation. This condition is not appropriate for the organization of the CNS and maturational level of the infant.
- This contradiction between the sensory needs of the infant and the sensory environment provided by the NICU may lead to an excessive sensory load, stress, and changes in neurosensory development.

Celik, H. I., Elbasan, B., Gucuyener, K., Kayihan, H., & Huri, M. (2018). Investigation of the relationship between sensory processing and motor development in preterm infants. *American Journal of Occupational Therapy*, 72(1), 7201195020p1-7201195020p7.



## ► Outpatient clinics

- In the hospital, the children experience health service routines at the same time as their spontaneous development process.
- Therefore, health professionals should make efforts to avoid this experience from being traumatic or a possible cause of interruptions in this process, as well as to humanize care delivery.



Pedro, I. C. D. S., Nascimento, L. C., Poleti, L. C., Lima, R. A. G. D., Mello, D. F. D., & Luiz, F. M. R. (2007). Playing in the waiting room of an infant outpatient clinic from the perspective of children and their companions. *Revista latino-americana de enfermagem*, 15(2), 290-297.

## ► Outpatient clinics

- The goals of treatment should not be restricted to saving lives and curing diseases, but also to preventing sequelae and, in parallel, to stimulating neuropsychomotor and cognitive development, in a way that is adequate to health restoration and promotion in a family-centered way in a broader perspective. (Go to module 4)
- Thus, creative strategies (eg. toys) should be used to minimize the effects of hospitalization and other outpatient care, as well as to help the child to overcome adversities.

Pedro, I. C. D. S., Nascimento, L. C., Poleti, L. C., Lima, R. A. G. D., Mello, D. F. D., & Luiz, F. M. R. (2007). Playing in the waiting room of an infant outpatient clinic from the perspective of children and their companions. *Revista latino-americana de enfermagem*, 15(2), 290-297.

## ► Nursery

- Nursery helps youngsters develop social and everyday skills, while staying at home can lead to poorer speech and movement.
- Young children are better off going to nursery than staying at home with a parent.



<https://www.ucl.ac.uk/ioe/research-projects/2019/mar/effective-pre-school-primary-and-secondary-education-project-eppse>

## ► Nursery

- A recent report suggests going to nursery, which makes the children's experience richer and broader, is more beneficial for helping youngsters develop social and everyday skills, while by contrast staying at home can lead to poorer speech and movement development.
- The study, by researchers at the London school of Economics and Oxford University, found children aged between two and three tended to be more stimulated at nursery due to the interaction with new children and adults, which helped their development.



## Preschool

- The influence of the preschool environment on children's motor development merits examination because most children spend many hours a day in preschool.
- It is crucial to empower the families/professionals in preschool environment.
- To explore its influences, Waelvelde et al. compared the motor development of preschool children from the Flanders region in Belgium with those in the USA.
  - The results indicated that Flemish children who started attending school at the age of 2 years 6 months, and who participated in a more formal curriculum, performed significantly better in the Movement Assessment Battery for Children than the standardized sample (attending preschool classes at the age of 5y).

Waelvelde H, Peersman W, Lenoir M, et al. The movement assessment battery for children: similarities and differences between 4- and 5-year-old children from Flanders and the United States. *Pediatr Phys Ther* 2008; 20: 30–38.





## ► Preschool

- The level of childhood physical activity was also affected by the environment of preschool they attended when the children's age, sex, or other environmental conditions were considered.
- Recently, an intervention study reported that school environment affected children's physical level when adjusting for sex, age, and body mass index centiles.\* Children attending childcare centres have also been shown to have less developed fine motor skills than those in private schools.
- The type of preschool layout (e.g. adequate open space for sports and free play) also has an influence on children's gross motor development.
- Evaluation in the preschool context should be done and collaboration should be done by the professionals.

Henderson KE, Grode GM, O'Connell ML, Schwartz MB. Environmental factors associated with physical activity in childcare centers. *Int J Behav Nutr Phys Act* 2015; 12: 43.

de Barros KMFT, Fragoso AGC, Oliveira ALB, et al. Do environmental influences alter motor abilities acquisition? A comparison among children from day-care centers and private schools. *Arq Neuropsiquiatr* 2003; 61: 170–75.

Giagazoglou P, Karagianni O, Sidiropoulou M, et al. Effects of the characteristics of two different preschooltype setting on children's gross motor development. *Eur Psychomot J* 2008; 1: 54–60.

## ► Environmental enrichment

- Enrichment of the environment has long been proposed as a treatment or strategy for increasing cognitive ability and well-being, namely in rodents and in children in educational contexts.
- “Enrichment” generally refers to increases in the variety and/or amount of multisensory stimulation, with the goal being to elicit exploratory behavior.
- Enriched environments have been lauded for reducing reactivity to stress and anxiety, increasing cognitive function, and enhancing learning and memory mechanisms.

Front. Psychol., 06 March 2019 | <https://doi.org/10.3389/fpsyg.2019.00466>. Enriched Environments as a Potential Treatment for Developmental Disorders: A Critical Assessment, Natalie J. Ball, Eduardo Mercado III, Itzel Orduna  
Arai JA, Feig LA. Long-lasting and transgenerational effects of an environmental enrichment on memory formation. Brain Res Bull. 2011 Apr 25;85(1-2):30-5. doi: 10.1016/j.brainresbull.2010.11.003. Epub 2010 Nov 13. Review. PubMed PMID: 21078373; PubMed Central PMCID: PMC3070197.

Baroncelli L, Braschi C, Spolidoro M, Begenisic T, Sale A, Maffei L. Nurturing brain plasticity: impact of environmental enrichment. Cell Death Differ. 2010 Jul;17(7):1092-103. doi: 10.1038/cdd.2009.193. Epub 2009 Dec 18. Review. PubMed PMID: 20019745.

