



INFORMATION SHEET

What are normal patterns of growth and development for children?

All children follow a general pattern of growth from birth, but each child's timing is unique. Children grow at different rates, with a wide variation of what would be called "normal" growth. Growth is generally referred to as an increase in the size of the body as a whole, or the size of different parts of the body.

Children's growth is regulated by the release of growth hormone. The secretion of growth hormone is greatest at puberty when, in combination with the sex hormones, oestrogen and testosterone, children undergo rapid growth and develop their secondary sex characteristics.

Growth includes changes in body physique, muscle size or strength, aerobic capacity, motor performance ability, the ratio of muscle to body fat and height and weight. It also includes changes to a child's psycho-social and cognitive development.

When teachers and parents first become concerned about a child's growth, it is usually because they notice that the child is developing at a slower rate compared with other children of the same age. It is therefore important that teachers and parents understand what is meant by the normal range of growth and development.

Growth charts have been developed for Australian children, where height and weight are plotted against each other. The use of these charts allows comparisons to be made with other children of the same age. These charts also allow for an assessment of whether or not a child is growing at the appropriate rate.

Stages of growth

There are several periods of growth which are generally recognised.

Prenatal

During this period growth rate is very rapid.

At birth

Full-term babies usually measure 48–51 cm in length and weigh between 2.7 and 3.8 kg.

First year

Babies will normally grow between 21 and 25 cm and will more than double their birth weight by their first birthday.

Second year growth

Growth is about 10–12 cm for both girls and boys. There is a significant change in physical characteristics.



Third year until puberty

After two years, growth continues at a slower but steady rate of 5–6 cm per year until the child reaches puberty. This is around 11 in girls and 13 in boys. Puberty initiates the onset of secondary sex characteristics.

Pubertal growth period

Pubertal growth lasts about two years, when girls grow around 6–11 cm per year and boys 7–12 cm per year.

Post-puberty

Normal growth stops when the growing ends of bone close. While there is a range in the age of menarche, bone closure is estimated to be around the age of 15–16 for girls and 17–18 for boys.

Why do some children not grow?

Variations in the growth of children and adolescents can be “normal” or can be influenced by congenital disease or illnesses. Some children do not produce

growth hormone, but most short children do not have any real underlying cause for their lack of growth. Children with chronic asthma, kidney disease, diabetes and arthritis can all fail to grow as much as others of the same age, usually as a result of the disease, poor nutrition and/or some medications.

Summing up

Although children and youth are very much alike and tend to follow the same sequence of growth and development, each is individual and will develop at his or her own rate. Some develop faster or more slowly in one area of growth than another. Parents and teachers should not be overly concerned about this. A child’s chronological age is not the main determinant of his or her readiness to grow.

Source: Children’s Hospital Institute of Sports Medicine
The New Children’s Hospital,
Westmead NSW