



Department of  
Health



## **Guidelines for Measuring Heights and Weights and Calculation of Body Mass Index-for-Age in Ohio's Schools**

## I. Introduction

The purpose of these guidelines is to provide practical guidance to school personnel who choose to collect heights and weights of the school-aged population. Screening for health problems in school is an appropriate and important part of school health services. The intent of screening is not to diagnose, but to separate those screened into two groups: those with no apparent problem in the area being screened and those who need follow-up care by their healthcare provider. Data collected during the screening can be used to influence policy and programming to create a healthier school environment.

Screening for height and weight can have value when there is sound purpose and follow up such as to establish baselines, develop programs, measure progress, or provide the legal guardians with information regarding their student's body mass index (BMI)-for-age.

Sensitive and supportive safeguards need to be in place. Labeling a student as overweight, too fat, too thin, or skinny based on a single height/weight measurement at one point in time is inappropriate. The physical and emotional well-being of students is also jeopardized when they develop poor self-esteem because of their body size, experience weight discrimination, or use unsafe weight loss practices.

*BMI measurement programs in schools may be conducted for surveillance or screening purposes.*

- **Surveillance:** To identify the percentage of students in the school or district who are underweight, healthy weight, overweight, or obese. This data is typically anonymous and can be used to identify trends over time or monitor the outcomes of a school policy or practice aimed to improve student health. This is not to inform parents of their child's weight status.
- **Screening:** To assess the weight status of individual students to identify those at risk and provide their legal guardians with information to help them take appropriate action.

The following guidelines were developed to help you measure students in a way that is sensitive and supportive, as well as accurate.

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## II. Appropriate Procedure for Screening

### **Step 1 Review school district procedures regarding health screenings.**

Support from the school district's administration is essential for a successful screening program.

### **Step 2 Legal guardian notification/permission should be consistent with other screenings.**

Refer to your school district's screening procedures.

### **Step 3 Prepare the school faculty, staff, and students for the screening process and value of the screen.**

Important concepts that need to be conveyed to students include:

- There are different body types; some body types are naturally associated with a higher body weight.
- A range of body 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.
- Normal growth and development patterns affect body shapes and sizes, especially during puberty. There may be sudden shifts in height and/or weight during growth spurts.
- Media messages suggesting that only thin people are happy or attractive should be challenged.
- Students can make healthy food choices.
- Daily physical activity contributes to overall health and a healthy weight.
- Sedentary behaviors can contribute to weight gain.

### **Step 4 Train and monitor assistive personnel in the screening process.**

It is preferred that a healthcare professional, such as the school nurse, conduct height and weight screenings. If assistive personnel are utilized, training must be provided. Interpretation of results of the screening is the responsibility of the healthcare professional.

### **Step 5 Respectful Screening.**

Design a screening process that protects the self-esteem of students:

- The student's privacy needs to be protected in the screening process. In order to assure privacy, no other students should be present. Only the screener should observe the results. Height and weight should not be announced for other students to hear.
- The results of the screening should be kept confidential. No comments on height or weight should be offered during the measurement process; however, if the student requests results, height/weight can be shared but refrain from using language that labels or diagnoses the student. Do not label any student as overweight, obese, underweight, too thin, too short, or too tall.
- Younger students and students who are anxious about the weight screening process can be positioned with their backs to the scale during measurement.
- 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 parent/guardian(s), and offer resources.

- All students should undergo the same measurement procedures. No student should be singled out for additional measurements because of physical appearance or weight.

#### **Step 6 Conduct Weight/Height Screening.**

When weight/height screening is conducted, the process must assure the results are accurate. Ideally, growth assessment is conducted annually over a student's entire K-12 career.

##### **Measure Weight.**

Students should be weighed using a platform scale on an uncarpeted floor. This may be a balance beam scale with nondetachable weights (no bathroom scales or spring scales) or a medical grade digital scale. Check your equipment regularly to make sure you are getting accurate measurements. Scales should be calibrated on a routine basis. Calibration involves putting known weights on the scale to check accuracy.