## ► Environmental enrichment

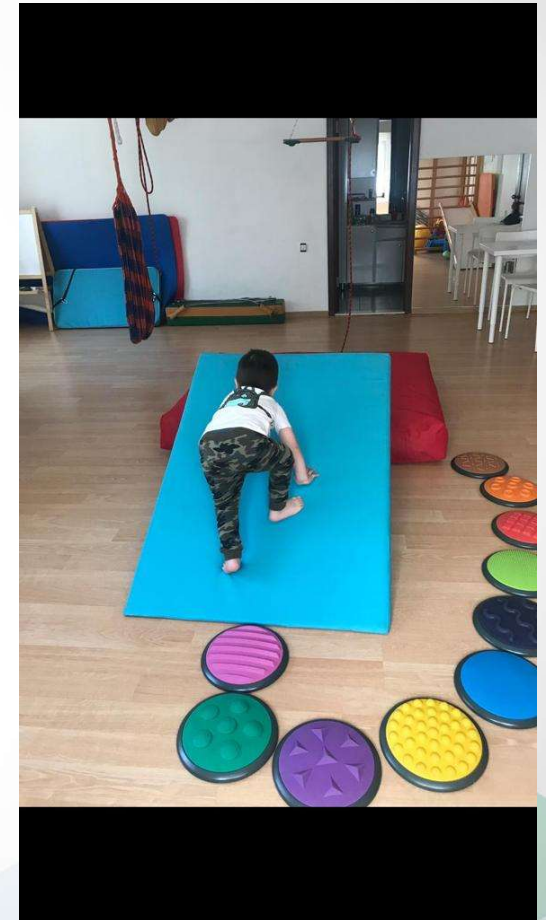
- Environmental enrichment as “a combination of complex inanimate and social stimulation”
- The use of enriched environments early in development is believed to be particularly effective during critical or sensitive periods, when brain plasticity is especially influenced by experience.
- In the context of neurodevelopmental disorders (NDDs), it is believed that environmental enrichment can compensate for deprivation of sensory/social/motor inputs caused by either an under-stimulating environment and/or by dysfunctional sensory systems.
- Enriched environments may also accelerate delayed developmental trajectories, thereby helping children to achieve age-typical social skills. In the case of compensatory mechanisms, enriched environments are thought to provide increased quantity and variety of inputs that augment neurobehavioral functioning. Enriched environments are also believed to encourage brain growth more generally.

Woo CC, Leon M. Environmental enrichment as an effective treatment for autism: a randomized controlled trial. *Behav Neurosci*. 2013 Aug;127(4):487-97. doi: 10.1037/a0033010. Epub 2013 May 20. PubMed PMID: 23688137.

Halperin JM, Healey DM. The influences of environmental enrichment, cognitive enhancement, and physical exercise on brain development: can we alter the developmental trajectory of ADHD? *Neurosci Biobehav Rev*. 2011 Jan;35(3):621-34. doi: 10.1016/j.neubiorev.2010.07.006. Epub 2010 Aug 5. Review. PubMed PMID: 20691725; PubMed Central PMCID: PMC3008505.

## ► Environmental enrichment

- For children at risk for NDDs, such as preterm infants, it has been proposed that environmental enrichment (relative to standard conditions in hospitals) should begin as early as possible, potentially while children are still in the Neonatal Intensive Care Unit.
- Some researchers suggest that there are early time windows for susceptibility of impaired synaptic phenotypes in NDDs, and that knowledge about these periods can be useful in early therapeutic treatment



## ► Enviromental Enrichment

- The daily lives of infants constantly expose them to a variety of stable and changing biomechanical, environmental, and task constraints.
- These constraints shape activity-dependent plastic changes in the infants' brain as well as advance the complexity of future behaviors.
- Environments that induce positive brain and behavioral changes are often called 'enriched environments'.





## ► Environmental Enrichment

- Environmental enrichment (EE) has been proven to enhance neuroplasticity and promote memory and motor function in animal studies but the effect in humans is less understood.
- In animal studies, an EE is defined as one that facilitates enhanced cognitive, motor and sensory stimulation. Although there is no agreed parameters for enrichment, these animal housing conditions typically include high levels of complexity and variability with arrangement of toys, platforms and tunnels being changed every few days to promote motor learning and memory.
- The motor opportunities afforded by EE are a critical success factor.

Nithianantharajah J, Hannan A: Enriched environments, experience dependent plasticity and disorders of the nervous system. *Nat Rev Neurosci* 2006, 7:697–709.

Morgan, C., Novak, I., Dale, R. C., Guzzetta, A., & Badawi, N. (2014). GAME (Goals-Activity-Motor Enrichment): protocol of a single blind randomised controlled trial of motor training, parent education and environmental enrichment for infants at high risk of cerebral palsy. *BMC neurology*, 14(1), 203.

## ► Environmental Enrichment

- Translating these ideas into the human context is complex. Much more is known about the detrimental impact of deprivation (under-enrichment) on child development than is known about what constitutes enrichment for infants raised in “expected environments”.
- Thus a continuum of enrichment is implied, but has not been well explained in terms of the type or amount of enrichment required for children who are not typically developing.

Fox S, Levitt P, Nelson C: How the timing and quality of early experiences influence the development of brain architecture. *Child Dev* 2010, 81(1):28–40.

Morgan, C., Novak, I., Dale, R. C., Guzzetta, A., & Badawi, N. (2014). GAME (Goals-Activity-Motor Enrichment): protocol of a single blind randomised controlled trial of motor training, parent education and environmental enrichment for infants at high risk of cerebral palsy. *BMC neurology*, 14(1), 203.



## ► Enviromental Enrichment

- One recent systematic review has demonstrated a small positive effect on motor outcomes for infants at high risk of CP when the utilised interventions are based on principles of environmental enrichment.
- The enhanced plasticity mechanisms present in the infant brain allow it to be more strongly influenced by the environment than adult brains, so furthering our understanding of what constitutes enrichment for brain injured babies is important.



Morgan C, Novak I, Badawi N: Enriched Environments and motor outcomes in cerebral palsy: systematic review and meta-analysis. Pediatrics 2013, 132(3):e735–e746.

Vaccarino F, Ment L: Injury and repair in the developing brain. Arch Dis Child Fetal Neonatal Ed 2004, 89:F190–F192.

