

# Motor development



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# Objectives

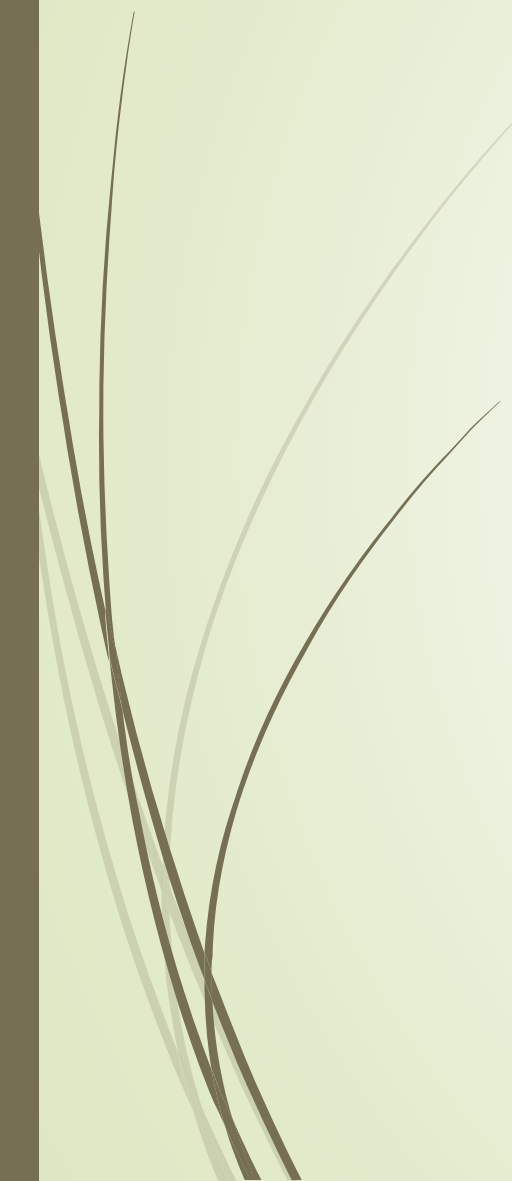
Identify Typical Developmental Stages Including:

- Gross and Fine Motor Development
- Languages Skills
- Cognitive Development
- Social – Emotional





# Content

- Understanding Motor Development
  - Milestones in Gross and fine Motor Skills
  - Strategies for Promoting Motor Development
- 



# Introduction

- ▶ Typically developing children move into and out of positions fluidly and with ease, **exploring their worlds, learning about their bodies, and developing motor, cognitive, sensory, and social**



# Definitions



- ▶ **Motor control** refers to how the **body directs movement** and how the musculoskeletal system interacts to carry out movements
- ▶ **Motor Development Defined:** Motor development encompasses the **progression of a child's physical abilities**, including **both fine and gross** motor skills.




# Definition and Significance

- **Differentiation** is the **progression** from **gross, immature** movement to **precise, well-controlled, intentional movement**.
- **Integration** is a related, similar change that occurs as an individual's movement ability gradually progresses.



# Definition and Significance

- **Sequential Nature:** Motor skills develop in a **predictable sequence**, with **each milestone building upon the previous one**
  - **Understanding this sequential progression is crucial for assessing a child's development.**
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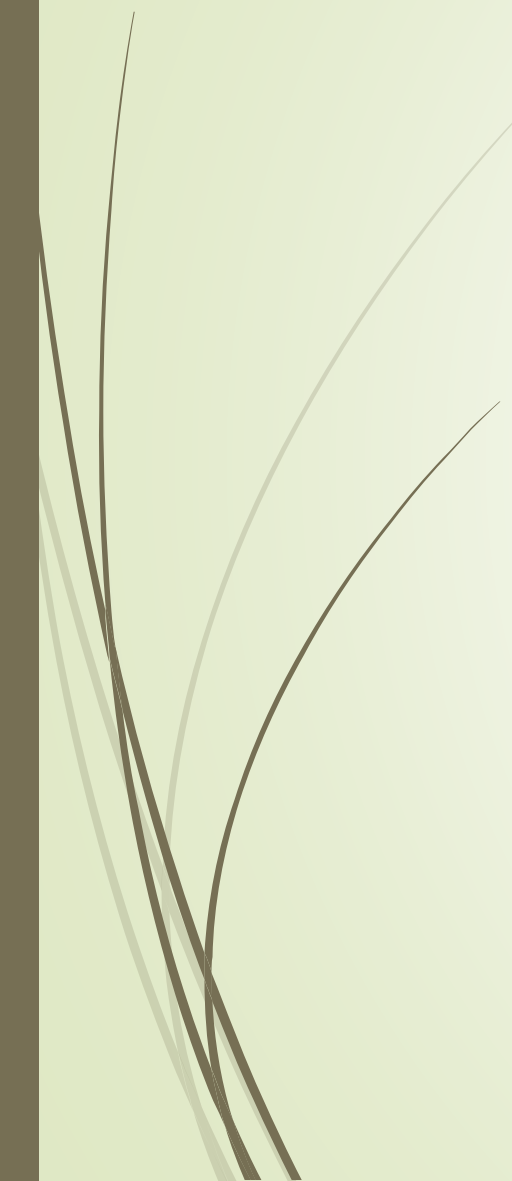
# Definition and Significance