##### Procedure:

1. If the student is not wearing socks, place a paper towel on the scale base.
2. Ask the student to remove shoes.
3. Ask the student to remove extra layers of clothing such as a sweatshirt or jacket if the child is comfortable doing so.
4. Place the sliding beam weights into the "zero" position before the student steps on the scale.
5. Ask the student to stand still with both feet in the center of the platform.
6. Record the measurement to the nearest 1/4 pound.
7. Return the sliding beam weights to the "zero" position after a measurement is completed.



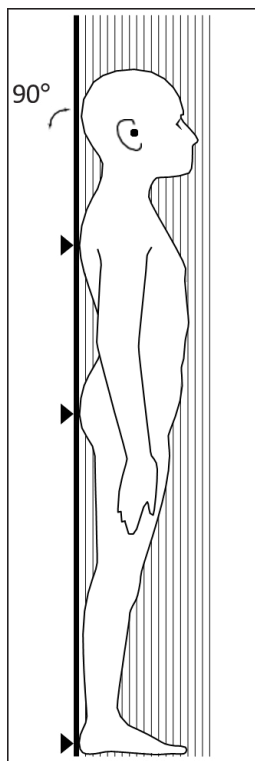
##### **Measure Height.**

A standing height board or stadiometer should be used. This device has a flat, vertical surface on which a measuring rule is attached. It also has a moveable right-angle block or headpiece and either a permanent surface to stand on or the entire device is mounted on the wall of a room with a level, uncarpeted floor. If this is not an option, a metal wall-mounted measuring tape is preferred over plastic or cloth that may stretch and provide an inaccurate measurement. Measuring rods attached to scales should not be used. The surface is not always stable and the measuring rod's hinge tends to become loose, causing inaccurate readings.

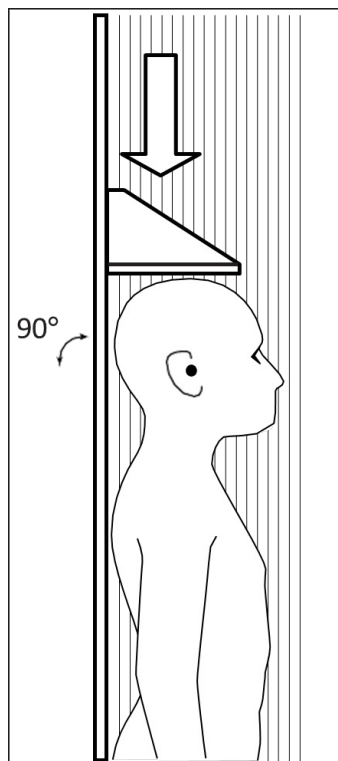


### Procedure:

1. Before you begin, place a paper towel on the stadiometer base if the student is not wearing socks.
2. Ask the student to remove shoes, hats, and bulky clothing such as coats and sweaters. Ask the student to remove or undo hairstyles and hair accessories that interfere with the measurement. If the student is unwilling to undo an intricate hairstyle, locate the crown of the head to the best of your ability.
3. Direct the student to stand erect with shoulders level, hands at sides, heels together, and weight evenly distributed on both feet. The student's feet should be flat on the floor or foot piece, with heels comfortably together, and touching the base of the vertical board. There are four contact points between the body and the stadiometer: head, upper back, buttocks, and heels (see **diagram 1**).
4. Ask the student to look straight ahead. When the chin is correctly positioned, the back of the head may no longer make contact with the board (see **diagram 2**).
5. Ask the student to breathe in and maintain his or her position. Lower the headpiece until it firmly touches the crown of the head and is at a right angle with the measurement surface. Check the contact points to ensure the lower body stays in the proper position and the heels remain flat. Read the measurement at eye level.
6. Record the height to the nearest 1/8 inch.



