



## Adolescence, Puberty and its changes

### A. Stages of Human Growth

**Human life is divided into four stages:**

- i. Infancy
- ii. Childhood
- iii. Adolescence
- iv. Adulthood

Each stage has a different rate of growth and development.

### B. What is Adolescence?

Adolescence is the transition period from childhood to adulthood, typically from 10 to 19 years of age. It is the stage where children begin to mature physically, emotionally, and mentally.

### C. What is Puberty?

Puberty is the process of physical changes through which a child becomes capable of reproduction. It starts due to hormones released by endocrine glands.

**Hormones control:**

- Growth
- Changes in body shape
- Development of reproductive organs
- Emotions and behavior

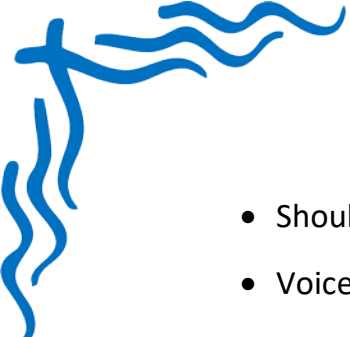
### D. Changes During Puberty

#### i. Physical Appearance

**Girls (10–15 years):**

- Hips widen
- Breasts develop (due to mammary glands)
- Growth in height

**Boys (12–16 years):**

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- Shoulders broaden
  - Voice deepens
  - Muscle growth
  - Growth in height

## **ii. Change in Voice**

Boys develop a deeper voice due to the growth of the voice box (larynx) – visible as the Adam’s Apple.

Girls have a softer, high-pitched voice.

## **iii. Sweat & Sebaceous Glands Activation**

Increased sweating

Oily skin (sebaceous glands)

Acne or pimples become common

## **iv. Hair Growth**

Underarms

Pubic area

Facial hair in boys (moustache, beard)

## **v. Development of Sex Organs**

Testes in boys start producing sperms.

Ovaries in girls begin producing eggs.

Both genders become capable of reproduction.

## **vi. Emotional and Mental Changes**

Mood swings and emotional ups and downs

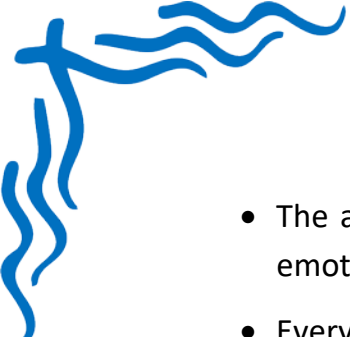
Increased need for independence

Formation of opinions and values

Increased creativity but sometimes impulsive behavior

## **E. Did You Know?**

- Your brain is rewiring itself during adolescence!

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- The amygdala, the emotion center, is super active – that’s why you may feel emotionally intense.
  - Everyone grows at their own pace — being an early or late bloomer is totally normal.

#### **F. Growth in Height Activity**

You can calculate your expected full height using the formula:

Full Height = (Current Height × 100) / % of Full Height at your age

For example, if you're 12 years old and 140 cm tall:

From the chart, boys are 84% of their full height at 12.

So, Full Height =  $(140 \times 100) \div 84 = \sim 166.67$  cm

#### **G. Historical Insight**

- In the early 20th century, psychologist G. Stanley Hall studied adolescence as a distinct stage.
- Emphasis was placed on both physical and psychological changes.
- It became a key focus in education and health research.