

GROWTH AND DEVELOPMENT IN CHILDREN

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OBJECTIVES

- Define growth and development.
- Identify the importance of growth and development.
- Outline the principles of growth and development.
- List factors affecting growth and development.
- Outline the types of growth and development.
- Identify the stages of development.

GROWTH

Growth refers to an increase in **physical size** of the whole body or any of its parts.

It is a **quantitative change** in the child's body.

It can be measured in Kg, pounds, meters, inches,
etc

CHANGES IN BODILY PROPORTIONS WITH AGE.

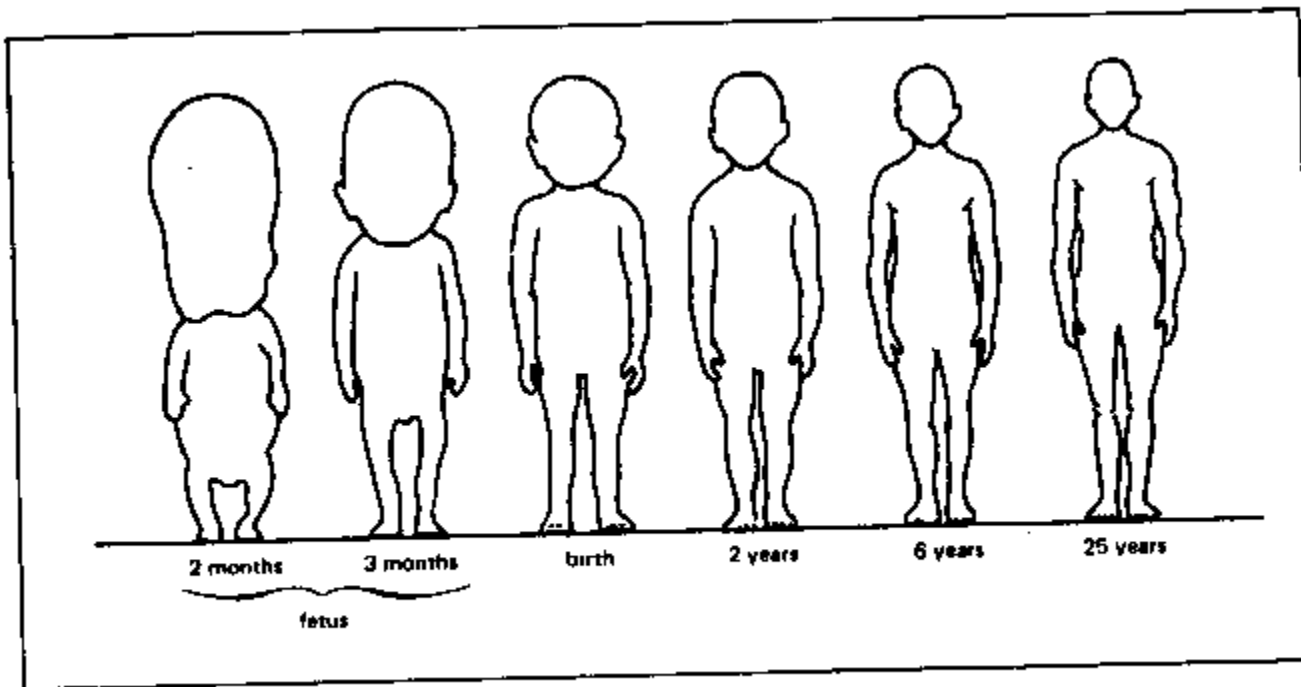


Figure 9. Changes in bodily proportions with age

DEVELOPMENT

- Development refers to a progressive increase in **skill and capacity of function.**
- It is a **qualitative change** in the child's functioning.
- It can be measured through **observation.**

FACTORS AFFECTING GROWTH AND DEVELOPMENT:

- Hereditary
- Environmental factors

PRENATAL FACTORS

1-Factors related to mothers during pregnancy:

- Nutritional deficiencies
- Diabetic mother
- Exposure to radiation
- Infection with German measles
- Smoking
- Use of drugs

2-Factors related to fetus:

- Mal-position in uterus
- Faulty placental implantation

POST NATAL FACTORS

External environment:

- socio-economic status of the family
- child's nutrition
- climate and season
- child's position in the family
- Number of siblings in the family
- Family structure (single parent or extended family ...)

