

ANTHROPOMETRY: CHILDREN AND ADOLESCENTS 5–19 YEARS

JUNE 2018

Older children and adolescents have high nutritional needs because of their rapid growth and development. Pregnant adolescents are at increased risk of malnutrition, which further increases their risk of pregnancy complications. Increased focus on addressing nutrition needs in this age group will improve health and help break the intergenerational cycle of malnutrition.

Anthropometry—the measurement of the human body—is used to determine and monitor nutritional status. Anthropometric data guide care and treatment; the design, implementation, monitoring, and evaluation of nutrition interventions; and policy design and resource allocation.



USAID
FROM THE AMERICAN PEOPLE

FANTA III
FOOD AND NUTRITION
TECHNICAL ASSISTANCE

fhi360
THE SCIENCE OF IMPROVING LIVES

CHALLENGES WITH ADOLESCENT ANTHROPOMETRY

There are limited evidence and experience on the best anthropometric measurements to use and how to classify nutritional status among adolescents. Interpretation of measurements may be complicated by puberty, which affects growth and body composition. Additional challenges occur with adolescents who don't know their age. Despite these challenges, anthropometry is a key method to assess adolescent nutritional status, determine eligibility for care and support programs, and promote healthy growth and development. To avoid misclassifying an individual's nutritional status or a population's risk, it is helpful to conduct a thorough assessment that considers more than one anthropometric measurement or index, clinical and biochemical assessments, growth patterns over time, dietary practices, food security status, health status, and care practices.

For more information, see the *Guide to Anthropometry: A Practical Tool for Program Planners, Managers, and Implementers* at <https://www.fantaproject.org/tools/anthropometry-guide>.

Anthropometric measurements commonly used for children and adolescents include **height**, **weight**, and **mid-upper arm circumference (MUAC)**. **Bilateral pitting edema**, a clinical indicator, is commonly assessed along with anthropometry. Some measurements are presented as indices, including **height-for-age (HFA)**, **weight-for-age (WFA)**, and **body mass index-for-age (BMI-for-age)**. Each index is recorded as a **z-score**, which describes how far and in what direction an individual's measurement is from the median of the World Health Organization Growth Reference for children and adolescents 5–19 years. A z-score that falls outside of the “normal” range indicates a nutritional issue.

TABLE A. COMMON CONDITIONS AND ANTHROPOMETRIC CUTOFFS

CONDITION	DESCRIPTION	MEASURE or INDEX	MODERATE	SEVERE
Stunting reflects chronic undernutrition	Low height relative to age	HFA	<2 to ≥ -3 z-score	< -3 z-score
Acute malnutrition occurs with rapid weight loss, inadequate weight gain, bilateral pitting edema (accumulation of fluid beginning in both feet); increases risk of death	Low weight relative to height	BMI-for-age (thinness)	<2 to ≥ -3 z-score	< -3 z-score
		MUAC	See Table B	See Table B
		Bilateral pitting edema		If present
Underweight can indicate stunting, acute malnutrition, or both	Low weight relative to age (5–10 years only)	WFA	<-2 to ≥ -3 z-score	< -3 z-score
Overweight/obesity reflects high levels of body fat; increases risk of noncommunicable diseases	High weight relative to height	BMI-for-age	> +1 to ≤+2 z-score (overweight)	> +2 z-score (obese)

TABLE B. COMMONLY USED COUNTRY-SPECIFIC MUAC CUTOFFS

There are no universal MUAC cutoffs for children 5 and older. Several countries have established their own MUAC cutoffs for boys and girls 5–14 years. Commonly used cutoffs, which are not standardized or validated, are below. See <https://www.fantaproject.org/tools/anthropometry-guide> for further discussion.

Age Group	NUTRITIONAL STATUS		
	Severe acute malnutrition (SAM)	Moderate acute malnutrition (MAM)	NORMAL
5–9 years	< 135 mm	≥ 135 to < 145 mm	≥ 145 mm
10–14 years	< 160 mm	≥ 160 to < 185 mm	≥ 185 mm