- **Influence of Maturation:** Motor development **is primarily a result of maturation rather than just practice.**





# Theories of motor development



(1) neural-maturation

(2) Cognitive

(3) dynamical systems

# Theories of motor development

**Gesell** explained maturation as a process controlled by **internal (genetic)** factors rather than **external (environmental)** factors. He believed that environmental factors would affect motor development only temporarily because **hereditary factors were ultimately in control of development.**





# Theories of motor development

- ▶ **Cognitive Theories**
- ▶ **phylogenetic functions** originated specifically in regard to a child's development of basic motor skills
- ▶ **ontogenetic skills** (motor learning) theory, the basis of new skilled movements in the older child or adult

# Dynamic Systems Theory (DST)

- interaction of multiple body
  - biomechanical
  - Central nervous system

**environment**

What is a control **parameter**?

**task**





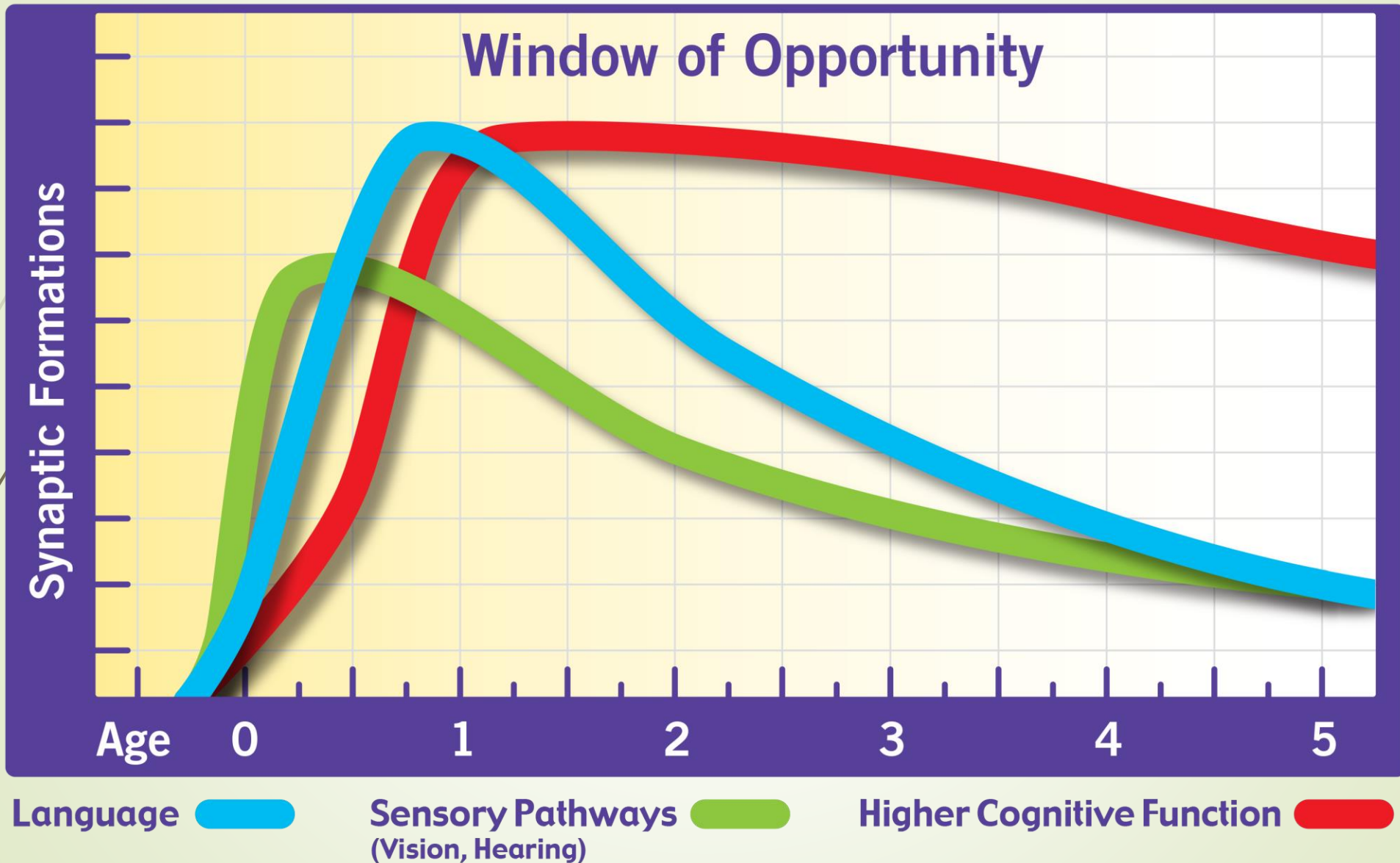
# Theories of Aging

Genetic  
**The cell nucleus**

Nongenetic  
**Environmental Factors**

# Human Brain Development

Synapse Formation Dependent on Early Experiences