INTERNAL ENVIRONMENT

- Child's intelligence
- Hormonal influences
- Emotions

STAGES OF GROWTH AND DEVELOPMENT

- Neonate
 - Birth to 1 month
- Infancy
 - 1 month to 1 year
- Early Childhood
 - Toddler
 - 1-3 years
 - Preschool
 - 3-6 years

CONT..

◎ Middle Childhood

- School age
- 6 to 12 years

◎ Late Childhood

- Adolescent
- 13 years to approximately 18 years

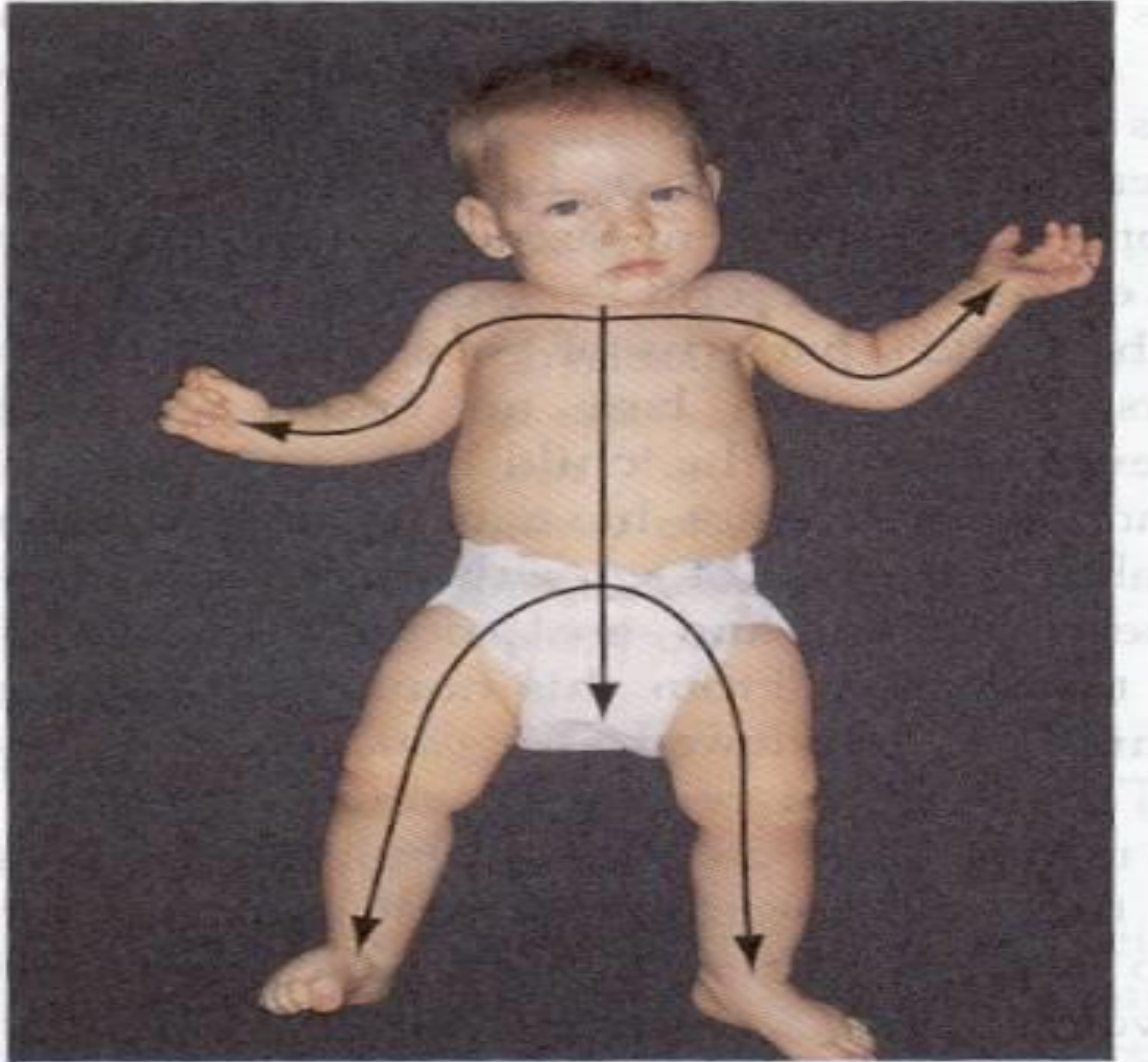
PRINCIPLES OF GROWTH AND DEVELOPMENT

- ◉ Growth is an orderly process, occurring in systematic fashion.
- ◉ Rates and patterns of growth are specific to certain parts of the body.
- ◉ Wide individual differences exist in growth rates.
- ◉ Growth and development are influenced by multiple factors.

PRINCIPLES CONTINUED

- Development proceeds from the simple to the complex and from the general to the specific.
- Development occurs in a cephalocaudal and a proximodistal progression.
- There are critical periods for growth and development.
- Rates in development vary.
- Development continues throughout the individual's life span.

GROWTH PATTERN



GROWTH PATTERNS

- ◎ The child's pattern of growth is in a head-to-toe direction, or **cephalocaudal**, and in an inward to outward pattern called **proximodistal**.

GROSS MOTOR SKILLS

- The acquisition of gross motor skill precedes the development of fine motor skills.
- Both processes occur in a cephalocaudal fashion
 - Head control preceding arm and hand control
 - Followed by leg and foot control.

CONT .. HEAD CIRCUMFERENCE

- It increases about **2 cm /month** during the **1st 3 months**,
- Then, **1 cm/month** during the next **3 months** and lastly **0.5cm/month** in the last **6 months**.
- Posterior fontanel closes by **6-8 w** of age.
- Anterior fontanel closes by **12-18 months** of age.

INFANCY

- It is the period which starts at the end of the first month up to the end of the first year of age.
- Infant's growth and development during this period are rapid.

GROWTH

Weight : the infant gains :

- Birth to 4 months → $\frac{3}{4}$ kg /month
- 5 to 8 months → $\frac{1}{2}$ kg / month
- 9 to 12 months → $\frac{1}{4}$ kg /month

The infant will double his birth wt by 6 months and triple it by 12 months of age.