**Diagram 1.**



**Diagram 2.**

### III. Calculate Body Mass Index-for-Age

#### Body Mass Index-for-Age Definition:

**BMI-for-age is the measure used for children ages 2 to 20 years old. BMI-for-age is the only indicator that allows plotting 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. Members from the ODH Bureau of Child and Family Health, the American Academy of Pediatrics, and the American Medical Association, with support from the Centers for Disease Control and Prevention (CDC), recommends that BMI-for-age be used to routinely screen for weight status.

- Convert height and weight to BMI by using one of the following methods:
  - τ Calculate BMI using the following formula:  
[weight in pounds] ÷ [height in inches] ÷ [height in inches] x 703, or
  - τ Use the CDC's online BMI calculator: <https://www.cdc.gov/healthyweight/bmi/calculator.html>
- Determine the student's age prior to plotting the measurements on the appropriate chart. When plotting the measurements on the charts for 2 to 20-year-olds, the student's age should be rounded to the nearest quarter of a year.
- Plot the results on the gender-specific BMI-for-age percentile chart published in 2022 by the CDC. The charts can be accessed at the following website:  
[https://www.cdc.gov/growthcharts/clinical\\_charts.htm#Set](https://www.cdc.gov/growthcharts/clinical_charts.htm#Set)
- All measurements for one student, grades K–12, should be plotted on the same BMI-for-age chart.
- Growth patterns that fall outside the established parameters of > 5<sup>th</sup> and < 85<sup>th</sup> percentiles suggest the need to recheck measurements, plots, and calculations, and make any necessary corrections or adjustments.

## IV. Interpret BMI-for-Age Results

The following information is for school districts that are monitoring individual student's BMI-for-age over grades K–12.

The BMI-for-age charts are designed to screen for weight problems, not to diagnose them. A BMI equal to or above the 85th percentile or below the 5th percentile on the BMI-for-age charts indicate further assessment is appropriate but does not mean that a student is underweight or overweight. The following established cut off points are used to identify underweight and overweight students and adolescents:

BMI Category	BMI Range
Underweight	Less than the 5th percentile.
Healthy Weight	5th percentile to less than the 85th percentile.
Overweight	85th percentile to less than the 95th percentile.
Obesity	95th percentile or greater.
Severe Obesity	120% of the 95th percentile or greater OR 35 kg/m <sup>2</sup> or greater.

BMI is an indirect measure of body fat; it does not differentiate between body fat and lean body mass. 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.

BMI-for-age interpretation is complicated by the fact that there are sudden shifts in height and weight during growth spurts. When both height and weight are changing, the BMI is unstable. BMI-for-age can be misinterpreted in students because height and weight growth spurts occur at different times. A normal, temporary, weight gain preceding a height spurt can be misinterpreted as an impending weight problem. The pattern of growth is far more informative than the height and weight at any given time. To accurately interpret BMI-for-age, a series of measurements is needed.

## V. Identify Community Resources to Help Families with Weight Concerns

Schools should identify local sources of help in the community for families with weight concerns prior to implementing the screening.

### Community Resources:

- Identify resources available to families in the community for nutrition counseling and physical activity. The local health department may be a good resource.
- Identify multidisciplinary weight treatment programs in the community if they exist. Research has shown the most promising approach to addressing childhood weight issues is a multidisciplinary approach involving physicians, nurses, dietitians, exercise professionals, mental health professionals, and families. This multidisciplinary model will look different in each community depending upon the available professionals.

## VI. Parent Notification of BMI-for-Age Results and Referral Mechanisms

- Parental notification of BMI-for-age results should be consistent with other school screenings.
- If a student's BMI-for-age is equal to or exceeds the 85th percentile or falls below the 5th percentile on the BMI-for-age growth chart, a respectfully worded letter should be written to notify parents that their student's weight may present a health risk. The letter should recommend that the parents seek further assessment by their family healthcare provider. The healthcare provider will be able to conduct a complete medical assessment, make further referrals, or implement a weight management program, if warranted. Sample letters are included in this packet.





