

# **SNS COLLEGE OF PHYSIOTHERAPY COIMBATORE - 35**

**COURSE NAME: PHYSIOTHERAPY IN NEUROLOGICAL SCIENCES**

**SUBJECT CODE: 6288**

**TOPIC: DEVELOPMENTAL DELAY**

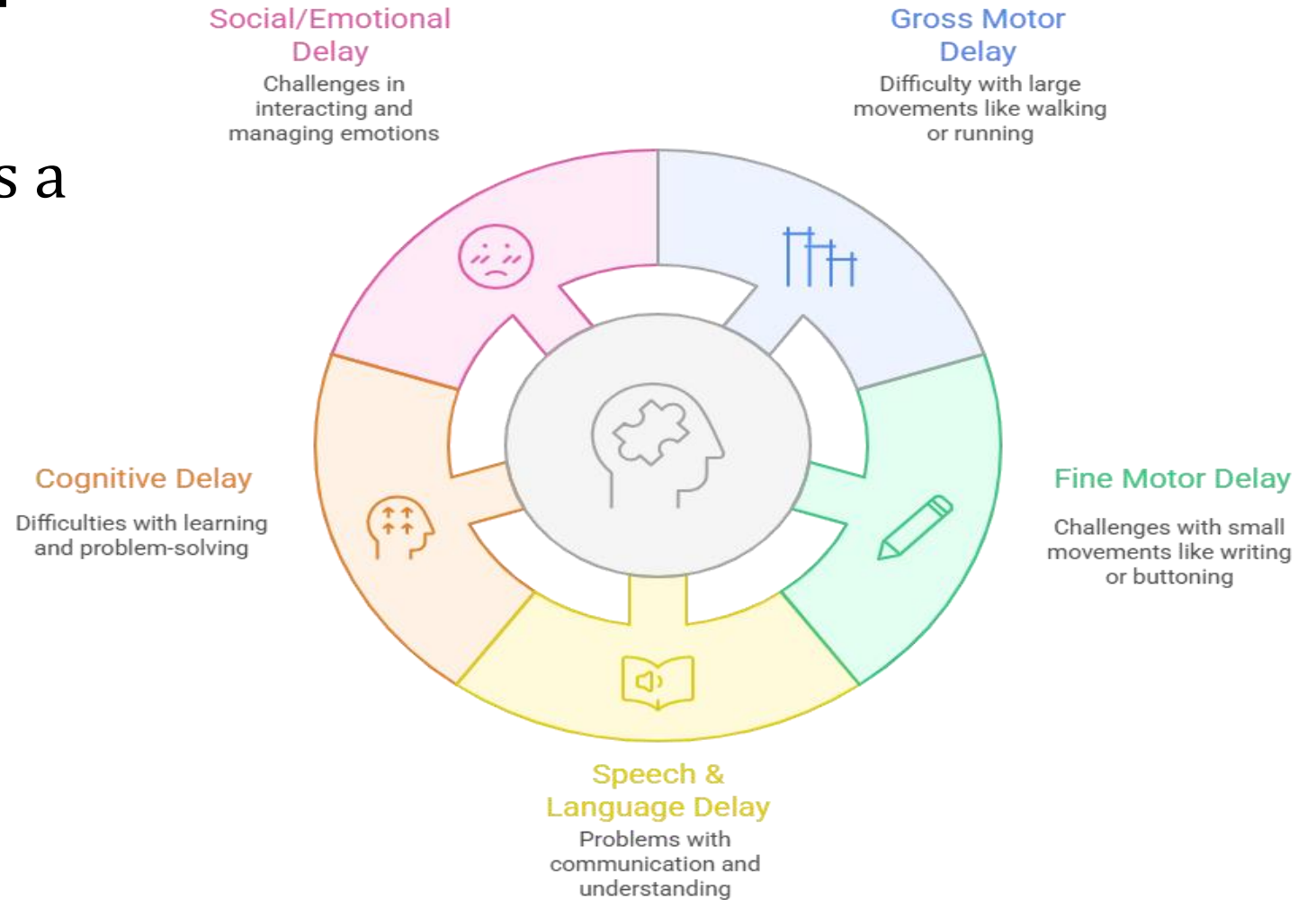
# DESIGN THINKING IN DEVELOPMENTAL DELAY

