



the movement to make healthy easy

In measuring height and weight in children and teens, the goal is to design a screening process that is sensitive, supportive, and protects a student's self-esteem, AND is also accurate and reliable. The accuracy depends, in part, on the quality of your equipment and if it has been maintained and calibrated.

The student's privacy needs to be protected in the screening process.

1. No other students should be present.
2. Only the screener should observe the results so the screening is kept confidential.
3. Height and weight shouldn't be announced for other students to hear.
4. Refrain from making comments during the screening that labels or diagnoses. If the student requests results, height/weight can be shared but do not label any student as overweight, obese, underweight, too thin, too short or too tall.
5. If a student makes a negative remark or has concerns about his or her own weight, it is appropriate to respond with a supportive comment. You may want to meet with the student in private at a later time to discuss his/her feelings, contact his/her parents or guardian and offer resources.
6. All students should undergo the same measurement procedures. No one student should be singled out for additional measurements because of physical appearance or weight.

Measure Weight

1. Students should be weighed using a calibrated balance beam or a medical-grade digital scale on an uncarpeted floor. Calibration involves putting known weights on the scale to check accuracy.
2. Student should wear lightweight garments, remove outer garments and shoes, empty pockets, stand still with both feet in the center of scale and not touching anything.
3. Measure to nearest 0.1 kg. Repeat; if numbers do not agree, repeat 3rd time. Results can be the average of two numbers.



the movement to make healthy easy

Measure Height

1. A calibrated vertical stadiometer with moveable headpiece perpendicular to the vertical backboard should be used on an uncarpeted floor. Plastic or cloth measuring tapes may stretch over time and provide an inaccurate measurement. Measuring rods attached to scales should not be used because the surface is not always stable and the hinge tends to become loose causing inaccurate readings.
2. Student should remove shoes, hats, bulky outer garments and remove or undo hairstyles and hair accessories that interfere with the measurement.
3. Ask student to stand with heels, buttock, shoulders, and head touching the upright surface with hands at their side.
4. Ask student to look straight ahead (the back of the head may no longer make contact with the board).
5. Lower the headpiece until it firmly touches the crown of the head and is at a right angle with the measurement surface. Read the measurement at eye level. Measure to the nearest 0.1 cm or 1/8 inch. Repeat; if numbers do not agree, repeat 3rd time. Results can be the average of two numbers.

Calculate Body Mass Index-for-Age

BMI-for-age is used for children ages 2 to 20 years. BMI-for age is the only indicator that allows us to plot a measure of weight and height with age on the same gender specific chart. BMI is more highly correlated with body fat than weight alone.

1. Convert height and weight to BMI by using one of the following methods:
 - a. Align the student's height and weight on a BMI wheel that is specific for ages 2-20, or
 - b. Calculate BMI using the following formula:
$$\text{BMI} = (\text{Weight in Kilograms} / (\text{Height in Meters}) \times (\text{Height in Meters}))$$
 - c. Use the CDC's online BMI calculator at <http://www.cdc.gov/nccdphp/dnpa/bmi/calc-bmi.htm>
2. Determine the student's age prior to plotting the measurements on the appropriate chart. The student's age should be rounded to the nearest quarter of a year.
3. Use a straight edge to plot the results on the sex-specific BMI-for-age percentile chart published in 2000 by the CDC; the charts can be accessed at the following



the movement to make healthy easy

web site: <http://www.cdc.gov/growthcharts>. All measurements for one student, grades K-12, should be plotted on the same BMI-for-age chart.

4. Growth patterns that fall outside the established parameters of $>5^{\text{th}}$ and $<85^{\text{th}}$ percentiles suggest the need to recheck measurements. Encourage parents to share the results of the growth screening with their child's health care provider.

BMI less than 5^{th} percentile = underweight

BMI between 85^{th} and 95^{th} percentile = overweight

BMI equal to or greater than 95^{th} percentile = obese

Source: Barlow SE (2007) Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report. *Pediatrics*: 120; S164-S192.

Interpret BMI-for-Age Results

The BMI-for-age charts are designed to screen for weight problems. A BMI equal to or above the 85^{th} percentile or below the 5^{th} percentile on the BMI-for-age indicates further assessment is appropriate. BMI does not directly measure body fatness. A very muscular student can have a high BMI-for-age percentile and have very little body fat. Conversely, a student can fall into "normal" percentiles and have excessive body fat. Important concepts to be conveyed to students include:

- A range of weights is normal. People can be healthy at many weights and look very different from one another. It is not normal or possible for every person to be the same size or shape.
- BMI does not directly measure body fatness.
- Normal growth and development patterns affect body shapes and sizes, especially at puberty. There may be sudden shifts in height and/or weight during growth spurts.
- Subtle media messages suggesting that only thin people are happy or attractive should be challenged.
- Students have the ability to make healthy food choices.
- Daily physical activity contributes to overall health and a healthy weight.
- Sedentary behaviors can contribute to weight gain.
- A pattern of growth (several measurements) is more helpful than the height and weight at any given time.