# Factors Affecting Motor Development



- **Biological Factors**
  - **Environmental Influences**
  - **Early Intervention**
- 





# Stages of Motor Development

- **Infancy:** From **reflexive movements** to the development of **voluntary control**, the infancy stage is marked by significant motor milestones such as **grasping, rolling, and crawling**.
- **Early Childhood:** This stage sees the refinement of **gross and fine motor skills**, including **running, jumping**, and the development of **hand-eye coordination**.

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- ▶ **Adolescence:** The adolescent years witness the **consolidation and enhancement of motor skills**, with a **focus on activities** that require precision and coordination.

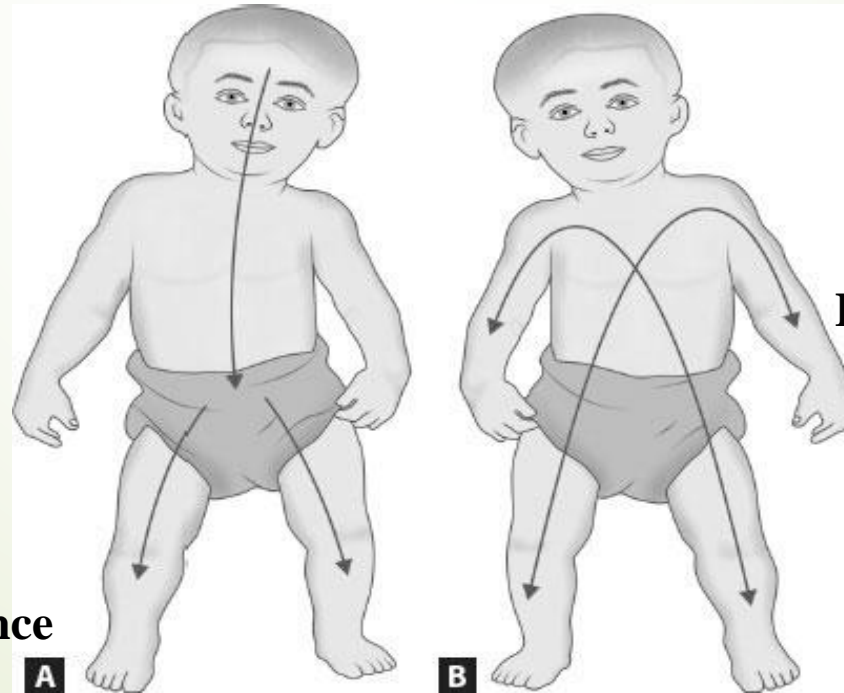


**Gross motor functions**



**Fine motor functions**

**Cephalocaudal**



**Proximodistal**

**A**

**B**



# Milestones in Gross Motor Skills

## ► Birth to 12 Months

- Head Control and Rolling Over
- Sitting Independently
- (indicating the strengthening of core muscles and balance)
- Crawling and Standing with Support