- **Empathize** Understand child's difficulties, parental concerns, family's psychosocial needs.
- **Define** Identify nature of developmental delay (motor, speech, cognitive, social, global).
- **Ideate** Brainstorm physiotherapy interventions, interdisciplinary approaches, assistive technologies.
- **Prototype** Design individualized therapy plan (play-based therapy, positioning, stimulation).
- **Test** Implement, monitor progress, re-assess milestones, modify plan.

# INTRODUCTION

- Developmental delay is a failure to achieve age-appropriate skills compared to peers.

## Types of Developmental Delay



Made with Napkin

## DEFINITION

Developmental delay is a condition where a child does not reach developmental milestones within expected timeframes.

Global developmental delay (GDD): Delay in  $\geq 2$  domains.

Difficulty in speech  
and language



Difficulty in problem-solving  
/logical reasoning



Trouble with learning  
in school



Unable to get dressed  
on his own



Difficulty in communicating  
/socialising with others



Poor vision /  
perception skill



Limited motor skills



Unable to walk, crawl,  
sit up or roll

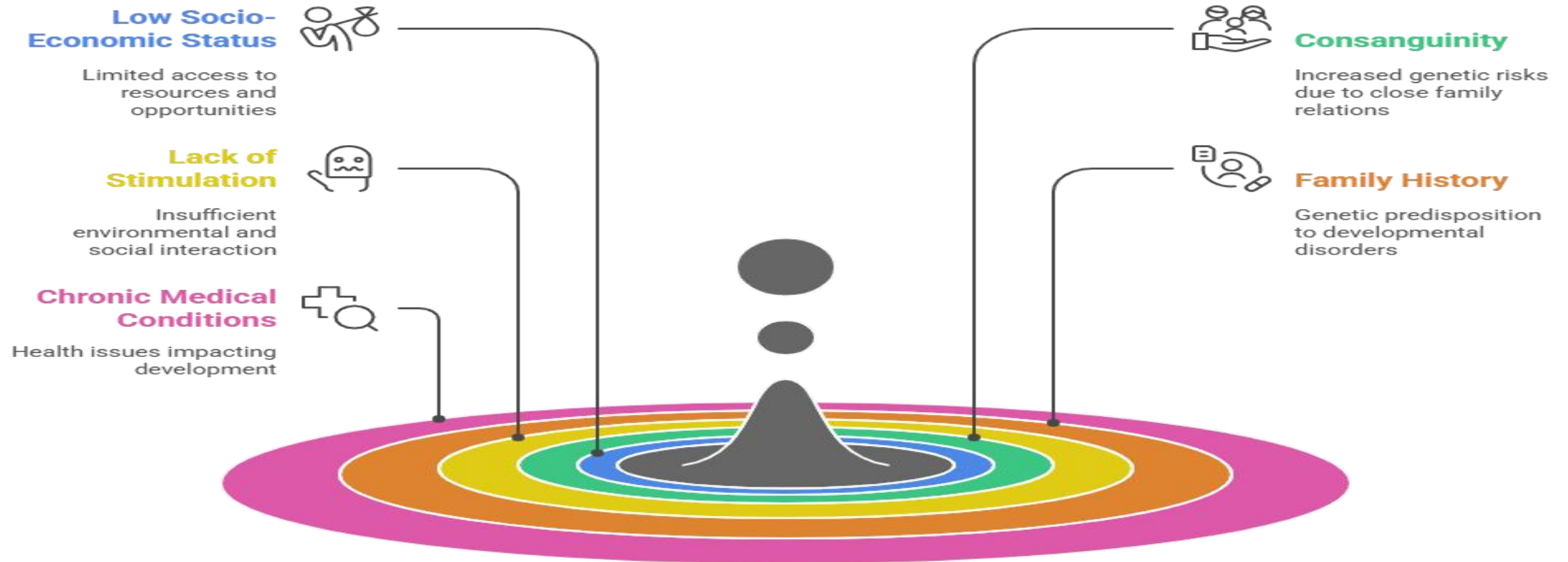


# ETIOLOGY

- **Prenatal:** Genetic syndromes, intrauterine infections, maternal malnutrition, substance abuse.
- **Perinatal:** Birth asphyxia, prematurity, low birth weight, neonatal sepsis.
- **Postnatal:** CNS infections, head injury, malnutrition, neglect, environmental deprivation.