## ► Enviromental Enrichment

- EE was formally defined as the one that involves “ a combination of complex inanimate and social stimulation”.
- The housing setup of the EE does not include specific parameters or static features.
- EEs include high levels of complexity and variability.
- For example, EEs contain platforms, tunnels and toys, which are typically changed every few days to introduce new challenges, require active memory, and promote learning.





## ► Materials and equipments used for environmental enrichment

- Toys
- Balls
- Bolsters
- Stairs
- Tunnels
- Wall climbing
- Swings
- and.....





## ► Unite 3: The Use of Toys/Therapeutic Equipment in EI

- The aim of this module is to present the usage of toys and its characteristics or therapeutic equipment in early intervention

## ► Unite 3: The Use of Toys/Therapeutic Equipment in EI

- Play
  - What is play?
  - Stages of play
  - Development of play
- Play in Early Intervention
  - Key points of play in early intervention
  - Infants and play
- Neural plasticity and play
- Establishing the play environment
  - Challenge
  - Amount of toys
  - Duration of play
  - Environment and affordance
  - Some toys and their contribution to development
- Home setting in family centered early intervention

## ► Play

- Play is the highest form of research.” — Albert Einstein



## What is Play?

- If we talk about childhood specially about early childhood, play is one of our most basic and important issues.
- Play is often talked about as if it was a relief from serious learning. But for children play is serious learning. Play is really the work of childhood (Fred Rogers).





## ► What is Play?

- Play and learning are dovetailed together for children, especially young children.
- Play is essential to development because it contributes to the cognitive, physical, social, and emotional well-being of children and youth. Play also offers an ideal opportunity for parents to engage fully with their children.

Children's categorization of play and learning based on social context, Justine Howard, [Vickii Jenvey](#) & Carly Hill, Pages 379-393 | Received 12 Dec 2004, Published online: 25 Jan 2007

Russ, S. W., & Schafer, E. D. (2006). Affect in Fantasy Play, Emotion in Memories, and Divergent Thinking. *Creativity Research Journal*, 18(3), 347-354.

Pediatrics January 2007, VOLUME 119 / ISSUE 1 FROM THE AMERICAN ACADEMY OF PEDIATRICS The Importance Of Play In Promoting Healthy Child Development And Maintaining Strong Parent-child Bonds Kenneth R. Ginsburg And The Committee On Communications, And The Committee On Psychosocial Aspects Of Child And Family Health

## ► What is Play?

Play is:

- A complex set of behaviors characterized by fun and spontaneity
- Play can be sensory, neuromuscular, cognitive & any combination of the three
- Play involves repetition of experience, exploration, experimentation, and imitation of one's surroundings

## ► Stages of Play

- According to sociologist Mildred Parten Newhall, there are six distinctive stages of play from infancy until preschool:
  - Unoccupied play
  - Solitary play
  - Onlooker play
  - Parallel play
  - Associative play
  - Cooperative play
- Each of the stages is very important for development and learning.
- In Parten's theory, children start with more individualized play such as solitary and parallel, but as they get older they transition into more group play such as associative and cooperative.

## ► Stages of Play

- Unoccupied play
  - This stage of play is mostly seen in newborns and infants, between the ages of 0 and 2.
  - They move their body with no purpose and explore their own body and the environment.
  - This is an important setting stage for future play exploration and development.
  - Just let them to discover the feeling of movement, their body, explore the objects taking into mouth, banging, squeezing etc.



## ► Stages of Play

- Unoccupied play
  - Each baby has its own ability to explore and move, and the movements that are self-initiated are very valuable for development.
  - Parents should be informed about the importance of these random movements and gestures.
  - Babies can and should make lots of trials and errors; they are very important at this period.
  - Their movements get more variable with these trials and errors.
  - As the baby move in more variable ways his/her brain gets more well developed.



## ► Stages of Play

- Solitary play
  - During this stage children will often play alone.
  - When child is playing she/he looks uninterested or unaware of what others around her/him are doing.
  - Babies and toddlers (birth to around two) are in this stage but all age groups can and should have some time for independent, solitary play.
  - Solitary play teaches children how to entertain themselves and be self-sufficient.
  - It is important to encourage them to play themselves at that ages.
  - Every baby/child should have some time for unstructured play.
  - By this way they have the opportunity to have ideas, think themselves, explore, create, learn about their own emotions and likes.

## ► Stages of Play

- Onlooker play
  - Child observes others playing but does not join the play at this stage.
  - Onlooker play typically occurs around ages two and a half to three and a half, but can take place at any age.
  - You can show to the child what you like to do, whether it's shaking a rattle, kicking a ball etc.
  - The parks are very good places to observe other kids how they are playing.

## ► Stages of Play

- Parallel play
  - Children play with the same toys *beside* each other but not *with* each other.
  - Parallel play is common in toddlers between the ages of 2 ½ and 3 ½ but can take place at any age.
  - Even though it seems like they are not interacting, they are paying attention to each other Parallel play is often a first step in forming strong social relationships outside of the family.
  - “My toy!” tantrum can be seen very often during this stage.

## ► Stages of Play

- Associative play
  - Children will begin to play together, but they do not organize their play toward a common goal.
  - This type of play typically begins around ages 3 or 4, extending into the pre-school age.
  - This is an important stage of play because it develops necessary skills such as cooperation, problems solving, and language development.
  - At these ages they will like to do things like construction, paintings etc.

## ► Stages of Play

- Cooperative play
  - When kids are finally ready to play together. This is when team sports or group performances become a lot more fun.
  - Cooperative play begins in the late preschool period, between the ages of 4 and 6.
  - Cooperative Play is often described as a more organized kind of play.
  - Promote a collaborative goal and work with the child as a team.
  - It can be anything purposeful for daily life.





## ► Development of Play

- How does play develop?

- Play progresses from social smiling to reciprocal serve-and-return interactions. Reciprocal games occur with both mothers and fathers and often begin in earnest with the emergence of social smiles at 6 weeks of age. Parents mimic their infant's "ooh" and "ah" in back-and-forth verbal games, which progress into conversations in which the parents utter pleasantries ("Oh, you had a good lunch!"), and the child responds by vocalizing back.
- Infants are entirely dependent on parents to regulate sleep–wake rhythms, feeding cycles, and many social interactions. Play facilitates the progression from dependence to independence and from parental regulation to self-regulation.