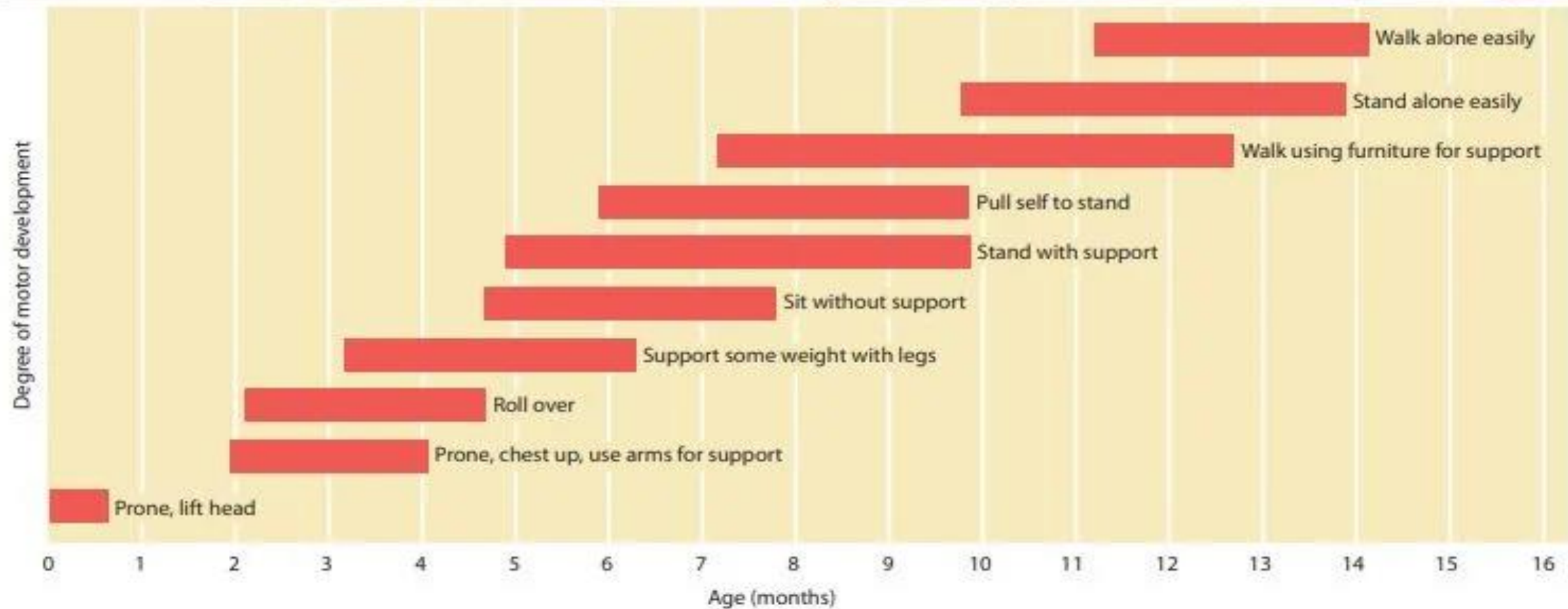
# Milestones in Gross Motor Skills



## 12 to 24 Months

- First Steps
- Exploration and Coordination:
- **(climbing stairs and pushing or pulling objects)**
- Running and Jumping