# RISK FACTORS

## Risk Factors for Developmental Delay



Made with Napkin

# DEVELOPMENTAL DOMAINS

- Gross motor → Sitting, standing, walking.
- Fine motor → Grasp, manipulation.
- Speech & language → Babbling, first words, sentences.
- Cognitive → Problem solving, learning.
- Social/Emotional → Interaction, play, bonding.

# DEVELOPMENTAL MILESTONES



# **NORMAL DEVELOPMENTAL MILESTONES (Gross Motor)**

- 3 months → Head control.
- 6 months → Rolls over.
- 9 months → Sits without support.
- 12 months → Stands, cruises.
- 15–18 months → Walks independently.

# **NORMAL DEVELOPMENTAL MILESTONES (Fine Motor & Speech)**

- 6 months → Reaches, transfers objects.
- 9 months → Pincer grasp.
- 12 months → Scribbles.
- 18–24 months → Builds tower.
- Speech milestones: cooing (3m), babbling (6m), first words (12m), 2-word phrases (24m).

# FINE MOTOR SKILLS

## Vision and fine motor (median ages)

6 weeks



Follows moving object or face by turning the head (illustrated).

4-6 months



Palmar grasp

10 months



Mature pincer grip

14 months-4 years



Tower of three  
(18 months)



Tower of six  
(2 years)



Tower of eight or  
a train with four bricks  
(2½ years)



Bridge (from a  
model) 3 years



Steps (after  
demonstration) 4 years

4 months



Reaches out for toys

7 months



Transfers toys from one hand to another

16-18 months



Makes marks with a crayon

2-5 years

Line (2 years)

Circle (3 years)

Cross (3½ years)

Square (4 years)

Triangle (5 years)

Ability to draw without seeing how it is done.  
Can copy (draw after seeing it done) 6 months  
earlier.

# ASSESSMENT TOOLS

- **Screening tools:** Denver Developmental Screening Test (DDST II), Trivandrum Developmental Screening Chart (TDSC).
- **Standardized assessments:** Bayley Scales of Infant Development, Gross Motor Function Measure (GMFM), Pediatric Evaluation of Disability Inventory (PEDI).

# RED FLAGS IN DEVELOPMENT

- No social smile by 3 months.
- Poor head control by 4 months.
- Not sitting by 9 months.
- Not walking by 18 months.
- No words by 2 years.
- Regression of skills at any age.