## ► Development of Play

- How does play develop?
  - It promotes a sense of agency in the child. This evolution begins in the first 3 months of life, when parents (both mothers and fathers) interact reciprocally with their infants by reading their nonverbal cues in a responsive, contingent manner.
  - Caregiver–infant interaction is the earliest form of play, known as attunement, but it is quickly followed by other activities that also involve the taking of turns. These serve-and-return behaviors promote self-regulation and impulse control in children and form a strong foundation for understanding their interaction with adults.

Michael Yogman, Andrew Garner, Jeffrey Hutchinson, Kathy Hirsh-Pasek, Roberta Michnick Golinkoff. From the American Academy of Pediatrics Clinical Report The Power of Play: A Pediatric Role in Enhancing Development in Young Children, [Pediatrics](#) September 2018, VOLUME 142 / ISSUE 3

## ► Development of Play

- According to Jean Piaget, in the first two years of life there is sensory motor stage. Piaget determined that play is described as functional play at that time.
- The term “sensorimotor” was used by Piaget, because he believed that infants were dependent on their senses and their physical abilities to understand their world.
- Because they can see, hear, taste, and smell from birth, they combine these senses with their emerging physical abilities to interact with objects by grasping, shaking, banging, and tasting them.
- Their growing perceptions are based on past experiences, cognitive awareness, and their current use of their senses.

## ► Development of Play

- In this period, children often repeat what they like to do. They can practice over and over the same thing without any purpose.
- As soon as the baby is born, she/he begins to explore his surroundings and body with his movements.
- As she/he grows up, he discovers how to reach out to toys, catch and play with her/his toes, shake the rattle, take the pacifier to his mouth, rolling, crawl and explore the house, cruises and stirring the drawer and so on.
- All the babies have fun while exploring their body and the environment.
- But the very important part of these; they make hundreds of trials and errors when they are doing all kinds of things.
- These trials and errors are very important for active learning and plasticity (Go to module 0).

## ► Play in early intervention

- Numerous studies emphasise the benefits of early intervention in the process of achieving developmental targets and goals for children with disabilities.
- Play has a central role in early intervention for children with disabilities, and it is used both for assessment and intervention.
- In their analysis of the use of play in early intervention, delineated two important benefits of play for children with disabilities: facilitation of the development of more advanced play skills and the provision of a natural playful context to make it easier important clinical activities, such as the assessment and the implementation of educational and rehabilitation activities with a wide variety of goals in different developmental areas.

Lifter K, Foster-Sanda S, Arzamarski C. Overview of Play: Its Uses and Importance in Early Intervention/Early Childhood Special Education. July 2011 Infants and young children 24(3):225–245 DOI: 10.1097/IYC.0b013e31821e995c

Stancheva-Popkostadinova, Vaska & Zorcec, Tatjana. (2016). 14 Play in Early Intervention for Children with Disabilities. 10.1515/9783110522143-016.



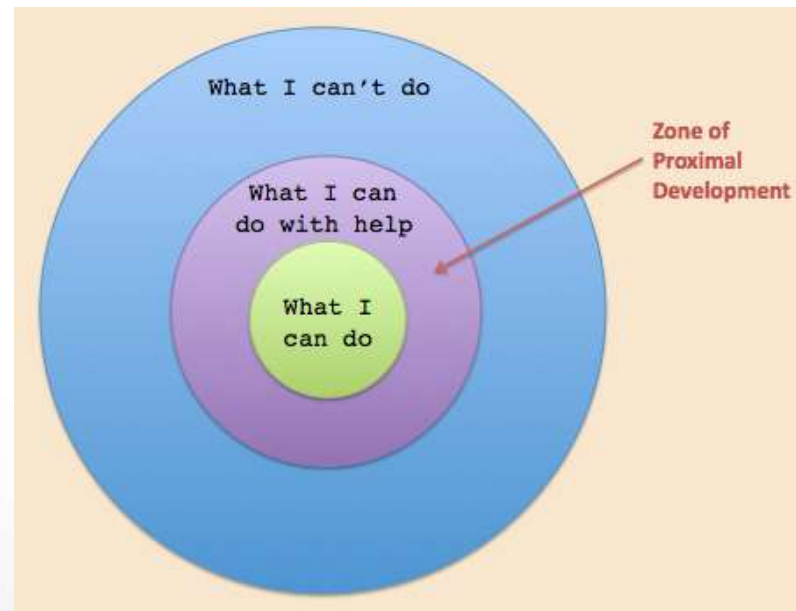
## ► Key points of play in early intervention

- Observe and follow the child. Let the child to make his/her own decisions. They engage more and be more active when it's their choice or desire to play. In active play they use their bodies more for motor planning and minds for problem solving.
- Choose activities that the child is intrinsically motivated. Every child has his/her own characteristics, interest and capacity. He/she uses all these features for exploring and discovering and these features lead the child for development. It is so important that it is her/his motivation to do the activity.



## ► Key points of play in early intervention

- Do not forget that; a child learns best when the task is not so easy and not so hard. Find the appropriate level for development. For further information you can read about *the zone of proximal development*. It is a concept developed by Soviet psychologist and social constructivist Lev Vygotsky (1896 - 1934).



## ► Key points of play in early intervention

- Be patient and give time to child. Babies/children who is need for EI needs more time than a typically developing peer. It takes time but when you do the activity for the child he/she does not have the opportunity for trials and errors.
- Toys/adapted toys should be related to the capacity of the child.
- Tell me and I'll forget; show me and I may remember; involve me and I'll understand."

Chinese Proverb

Four overlapping triangles in light blue, light green, and teal are positioned at the bottom right of the slide, pointing towards the right.

## ► Key points of play in early intervention

- Pleasurable. Play is fun!



## ► Key points of play in early intervention

- The child should really feel that he/she is in play and enjoy.



Eurlyaaid Video



## ► Key points of play in early intervention

- Give enough time both for structured and unstructured play for a response.
- Therapists and parents always have a aim for a baby/child who needs early intervention but baby/child should have some time for free play for exploring by themselves.