INFANT WEIGHT CALCULATION

Infants from 3 to 12 months

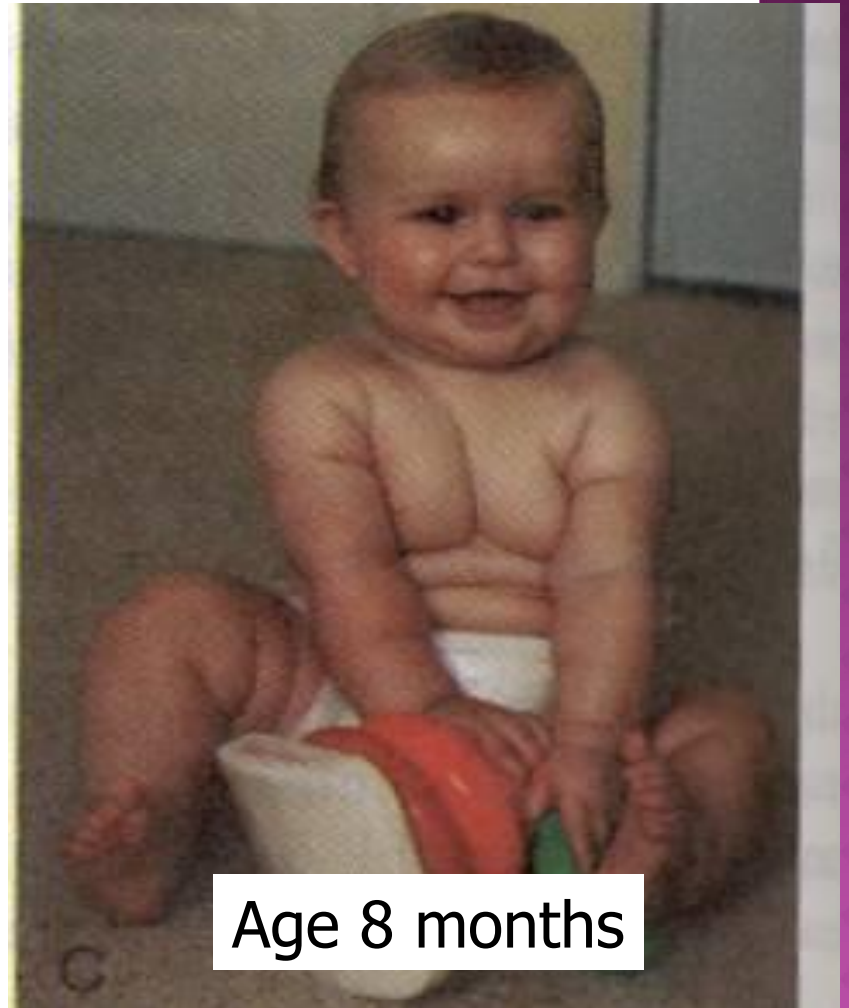
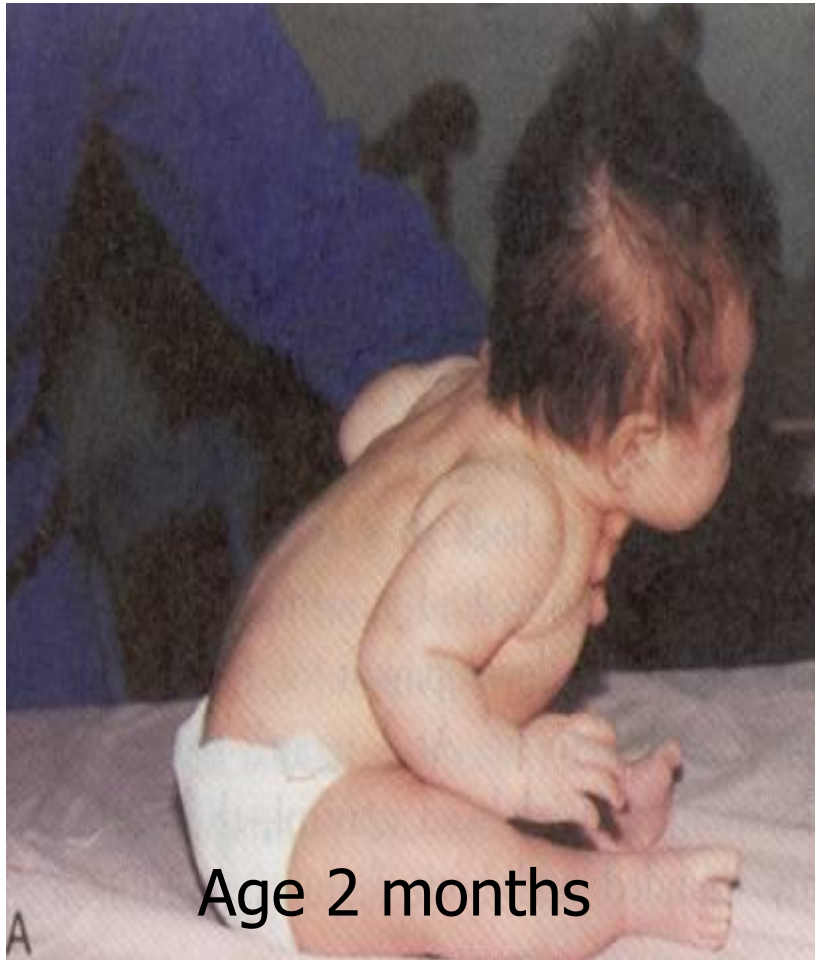
$$\text{Weight} = \frac{\text{Age in months} + 9}{2}$$