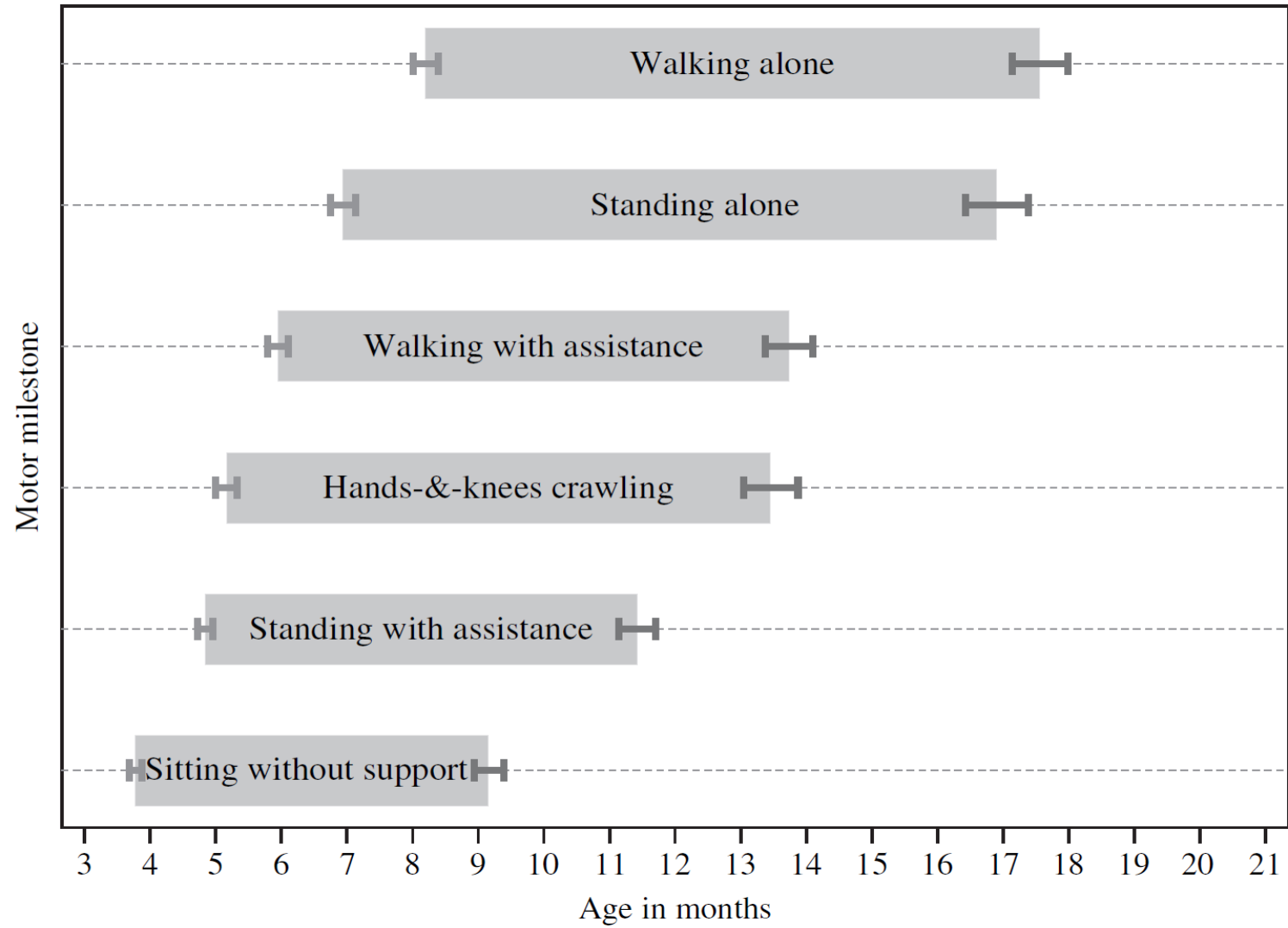
# GROSS AND MOTOR DEVELOPMENT IN THE FIRST TWO YEARS

(ALLYN & BACON, 2008)

MOTOR SKILL	AVERAGE AGE ACHIEVED	AGE RANGE IN WHICH 90 PERCENT OF INFANTS ACHIEVE THE SKILL
When held upright, holds head erect and steady	6 weeks	3 weeks–4 months
When prone, lifts self by arms	2 months	3 weeks–4 months
Rolls from side to back	2 months	3 weeks–5 months
Grasps cube	3 months, 3 weeks	2–7 months
Rolls from back to side	4½ months	2–7 months
Sits alone	7 months	5–9 months
Crawls	7 months	5–11 months
Pulls to stand	8 months	5–12 months
Plays pat-a-cake	9 months, 3 weeks	7–15 months
Stands alone	11 months	9–16 months
Walks alone	11 months, 3 weeks	9–17 months
Builds tower of two cubes	11 months, 3 weeks	10–19 months
Scribbles vigorously	14 months	10–21 months
Walks up stairs with help	16 months	12–23 months
Jumps in place	23 months, 2 weeks	17–30 months
Walks on tiptoe	25 months	16–30 months









# Milestones in Gross Motor Skills

## ➤ 2 to 4 Years

- **Refinement of Locomotor Skills:**

- (walking, running, and jumping abilities, increased speed, balance, and control)

- **Ball Skills**

- (kicking, throwing, and catching)

- **Outdoor Play**

- (riding tricycles and climbing structures contributes)

# Milestones in Gross Motor Skills

## ➤ 4 to 6 Years

- **Enhanced Coordination:**
- (engage in more complex physical activities)
- **Sports and Group Games:** Participation in **organized sports** and **group games** fosters **teamwork**, **spatial awareness**, and the **refinement of gross motor skills**.
- **Fine-Tuning Skills:**
- (skipping, hopping, and galloping)





# Fine motor skills

Fine motor skills involve the use of smaller hand muscles, commonly used for activities such as cutting, writing and doing up buttons.

# Developmental Milestones: 4 to 5 Year Olds

## Hand and Finger Skills Fine Motor

- Copies triangle and other geometric patterns
- Draws person with body
- Prints some letters
- Dresses and undresses without assistance
- Usually cares for own toilet needs