## ► Infants and play

- Play is an integral part of children's routines and activities and plays an important role in motor, cognitive, social-emotional and self-regulating development.
- Through play, babies and toddlers learn about objects and develop interactive skills.
- Early play is closely linked to the development of language and social skills and can take place in many other forms of learning.



Lifter, K., Foster-Sanda, S., Arzamarski, C., Briesch, J., & McClure, E. (2011). Overview of play: Its uses and importance in early intervention/early childhood special education. *Infants & Young Children*, 24(3), 225-245.

## ► Infants and play

- The purpose of the play should be well established in the play environment.
- Significant improvements in motor, cognitive, language and social functions can be achieved with the right play selection and creation of the right environment.

## ► Infants and play

- For example; when we consider a 3-month-old baby, the play environment should include colorful toys, toys with sounds, activity rugs, soft babies.
- With these toys, a baby who has come to the third month starts to show more interest in the environment.

## ► Neural Plasticity and Play

- Effects on neural plasticity
  - The brain is much more sensitive to experience in the first few years of life than in later years.
  - The plasticity of the brain underlies much of the learning that occurs during this period.
  - Early play is closely linked to the development of brain.



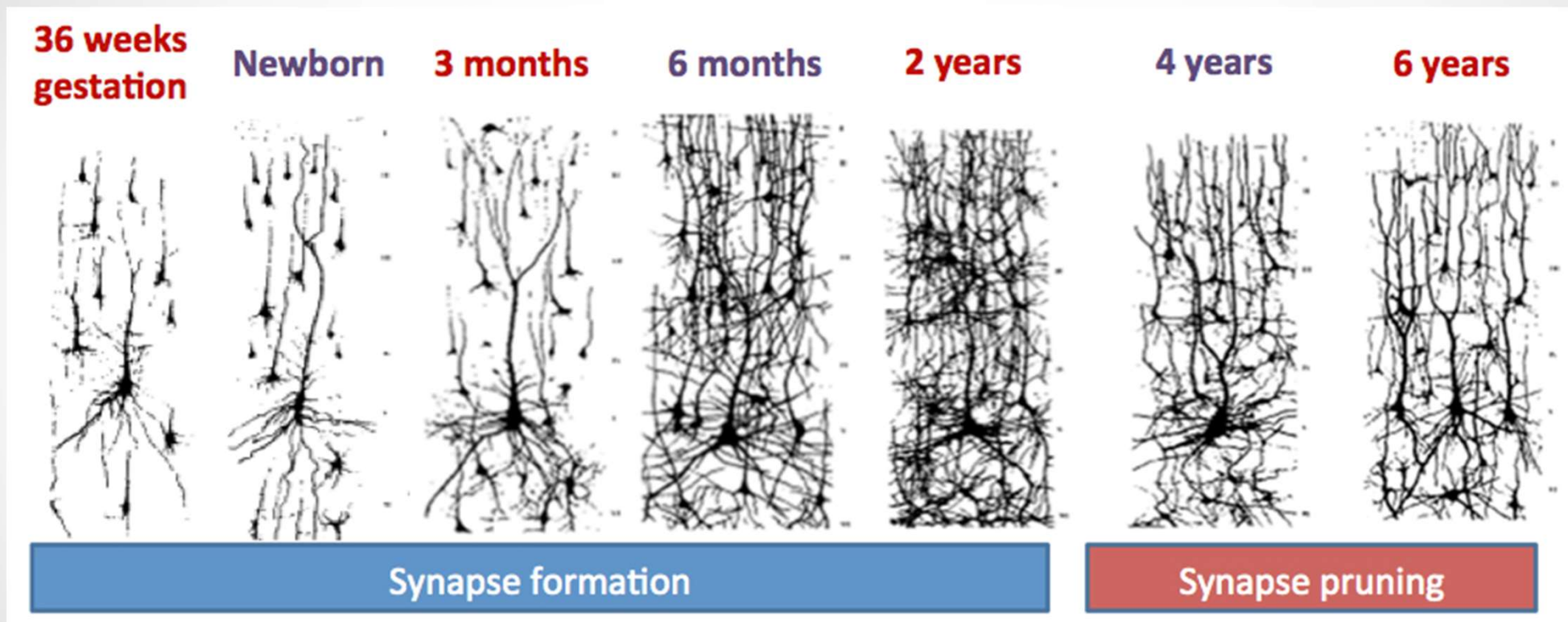


## ► Neural Plasticity and Play

- The visual cortex develops rapidly during first year and during the first months of life, the sensorimotor cortex becomes more activated.
- From birth to age one, play development follows a pattern that reflects the development of the brain areas that are most active.

Tierney, A. L., & Nelson III, C. A. (2009). Brain development and the role of experience in the early years. *Zero to three*, 30(2), 9.

## ► Synaptic development



Tierney, A. L., & Nelson III, C. A. (2009). Brain development and the role of experience in the early years. *Zero to three*, 30(2), 9.

<https://ib.bioninja.com.au/options/option-a-neurobiology-and/a1-neural-development/synaptic-formation.html>

8

needs a reference

carolynb; 15.04.2019

## ► Neural Plasticity and Play

- Much early play involves practice of the sensorimotor system.
- Infants observe interesting patterns and colors, explore textures and sounds, grasp objects and perform various actions.
- Different types of play have an impact on the development of the brain, especially the frontal and temporal areas of the brain.
- In the early period plays that have contributed to sensory-motor development such as opening and closing of the hands and peek-a-boo should be used.

Brown, F., & Webb, S. (2005). Children without play. *Journal of Education*, 35(1), 139-158.

## ► Neural Plasticity and Play

- The best toys for the newborn are their parents.
- The infants and parent interaction have important role in brain development.
- The infants learns to speak and the words with the parent talking to him/her.



## ► Establishing the play environment; how it should be?

- ✓ It is important to set up motor enriched play environments to promote child self-generated movements, exploration and task success.
- ✓ This includes careful toy selection “matched” to the desired motor task, plus physical set up of areas for practicing and repeating activities related to the identified goal areas, weightbearing, and reaching and grasping tasks.
- The whole home environment for motor learning have to taken into account.

