

Measuring Anthropometrics in a Diverse Population

Getting Accurate Measurements
Pediatric Population

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What are Anthropometrics?

- Anthropometrics are comparative measurements of the human body. Growth is an important index of a child's health status and should be monitored regularly.

Nutrition Interventions for Children with Special Health Care Needs



What Measurements are Frequently Recorded?

- Plot on standard growth charts
 - Height or length for age
 - Weight for age
 - Weight for height (or length)
 - Head circumference
 - Body Mass Index (BMI)

Compare current measurements to previous measurements to make sure measurements are accurate

Less Frequent Measurements

- Sitting Length
- Crown-Rump Length
- Arm Span
- Skin fold for triceps/subscapular
- Mid-Upper Arm Circumference
- Arm muscle and fat area

Why Are Accurate Measurements Important?



- To accurately assess growth status there must be quality anthropometric measurements.
- No matter what method of measuring the technique should always be recorded in the chart

Length/Height

- Ways to measure length or height
- <http://www.cdc.gov/nchs/video/nhanes3/anthropometry/height/height.htm>
- Alternative modes of measurement could be crown-rump length, sitting height, or arm span.
 - > Alternatives are used when patient has contractures about the hips, knees, and ankles that can interfere with the accuracy of the measurement. Or any child who is in a wheelchair or unable to stand

Crown-Rump Measurement



- Technique and Equipment:
 1. Use the same equipment and technique used for recumbent length, except bend child's legs at a 90-degree angle and bring footboard up against the buttocks.
- Compare to other weights to make sure measurement is accurate
- Used in place of length when a child is unable to stand, but can sit erect.

Arm Span

- Technique:
 1. Have child sit in erect position with arms outstretched
 2. Hold fixed end of anthropometer at the tip of the middle finger of one of the child's hands. To the tip of the middle finger of the other child's hand going across the child's back.
 4. Have the child stretch their arms to achieve maximum arm span
 5. Note arm span was technique used to estimate stature.
- Technique used when patient has lower extremity contractures or lower body paralysis but normal upper body function



Correct Technique



Incorrect Technique

Weight: Infants

- Technique & Equipment
 1. Remove infant's clothing and diaper
 2. Center the infant in the scale tray
 3. Weigh to nearest thousandth of a kilo
 4. Record any information about conditions that might have interfered with accurate weight measure (infant was moving).
 5. Compare to other weights to make sure measurement is accurate



Weight: Children



1. Weigh the child with only lightweight undergarments and no shoes
2. Have child stand in the center of the scale's platform, touching nothing, with their heels together.
3. Record any information about conditions that might have interfered with accurate weight measure (child was moving).
4. Compare to other weights to make sure measurement is accurate

Head Circumference

- Closely related to brain growth
 - > Rapid growth could show signs of hydrocephalus
 - > Decreased rate of growth could be a sign of developmental delays or malnutrition
- Measured in children less than 36 months of age
- Used to compare trends in child during different developmental stages.

<http://depts.washington.edu/growth/cshcn/text/page1a.htm>

Head Circumference

- Technique and Equipment
 1. Use flexible, non-stretch measuring tape
 2. Position child in lap of caregiver. Remove any barrettes or braids in the child's hair
 3. Place lower edge of measuring tape just above the child's eyebrows, above the ears, and around the occipital prominence (largest part) at the back of the child's head.
 4. Pull the tape snugly to compress the hair. The objective is to measure maximal head circumference
 5. Repeat the measurement twice or until two measurements agree to within 1 cm
 6. Record and plot on growth chart
 7. If measurement differs drastically from previous measures; check accuracy of plotting, and measurements.

Alternative Measurements of Body Composition: Skin Folds

In order to obtain an accurate reading you first must determine the correct spot to check for subcutaneous fat or circumference

http://www.cdc.gov/nchs/video/nhanes3_anthropometry/limb_length/limb_length.htm

- The follow video shows the technique of measuring skin folds
- http://www.cdc.gov/nchs/video/nhanes3_anthropometry/skinfolds/skinfolds.htm



Alternative Measurements of Body Composition: Circumference

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- Technique & Equipment
 1. Use flexible non-stretch tape measure
 2. Relax child's arm
 3. Measure right arm at midpoint mark
 4. Wrap tape around the arm so that it is touching the skin but not perpendicular to the long axis of the arm

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Special Health Care Needs

Populations at Risk for Incorrect Measurements

- Patients who made need special care for Measuring
 - > DoCerebral Palsy
 - > Spina Bifida
 - > Scoliosis
 - > Wheelchair bound
- In order to properly assess these at risk populations alternative growth charts and methods of measuring anthropometrics might be required.

Case Study

- What would you do if you had the following patient come in needing height, and weight measured
- 3 year old girl who has cerebral palsy and is a quadriplegic.
- How would you figure out her height?
 - > Why did you choose this method?
 - > What equipment would you need?
- How would you figure out her weight?
- What if any notations should be made with the measurements?



Answers to Case Study

- How would you figure out her height?
 - > Using Crown-Rump Technique
- Why did you choose this method?
 - > Choose this method due to lack of ability to stand and arm span is a poor choice given upper body contractures
- What equipment would you need?
 - Recumbent board, and scale large enough for wheelchair
- How would you figure out her weight?
 - > Weigh wheel chair empty then place girl in chair and weigh both. Subtract the difference to find the weight
- What if any notations should be made with the measurements?
 - > Should note that Crown-Rump technique was used for height and weighing measured subtracting wheel chair

Go Be an Anthropometric Pro!