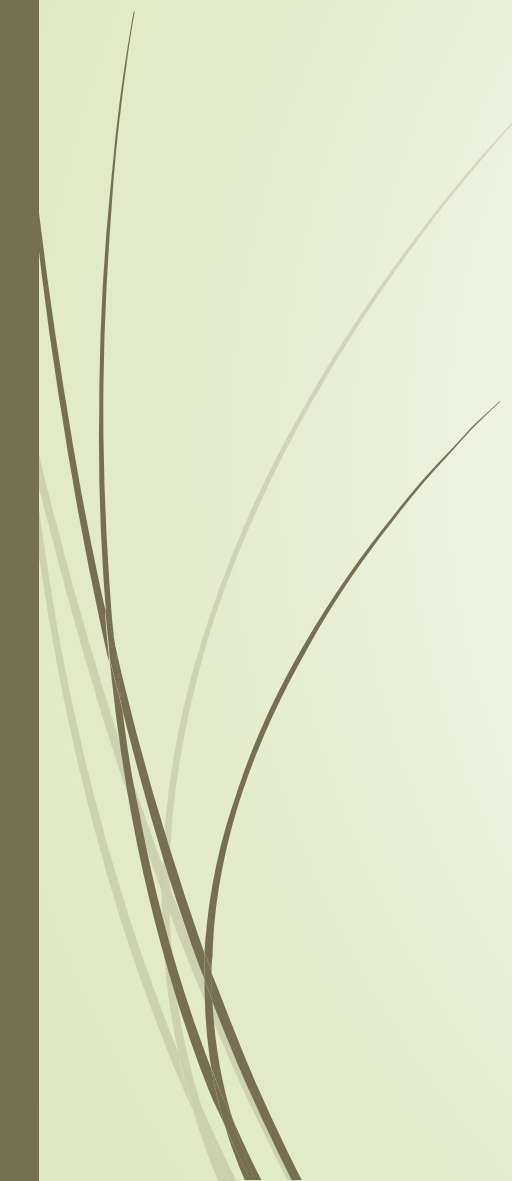


## *postural control*

- **The goal of the postural control** is to attain a stable vertical posture of the head and trunk against the force of gravity.
- base is provided for adequate reaching, sitting, standing, and walking.
- There are **four types** of postural control: **static, reactive, anticipatory, and adaptive.**