## ► Establishing the play environment; how it should be?

### ► Challenge



- Considering the principles of motor learning, creating a challenge environment in a desired movement holds an important place (please go to unit 2 for detailed information).
- When a desired action is carried out, the infant is asked to perform the movement in this environment by changing the environment or making the conditions difficult.
- For example, in an infant whose weight bearing/shifting activity is performed on a hard floor, it is desired to perform the activity on the soft ground and the challenge environment is created.

## ► Establishing the play environment; how it should be?

### ► Amount of toys

- Fewer toys may allow for deeper, sophisticated play, because of the opportunity to become creative with each object in the environment.
- The environment in which many toys exist may cause confusion in infants.
- An abundance of toys present reduced quality of infant's play.



## ► Establishing the play environment; how it should be?

### ► Amount of toys

- Fewer toys at once may help toddlers to focus better and play more creatively.
- For this reason, an environment of intervention should be created with a few toys that the child is interested in.



Dauch, C., Imwalle, M., Ocasio, B., & Metz, A. E. (2018). The influence of the number of toys in the environment on toddlers' play. *Infant Behavior and Development*, 50, 78-87.

## ► Establishing the play environment; how it should be?

### ➤ Duration of play

- ✓ Infants, measure time by their interest level and not by the clock.
- ✓ Children's sense of satisfaction comes from being engaged in an imaginative play scheme where they explore the materials and experience the process.
- ✓ For this reason, it is possible to play in most of the time when they are active except for sleep and feeding times.



## ► Establishing the play environment; how it should be?

### ➤ Environment and affordance

- ✓ The environment must be of suitable width, light and temperature.
- ✓ Extremely hot or dark environments can cause the infants to become uncomfortable and prevent the desired activity.
- ✓ In addition, noisy environments can affect infants negatively, so the sound level of the environment should be well adjusted.
- ✓ Environmental enrichment should also be considered according to the child's needs

## ► Affordance

- Psychologist James Gibson coined “affordance” in 1977, referring to *all* action possibilities depending on users’ physical capabilities. So, a chair not only “affords” being “sat on,” but also “thrown,” “stood on,” etc.
- Don Norman’s 1988 book, *The Design of Everyday Things*, affordances became defined as *perceivable* action possibilities—i.e., only actions users *consider* possible. Thus, an object’s affordances depend on users’ physical capabilities and their goals and past experiences.

## ► Affordance

- Affordance is each of the various opportunities for perception, action and interaction that an object or place offers to any individual. It depends on a person's
  - Past experiences
  - Current developmental or maturational level
  - Sensory awareness of the opportunities
  - Immediate needs and motivation

## ► Affordance

- For example; a laundry basket refers to putting the laundry into an adult; but the same basket refers to an object for a one year old child to sit in, to be turned upside down and step on or pushed like a car.
- When designing the play space 'affordance' should be kept in mind in early intervention.
- An instrument was developed to assess the affordances in the home environment, "Affordances in the Home Environment for Motor Development Self-Report" ("AHEMD-SR") to early childhood practitioners.

## ► Some toys and their contribution to development

- Rattles, squeeze toys, teething toys, textured balls, and vinyl and board books, play mat, baby gym.
- With these kind of toys baby can reach, hold, manipulate, suck on, squeeze, shake, make noise. First steps of hand-eye coordination begin with such toys.





## ► Some toys and their contribution to development

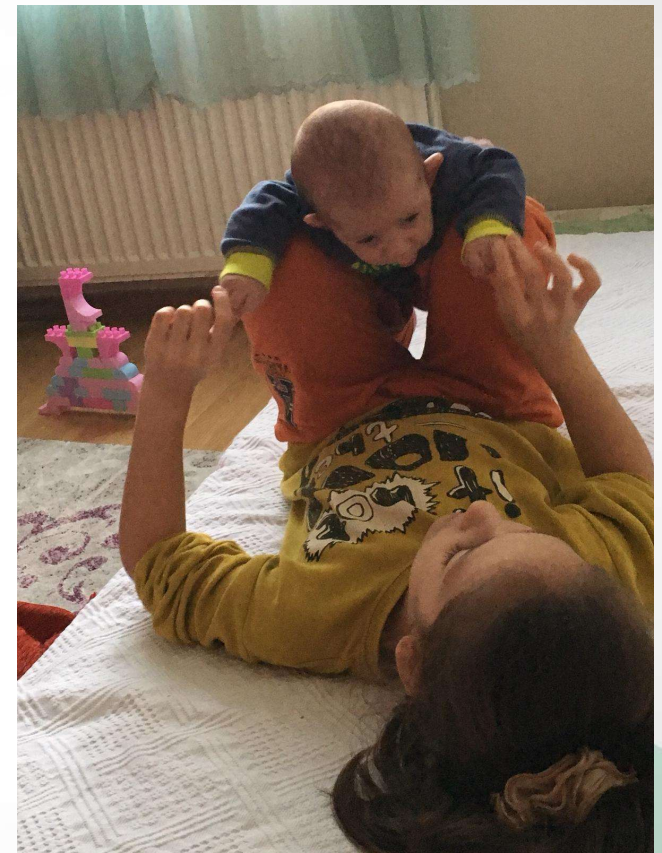
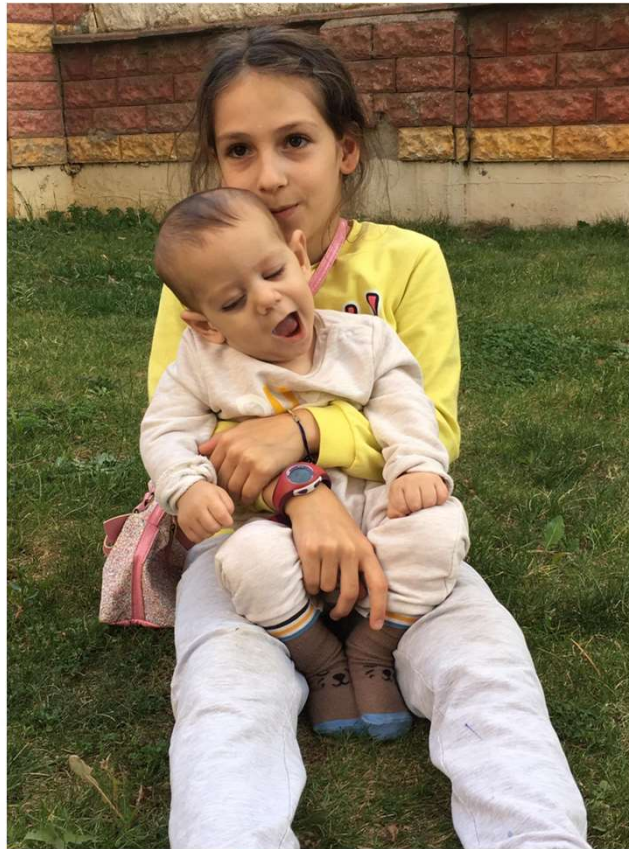
- Cause and effect toys. 'Cause and effect' is a very important concept for communication and cognition skills.
- Cause and effect is like a you do something and there is a result of your action.
- Toys which make noise or movement when an action is taken, bubbles, toys with rope-drawn and etc. are a few examples for this.