$$\begin{aligned} \text{Wt of 7 months old infant} &= \\ 7+9 &= 16/2 = 8 \text{ kg} \end{aligned}$$

SITTING UP

- ◎ 2 months old: needs assistance
- ◎ 6 months old: can sit alone in the tripod position
- ◎ 8 months old: can sit without support and engage in play

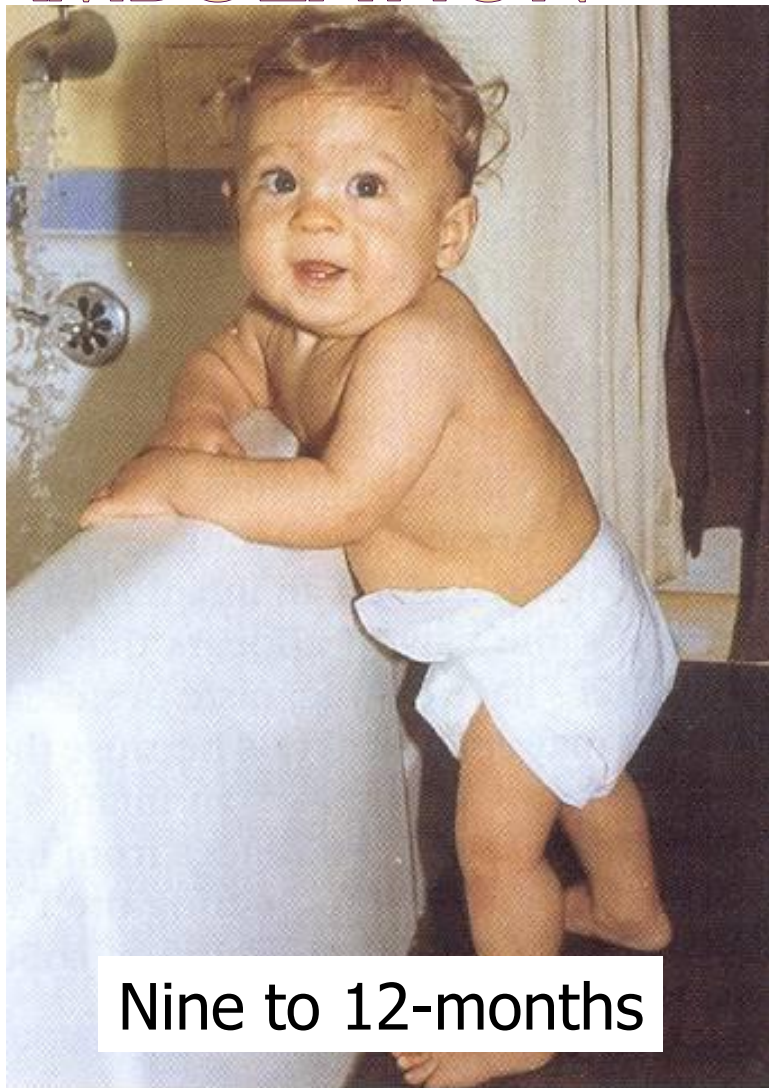
SITTING UP



AMBULATION

- 9 month old: crawl
- 1 year: stand independently from a crawl position
- 13 month old: walk and toddle quickly
- 15 month old: can run