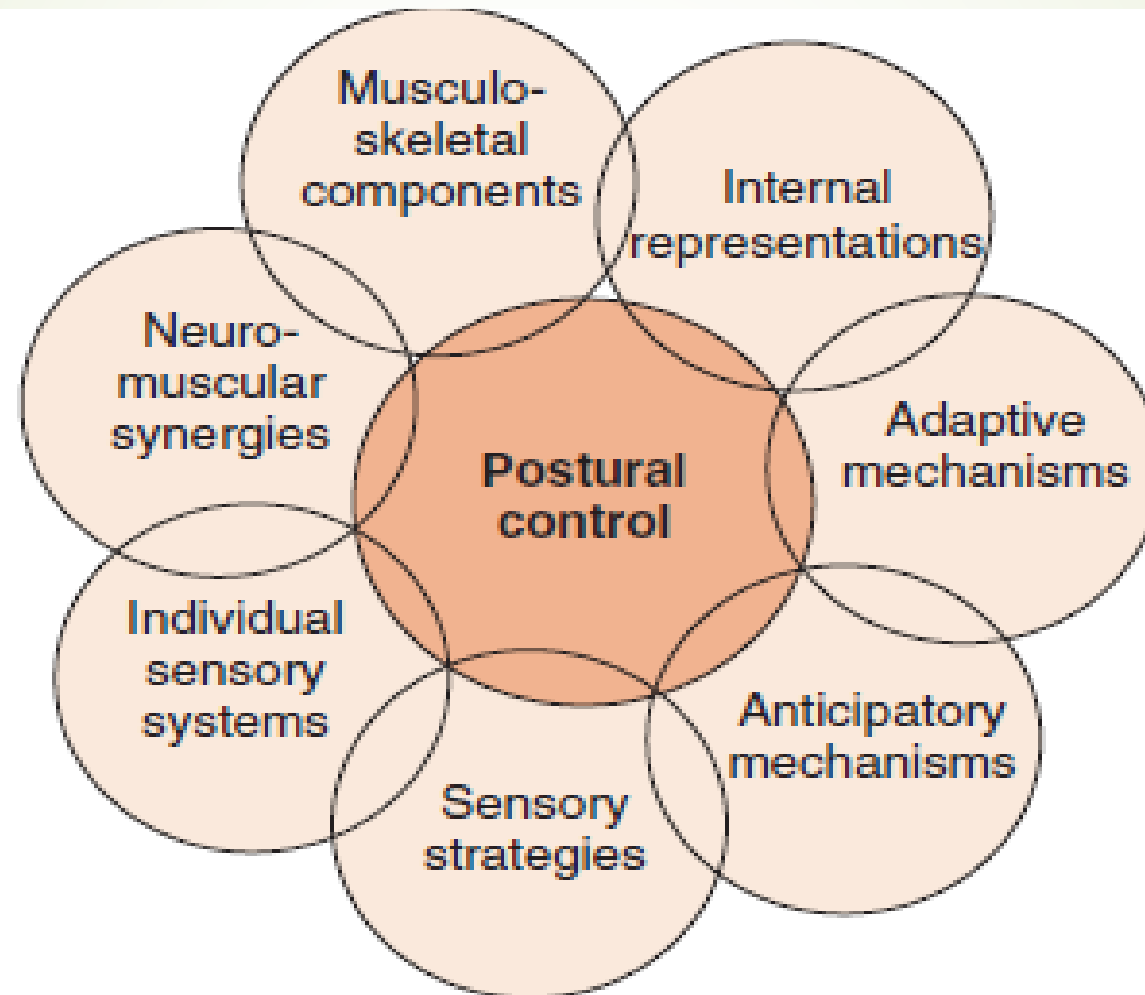


# Posture has three functions

- **1) maintain alignment of the body's segments in any position**
  - **2) anticipate change to allow the body to engage in voluntary, goal-directed movements**
  - **3) react to unexpected perturbations or disturbances in balance**
- 



# The Systems for Postural Control





# Strategies for Promoting Motor Development

- ▶ **Creating Enriching Play Environments**
  - **Outdoor Play Spaces**
  - **Indoor Exploration**
  - **Incorporating Nature**



# Strategies for Promoting Motor Development

- ▶ **Encouraging Physical Activity**
  - **Structured Activities**
  - **Dance and Movement**
  - **Yoga and Mindfulness**



# Strategies for Promoting Motor Development

- ▶ **Supportive Guidance and Interventions**
  - **Individualized Plans**
  - **Educator Training**
  - **Family Involvement**



# Strategies for Promoting Motor Development

- ▶ **Holistic Integration in Early Education**
  - **Curricular Integration:** Integrating motor development activities seamlessly into early childhood curricula ensures that physical skills are nurtured alongside cognitive and socio-emotional development.



# Strategies for Promoting Motor Development

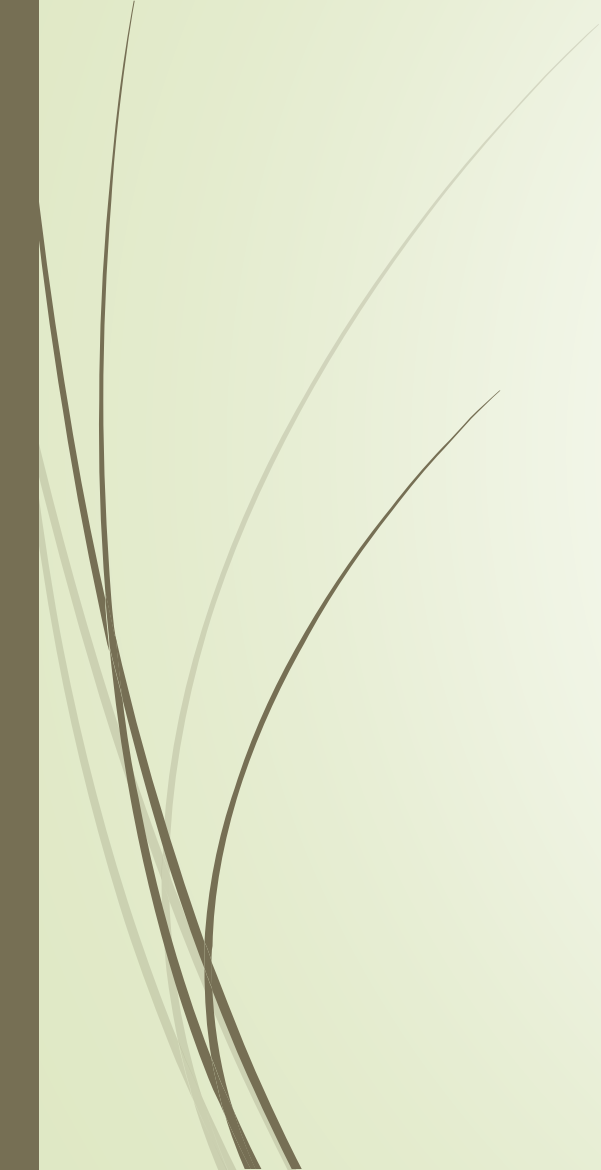
- **Multisensory Approaches:** Embracing multisensory approaches to learning that incorporate movement, touch, and physical exploration enriches children's overall developmental experiences.
- **Community Engagement:** Collaborating with community resources such as parks, recreational centers, and health professionals enhances the holistic approach to promoting motor development in early education.