## DEVELOPMENTAL RED FLAGS for Infants

### 0 - 3 Months

Feeding difficulties

Turning head to one side only

Strong preference for specific posture or position

Flattening of back or side of head

Decreased movement on one side of body

Arching of back/body

Stiffness or floppiness

Significant birth history

### 7 - 9 Months

Inability to bring hands together

Inability to sit up

Difficulty bearing weight on hands and arms

Limited desire to move

Asymmetrical use of body

Sitting with wide legs or W-Sitting

THEINSPIREDTREEHOUSE.COM

### 4 - 6 Months

Arching the body

Keeping one or both hands tightly clenched

Shifting weight and/or reaching only to one side

Lacking variety in movements on the floor

### 10 - 12 Months

Lack of variability in movement

Lack of desire to move

Strong preference for using one side of the body

Consistent asymmetrical movement patterns

Consistently standing, cruising, or walking on tiptoes

Struggling with grasping and releasing objects

MOVEPLAYGROW.COM

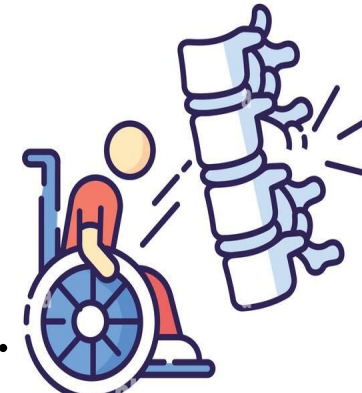
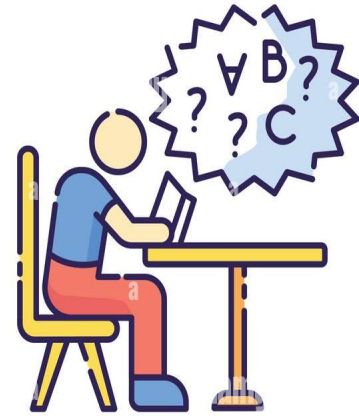
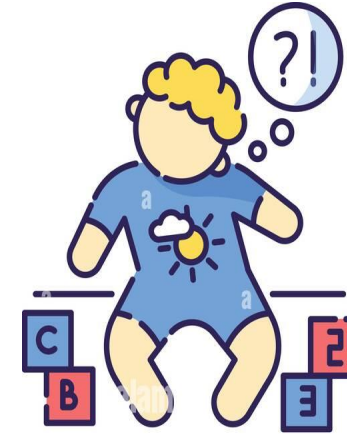
# PHYSIOTHERAPY ROLE

- **Early intervention is the key:**  
Promote motor development via play.  
Facilitate normal movement patterns.  
Prevent secondary complications (contractures, deformities).  
Family education and caregiver training.



# MANAGEMENT STRATEGIES

- Neurodevelopmental Treatment (NDT/Bobath).
- Sensory integration therapy.
- Constraint-induced movement therapy (CIMT).
- Task-specific training (play therapy).
- Positioning & handling techniques.
- Orthoses & adaptive equipment if needed.





# TREATMENT

- Gross motor facilitation: Rolling, creeping, crawling, standing, gait training.
- Balance & coordination: Swiss ball, balance boards.
- Strengthening & stretching: To prevent contractures, promote endurance.
- Play therapy: Motivating child through functional play.
- Hydrotherapy: Buoyancy-assisted movement.

# MULTIDISCIPLINARY APPROACH

Physiotherapist → Motor development.

Occupational therapist → ADLs, fine motor.

Speech therapist → Communication.

Psychologist → Cognitive & behavioral support.

Pediatrician/Neurologist → Medical management.

Parents → Home-based carryover.

# IN CLASS ASSESSMENT

1. What is the definition of Global Developmental Delay (GDD)?

- A) Delay in one developmental domain
- B) Delay in  $\geq 2$  developmental domains
- C) Delay only in motor skills
- D) Delay due to environmental factors only

2. Which of the following is a prenatal etiology of developmental delay?

- A) Birth asphyxia
- B) Genetic syndromes
- C) Head injury
- D) Neonatal sepsis

# IN CLASS ASSESSMENT

3. At what age should a child typically achieve independent walking?

- A) 9 months
- B) 12 months
- C) 15–18 months
- D) 24 months

4. Which assessment tool is used for standardized evaluation of infant development?

- A) Denver Developmental Screening Test (DDST II)
- B) Bayley Scales of Infant Development
- C) Trivandrum Developmental Screening Chart (TDSC)
- D) Gross Motor Function Measure (GMFM)

# IN CLASS ASSESSMENT

5. What is a key role of physiotherapy in managing developmental delay?

- A) Promoting motor development via play
- B) Prescribing medications
- C) Conducting psychological tests
- D) Performing surgical interventions

# ANSWERS FOR IN CLASS ASSESSMENT

1. B) Delay in  $\geq 2$  developmental domains
2. B) Genetic syndromes
3. C) 15–18 months
4. B) Bayley Scales of Infant Development
5. A) Promoting motor development via play

# THANK YOU

## Physiotherapy Treatment Strategies for Developmental Delay