## ► Some toys and their contribution to development

- Interlocking blocks, nesting blocks and every toy that needed to use both hands improves bilateral hand coordination.
- They are also good for problem solving.
- Balls, ball pools, tunnels, push and pull toys, tricycles or three-wheeled scooters, plastic bowling sets, child-size basketball hoop and etc. encourages children to be active.

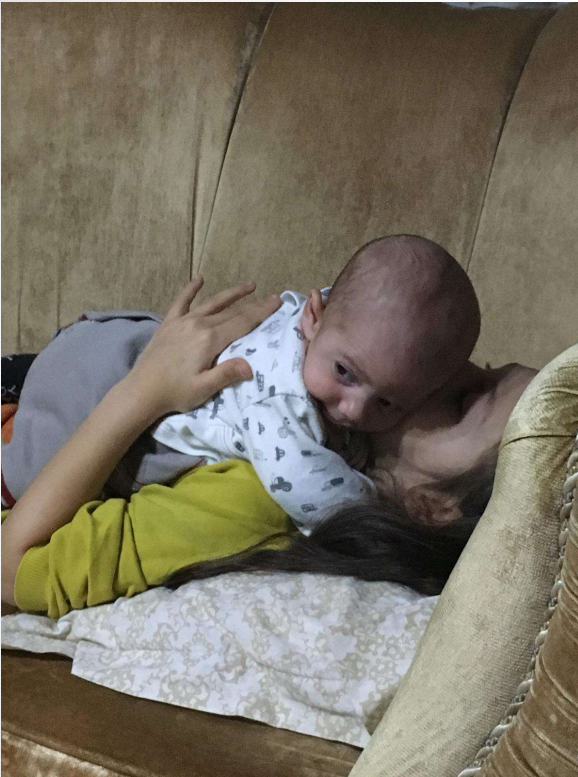
## ► Home setting in family centered early intervention



Siblings' bodies may be useful and joyful for handling and positioning.



## ► Home setting in family centered early intervention



Prone position



Helps to feel the feet



## ► Home setting in family centered early intervention



Mother's lap may be used for side sitting



Long pillows for supported sitting



## ► Home setting in family centered early intervention



Different positions giving opportunities for trials and errors for developing better sitting.



## ► Home setting in family centered early intervention



Supporting feet with table



Sitting in a swimming ring encourages lots of movements

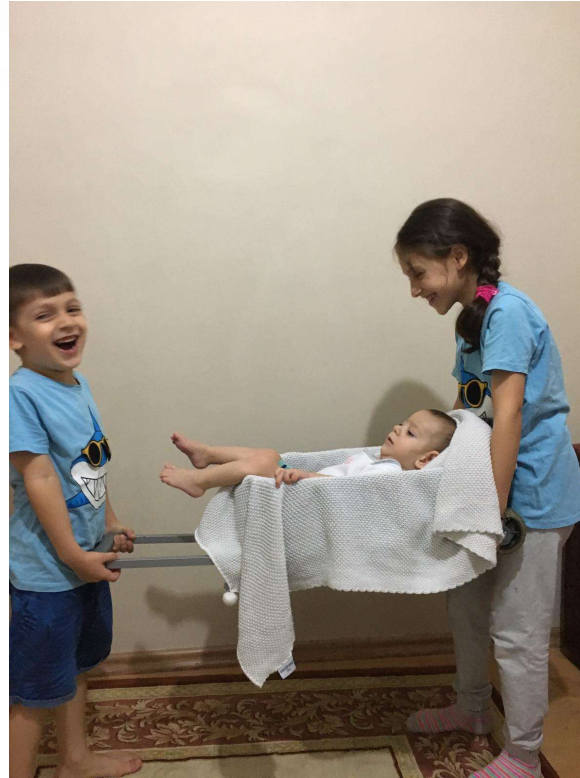
## ► Home setting in family centered early intervention



Better posture when supported with pillows



## ► Home setting in family centered early intervention



Using suitcase for midline positioning, movement, communication etc.

## ► Home setting in family centered early intervention



Putting the toy under the infant supports better position of the head and spine



## ► Home setting in family centered early intervention

Let them do it!



Surging for alternative way for sitting

## ► Unite 4: Early Intervention in Low Resources Areas



This module will present the basic principles of early intervention in low resources areas. It also gives an idea about the play and materials used for play in low resources area.





## ► Unite 4: Early Intervention in Low Resources Areas

- The effects of low socioeconomic status on early intervention
- Arrangements that can be done in areas with low resources
- Adjustment for play
- Home visits
- Sharing the ideas with the families
- Materials that can be used in low resource areas



## ► The effects of low socioeconomic status on early intervention

- According to the United States Census Bureau, 20 percent or over fifteen million children under the age of eighteen currently live in poverty.
- The census defines the poverty threshold as the minimal income necessary to pay for food, shelter, and clothing that meet the basic needs for healthy living.
- At least 20 percent to 30 percent of families below the poverty threshold do not have the minimal financial, material, or social resources to meet their children's needs.
- In addition to income poverty, there is also human poverty.