## References

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[https://www.in.gov/health/files/collection\\_guidelines.pdf](https://www.in.gov/health/files/collection_guidelines.pdf)  
[Measuring Obesity | Obesity Prevention Source | Harvard T.H. Chan School of Public Health](#)

## Resources

The following is a list of agencies that could provide expertise/assistance in the area of childhood nutrition and physical activity.

- Ohio Department of Health.
- Local health departments.
- Ohio Academy of Nutrition and Dietetics.
- Local hospitals—check with the dietetics/nutrition department.
- Ohio State University Cooperative Extension Service.



## Acknowledgements

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## Appendix

### Sample Letters to Parent/Guardian.

#### *Sample letter No. 1*

Dear (Parent/Guardian),

Your child was recently weighed and measured through our school health services program to assess how (he/she) is growing. Your child's weight was found to be (low/high) for (his/her) height and age. This does not necessarily mean your child is (underweight/overweight) but may be at risk for this condition. The best person to evaluate your child's weight status is (his/her) healthcare provider. We encourage you to schedule an examination with your child's healthcare provider.

The healthcare provider should weigh and measure your child and may ask questions about his/her growth since birth, and about the height and weight of biological relatives. Your healthcare provider is a good resource for advice about nutrition and physical activity to address any weight issues. If you do not have health insurance or access to healthcare, please contact us for information about possible health care services options.

It is important that you don't put your child on a weight (gain/loss) diet without direction and supervision from your child's healthcare provider. Instead, we encourage good nutritional practices and daily physical activity. If you have any questions or would like information on available community resources, please do not hesitate to call me at [INSERT PHONE NUMBER] \_\_\_\_\_.

Sincerely,

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School Nurse

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Date

Sample letter No. 2

Dear (Parent/Guardian),

Your child's growth is important because it is an indicator of overall health. A child's growth is determined by monitoring a child's height and weight over time. As part of our continuing effort to help ensure our students' health, we have measured your child's height and weight. The results are recorded below:

<b>Height</b>	<b>Weight</b>	<b>BMI-for-Age Percentile</b>

Body mass index (BMI) is a screening tool that measures weight relative to height and is an indirect measure of body fat. According to the Centers for Disease Control and Prevention, a BMI-for-age at or above the 85th percentile, or lower than the 5th percentile may be a health risk for your child. Your child's BMI-for-age was in the following percentile grouping:

- At or above the 95th percentile (considered overweight).
- 85th–94th percentile (considered to be at risk of becoming overweight).
- 5th–84th percentile (considered average or typical, most children are in this group).
- Below the 5th percentile (considered underweight).

If your child is at or above the 95th percentile or below the 5th percentile, we recommend that you contact your healthcare provider to discuss your child's health. If your child is between the 85th and 94th percentile, bring these findings to your healthcare provider's attention at your child's next scheduled visit.

If you have questions, do not have a healthcare provider or health insurance for your child, would like information on available community resources, or would like to discuss these results with the school nurse, please call [INSERT PHONE NUMBER].

\_\_\_\_\_  
School Nurse

\_\_\_\_\_  
Date

Adapted from letter developed by Nancy Mosca, PhD, RN



**The Ohio Department of Health recommends that you use the Centers for Disease Control and Prevention BMI Height and Weight Screening Form referred to as the Children's BMI Tools for Schools.**

**The Children's BMI Tool for Schools is an Excel spreadsheet intended for use by a school, childcare, and other professionals who want to compute Body Mass Index (BMI)-for-age for a group of up to 2,000 children (metric version) or 20,000 children (U.S. version).**

**This spreadsheet can be found at:**  
**[https://www.cdc.gov/healthyweight/assessing/bmi/childrens\\_bmi/tool\\_for\\_schools.html](https://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/tool_for_schools.html)**



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