AMBULATION



Nine to 12-months



13 month old

FINE MOTOR - INFANT

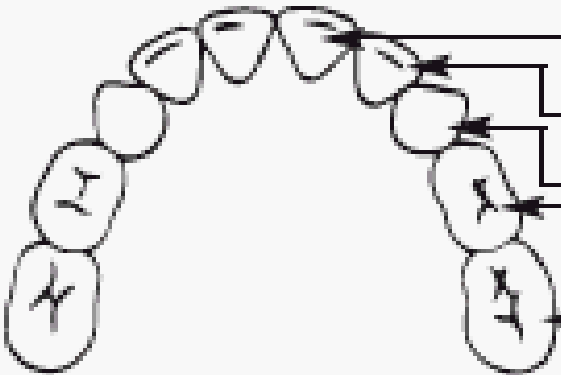
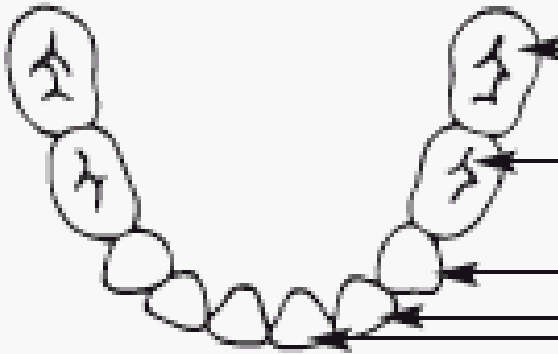
- Newborn has very little control. Objects will be involuntarily grasped and dropped without notice.
- 6 month old: **palmar grasp** - uses entire hand to pick up an object
- 9 month old: **pincer grasp** - can grasp small objects using thumb and forefinger

SPEECH MILESTONES

- 1-2 months: coos
- 2-6 months: laughs and squeals
- 8-9 months babbles: mama/dada as sounds
- 10-12 months: “mama/dada specific”
- 18-20 months: 20 to 30 words - 50% understood by strangers
- 22-24 months: two word sentences, >50 words, 75% understood by strangers
- 30-36 months: almost all speech understood by strangers

CONT..

PRIMARY DENTITION

	Upper Teeth	Erupt	Exfoliate
	Central incisor	8-12 months	6-7 years
	Lateral incisor	9-13 months	7-8 years
	Canine (cuspid)	16-22 months	10-12 years
	First molar	13-19 months	9-11 years
	Second molar	25-33 months	10-12 years
	Lower Teeth	Erupt	Exfoliate
	Second molar	23-31 months	10-12 years
	First molar	14-18 months	9-11 years
	Canine (cuspid)	17-23 months	9-12 years
	Lateral incisor	10-16 months	7-8 years
	Central incisor	6-10 months	6-7 years

FINE MOTOR DEVELOPMENT



RED FLAGS IN INFANT DEVELOPMENT

- ⦿ Unable to sit alone by age 9 months
- ⦿ Unable to transfer objects from hand to hand by age 1 year
- ⦿ Abnormal pincer grip or grasp by age 15 months
- ⦿ Unable to walk alone by 18 months
- ⦿ Failure to speak recognizable words by 2 years.

TODDLER GROWTH - WEIGHT

- ◉ During the toddler stage growth slows considerably.
- ◉ Formula to calculate normal weight of children over 1 year of age is
- ◉ **Age in years X 2+8 = kg.**
- ◉ e.g., The weight of a child aged 4 years

$$4 \times 2 + 8 = 16$$

NB: Daytime bladder and bowel control by 24-30 months

HEIGHT:

- ◉ During 1-2 years, the child's height increases by 1cm/month.
- The toddler's height increases about 10 to 12.5cm/year.
- ◉ Formula to calculate normal height
Age in years X 5 + 80 = cm.
- ◉ H/C: The head increases 10 cm only from the age of 1 year to adult age.

