

## CHAPTER 5: GROWTH

### 5.1 Pattern of Human Growth

- Growth in human is a process of change in physical shape, body size and cell function of the human.
- The rate of human growth is measured by the weight and height of their body.
- The graph below shows the human growth curve.

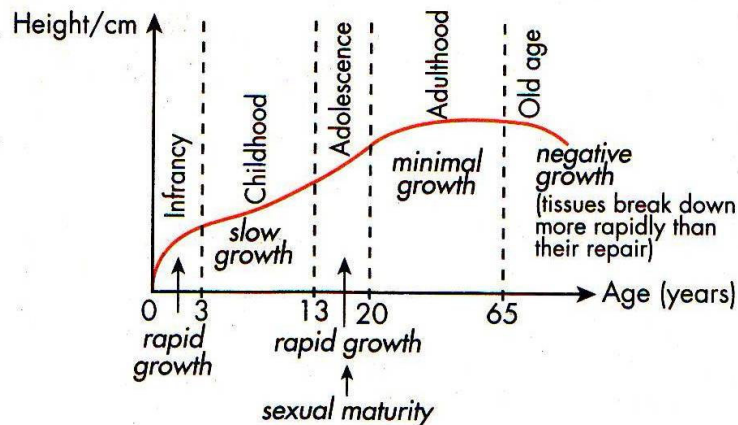
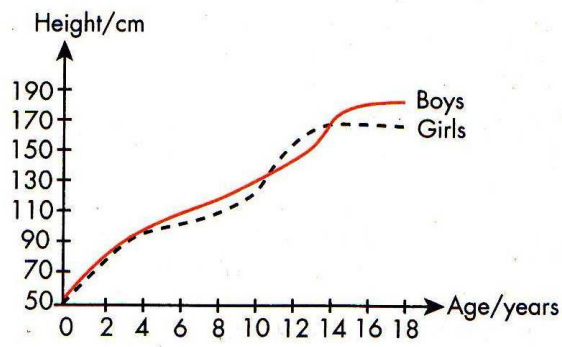


Figure 5.1

- It can be divided into five stages.
  - (a) Infancy – rapid growth (0-3 years)
  - (b) Childhood – slow growth (3-13 years)
  - (c) Adolescence – rapid growth (13-20 years)
  - (d) Adulthood – minimal growth (20-65 years)
  - (e) Old age – negative growth (65 years and above)
- The graph below shows the growth curves of males and females.



**2 – 4 years:**  
Same rate of growth for boys and girls

**4 – 10 years:**  
Boys grow at faster rate

**10 – 12 years:**  
Girls are taller because of sexual maturity

**After 14 years:**  
Boys grow at faster rate

Figure 5.2

- (a) The growth rate at infant stage (0-2 years) is the greatest.
- (b) The growth rate in males and females is almost the same from 0-12 years.
- (c) From 12-14 years, the females grow at a higher rate than the males.
- (d) From 14 years onwards, the males grow at a higher rate than the females.

- Effects of nutrition:

- (a) Balanced diet is necessary for the healthy growth.
- (b) The following table shows the nutrients and their respective functions.

<b>Nutrient</b>	<b>Function</b>
Proteins	Build new tissues to replace old and worn-out tissues
Carbohydrates	Provide energy
Fats	Provide energy
Iron	Forms haemoglobin in red blood cell
Calcium, phosphorus and vitamin D	Form strong bones and teeth
Vitamins	Fight against infections