Rantala, A., Uotinen, S., & McWilliam, R. A. (2009). Providing early intervention within natural environments: A cross-cultural comparison. *Infants & Young Children*, 22(2), 119-131.

Dunst, C. J., Leet, H. E., & Trivette, C. M. (1988). Family resources, personal well-being, and early intervention. *The Journal of Special Education*, 22(1), 108-116.



## ► The effects of low socioeconomic status on early intervention

- Persons living in high-poverty areas are often geographically and socially isolated from mainstream society and may be exposed to crime, drug abuse, and substandard education.
- Income and human poverty place children at high risk for physical and mental health problems and make their continued living below the poverty line more likely.
- Children living in poverty areas confront widespread environmental inequities. Compared with their economically advantaged counterparts, they are exposed to more family turmoil, violence, separation from their families, instability, and chaotic households.

Rantala, A., Uotinen, S., & McWilliam, R. A. (2009). Providing early intervention within natural environments: A cross-cultural comparison. *Infants & Young Children*, 22(2), 119-131.

Dunst, C. J., Leet, H. E., & Trivette, C. M. (1988). Family resources, personal well-being, and early intervention. *The Journal of Special Education*, 22(1), 108-116.

## ► The effects of low socioeconomic status on early intervention

- Families living in poverty areas can use and adapt natural and manmade items in their living environment without the need for commercial toys.
- Household items could be used as playthings,
- Professionals (early intervention specialists) working with infants in impoverished homes find few if any toys available to their young children.
- This situation occurs in the homes of many recent refugee and immigrant families, of single-parent families (many with teen mothers), of children fostered by relatives, multiple families in one apartment with limited resources, families who cannot meet basic needs, and homeless families or those who move repeatedly

## ► Arrangements that can be done in areas with low resources

- The home visitors who provide early-intervention services to families and their children with developmental disabilities or delay in the developmental skills have to be creative.
- With the appropriate house arrangement that can be done under these environmental conditions, significant contributions can be made to the development of infants at risk.
- For example, for a family who will not be able to buy an activity carpet, this can be eliminated with a toy tied to a rope between two chairs.



## ► Arrangements that can be done in areas with low resources

- Similarly, for a family who will not be able to buy the first step car, this problem can be eliminated by reversing the coffee table or small table in the house.





## ► Arrangements that can be done in areas with low resources

- For families who cannot have a feeding chair, this problem can be solved with a board attached to the arms of the little chair in the house.



## ► Arrangements that can be done in areas with low resources

A laundry basket refers to putting the laundry into an adult; but the same basket refers to an object for a one year old child to sit in, to be turned upside down and step on or pushed like a car.

## ► Materials that can be used in low resource areas

- A carpet or a towel in the house can be used as a bolster.



## ► Materials that can be used in low resource areas

- A board attached to the arms of the little chair in the house can be used a feeding chair.





## ► Adjustment for play

- In all early-intervention disciplines, play becomes a major focus of professional services for children with developmental delay and special needs.
- Play serves as a process for learning, a process for assessing developmental skill sets, and a process for delivering intervention procedures to improve a child's developmental and learning abilities.
- In other words, early intervention may involve establishing developmentally appropriate play skills themselves as a goal and using play as a means of achieving other goals as when, for example, enticing a child to swipe at bubbles extends the range of motion in his arms or when coaxing a child to crawl toward a toy improves her mobility.

Campbell, P. H., & Sawyer, L. B. (2007). Supporting learning opportunities in natural settings through participation-based services. *Journal of Early Intervention*, 29(4), 287-305.

## ► Adjustment for play

- When organizing play in low socio-economic environment, make sure the family understands the play well.
- When adjusting play in poverty areas, play should be age appropriate for infants.
- The importance of the use of colored, audible and illuminated toys should be explained to the family.
- The importance of parents-child interaction should be emphasized, and the parents should be encouraged to face to face communication with the baby.



## ► Adjustment for play

- In the early infancy, games like peek a boo should be learned to the family, and later on, it is necessary to teach some fine motor skills such as putting hoops on top of each other.



## ► Adjustment for play

- Both fine and gross motor development also can be improved with balls of different colors and surfaces.
- The infant can easily perform activities such as turning, side-sitting by touching the ball and turning in the direction of the ball.





## ► Sharing the ideas with the families

- Communicating together involves a two-way sharing of information and helps to develop a common understanding, meaning it is easier for parents and professionals to support one another.
- Effective communication and sharing the ideas also helps families and intervention experts to build a trusting partnership and develop honest and respectful relationships.
- When families and professionals collaborate effectively, this allows early childhood staff to understand what is happening at home or how they would like their children's behaviour managed in early intervention.

Brorson, K. (2005). The culture of a home visit in early intervention. *Journal of early childhood research*, 3(1), 51-76.

Campbell, P. H., & Sawyer, L. B. (2007). Supporting learning opportunities in natural settings through participation-based services. *Journal of Early Intervention*, 29(4), 287-305.

## ▶ Sharing the ideas with the families

- When the professionals share ideas effectively, parents are able to understand what is happening in their child's development and how it can be developed.
- When families and professionals share information, everyone can be aware of children's strengths and challenges and can work together to support children's motor development, social and emotional wellbeing.

Brorson, K. (2005). The culture of a home visit in early intervention. *Journal of early childhood research*, 3(1), 51-76.

Campbell, P. H., & Sawyer, L. B. (2007). Supporting learning opportunities in natural settings through participation-based services. *Journal of Early Intervention*, 29(4), 287-305.

## ► Sharing the ideas with the families

- Enabling parents in simple motor task analysis and coached in appropriate strategies to enhance their child's development both at a specific goal level and in general early learning and development principles.
- Families can be trained to optimise the best use of their infants' awake time and the naturally occurring opportunities for learning.
- As new motor skills emerged parents can be coached in strategies to increase the challenge of the task; for example remove support or introduce a more complex toy.



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