Growing Up



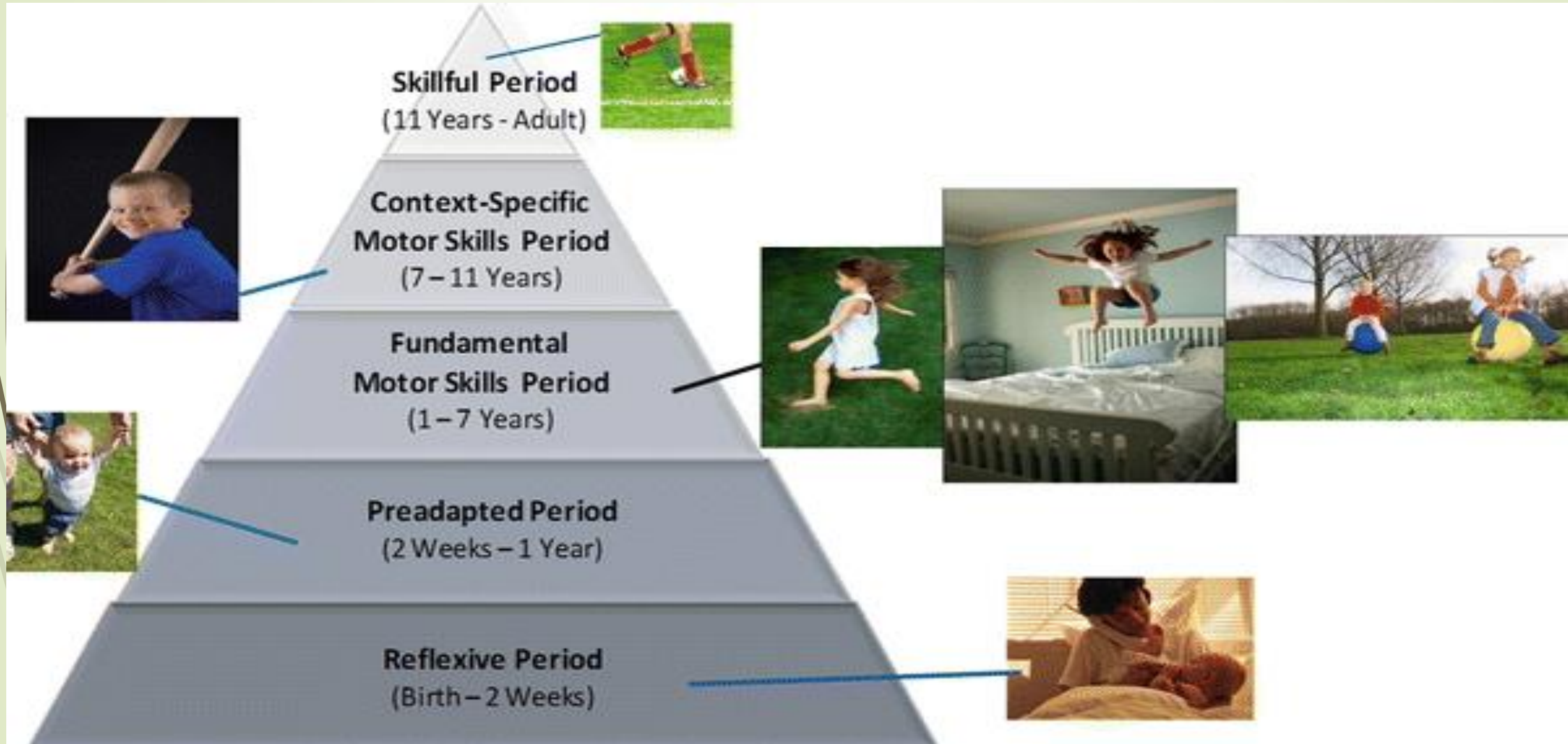
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# Clark and Metcalfe's Mountain of Motor Development



# Periods of Development

<b>Prenatal</b>	<b>Conception to birth</b>
<b>Infancy and toddlerhood</b>	<b>Birth–2 years</b>
<b>Early childhood</b>	<b>2–6 years</b>
<b>Middle childhood</b>	<b>6–11 years</b>
<b>Adolescence</b>	<b>11–18 years</b>
<b>Early adulthood</b>	<b>18–40 years</b>
<b>Middle adulthood</b>	<b>40–65 years</b>
<b>Late adulthood</b>	<b>65 years–death</b>



# Developmental Milestones: 6 to 7 Years



## Motor Skills

- Use one hand consistently for fine motor tasks
- Interested in games with rules and but lacks skill
- Use a fork and knife together to cut soft foods
- Get dressed by themselves including fasteners
- Enjoys roughhousing, but does not know when to stop; may end up hurt, upset, or exhausted

# Developmental Milestones: 8 to 12 Years

## Motor skills

- ▶ Does well at games/sports requiring skill, strength and agility
- ▶ Large and fine motor skills becoming highly coordinated
- ▶ Preparation for puberty





# MOTOR SKILL DEVELOPMENT



## Locomotor Activity

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## Non-Locomotor Activity

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## Manipulative Skills

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## Development of Gross Motor Skills