FINE MOTOR - TODDLER

- ⦿ 1 year old: transfer objects from hand to hand
- ⦿ 2 year old: can hold a crayon and color vertical strokes
 - Turn the page of a book
 - Build a tower of six blocks

FINE MOTOR - OLDER TODDLER

- ⦿ 3 year old: copy a circle and a cross - build using small blocks
- ⦿ 4 year old: use scissors, color within the borders
- ⦿ 5 year old: write some letters and draw a person with body parts

ISSUES IN PARENTING - TODDLERS

- ◉ Stranger anxiety - should disappear by age 2 ½ to 3 years
- ◉ Temper tantrums: occur weekly in 50 to 80% of children - peak incidence 18 months - most disappear by age 3
- ◉ Sibling rivalry: aggressive behavior towards new infant: peak between 1 to 2 years but may be prolonged indefinitely
- ◉ Thumb sucking
- ◉ Toilet Training

PRESCHOOLER GROWTH

Weight:

The preschooler gains approximately 1.8kg/year.

Height:

He doubles birth length by 4-5 years of age.

FINE MOTOR AND COGNITIVE ABILITIES

- ◉ Buttoning clothing
- ◉ Holding a crayon / pencil
- ◉ Building with small blocks
- ◉ Using scissors
- ◉ Playing a board game
- ◉ Have child draw picture of himself

RED FLAGS: PRESCHOOL

- ⦿ Inability to perform self-care tasks, hand washing simple dressing, daytime toileting
- ⦿ Lack of socialization
- ⦿ Unable to play with other children
- ⦿ Able to follow directions during exam
- ⦿ Performance evaluation of pre-school teacher for kindergarten readiness

SCHOOL AGE

Weight:

- School-age child gains about **3.8kg/year**.
- Boys tend to gain slightly more weight through **12 years**.
- **Weight Formula for 7 - 12 yrs**

$$= \frac{(\text{age in yrs} \times 7) - 5}{2}$$

Height:

- The child gains about **5cm/year**.

SCHOOL YEARS: FINE MOTOR

- ◉ Writing skills improve
- ◉ Fine motor is refined
- ◉ Fine motor with more focus
 - Building: models
 - Sewing
 - Musical instrument
 - Painting
 - Typing skills
 - Technology: computers

RED FLAGS: SCHOOL AGE

- ⦿ School failure
- ⦿ Lack of friends
- ⦿ Social isolation
- ⦿ Aggressive behavior: fights, fire setting, animal abuse

SCHOOL AGE: GROSS MOTOR

- ⦿ 8 to 10 years: team sports
- ⦿ Age ten: match sport to the physical and emotional development

SCHOOL AGE: COGNITIVE

- Greater ability to concentrate and participate in self-initiating quiet activities that challenge cognitive skills, such as **reading, playing computer and board games.**

ADOLESCENT

- As teenagers gain independence they begin to challenge values
- Critical of adult authority
- Relies on peer relationship
- Mood swings especially in early adolescents

ADOLESCENT

Weight:

- Growth spurt begins earlier in girls (10-14 years, while it is 12-16 in boys).
- Males gains 7 to 30kg, while female gains 7 to 25kg.

Height:

- By the age of 13, the adolescent triples his birth length.

CONT.. HEIGHT

- Males gains 10 to 30cm in height.
- Females gains less height than males as they gain 5 to 20cm.
- Growth in height ceases at 16 or 17 years in females and 18 to 20 in males

ADOLESCENT BEHAVIORAL PROBLEMS

- ⦿ Anorexia
- ⦿ Attention deficit
- ⦿ Anger issues
- ⦿ Suicide

ADOLESCENT TEACHING

- ◉ Relationships
- ◉ Sexuality - STD's / AIDS
- ◉ Substance use and abuse
- ◉ Gang activity
- ◉ Driving
- ◉ Access to weapons

QUESTIONS

⦿ ?????