

## Data Collection Worksheet

**Please Note:** The Data Collection Worksheet (DCW) is a tool to aid integration of a PhenX protocol into a study. The PhenX DCW is not designed to be a data collection instrument. Investigators will need to decide the best way to collect data for the PhenX protocol in their study. Variables captured in the DCW, along with variable names and unique PhenX variable identifiers, are included in the PhenX Data Dictionary (DD) files.

### Mid-Upper Arm Circumference

#### Upper Arm Length

In this study, the length of the upper arm is measured to obtain reliable arm circumference (Section 3.4.7). Exam staff will measure the upper arm length on participants aged 2 months and older.

1. Position the SP. Direct the SP to turn away from you. Ask him or her to stand upright with the weight evenly distributed on both feet; the right arm bent 90° at the elbow, and the right palm facing up. Demonstrate the correct position if necessary (Exhibit 1).

Exhibit 1. SP position for upper arm length and midpoint



2. Mark the Measurement Site. Locate the end of the spine of the right scapula by following the scapula out to the arm until it makes a sharp V-turn to the front of the body (Exhibit 2). Using the cosmetic pencil, make a horizontal line on the uppermost edge of the posterior border of the spine extending from the acromion process (see Exhibit 3).

Exhibit 2. Upper arm bony landmarks

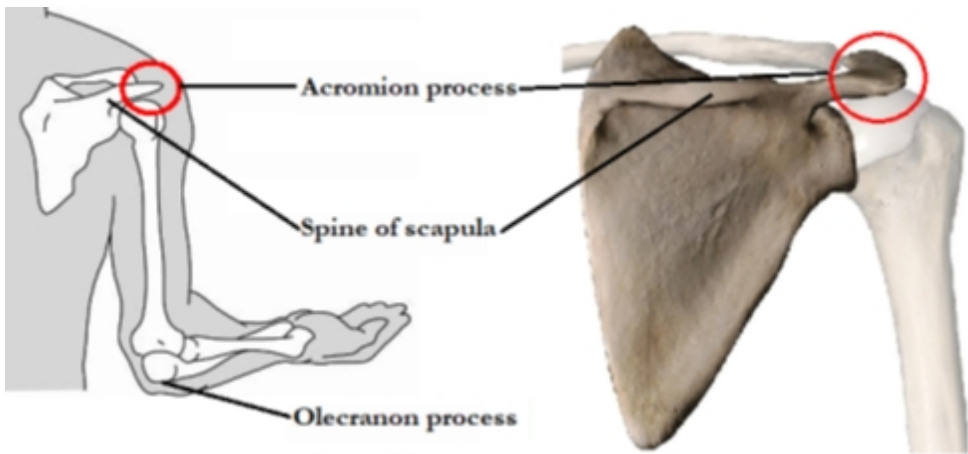


Exhibit 3. Marking spine extending from acromion process



3. Take the Measurement. Hold the zero end of the measuring tape at this mark and extend the tape down the center of the posterior surface of the arm to the tip of the olecranon process, the bony part of the mid-elbow (Exhibit 4). Exhibit 5 shows the measurement on an infant. Note: Some SPs with large arms have a lot of sagging fat and flesh near the elbow. If the arm length is obtained by bringing the tape down the back of the arm and around this extra flesh to the tip of the olecranon process, then call "BE" to the recorder who will record the measurement and add the "Bowing Effect" comment beside the Upper Arm Length measurement in ISIS.

Exhibit 4. Marking upper arm length midpoint



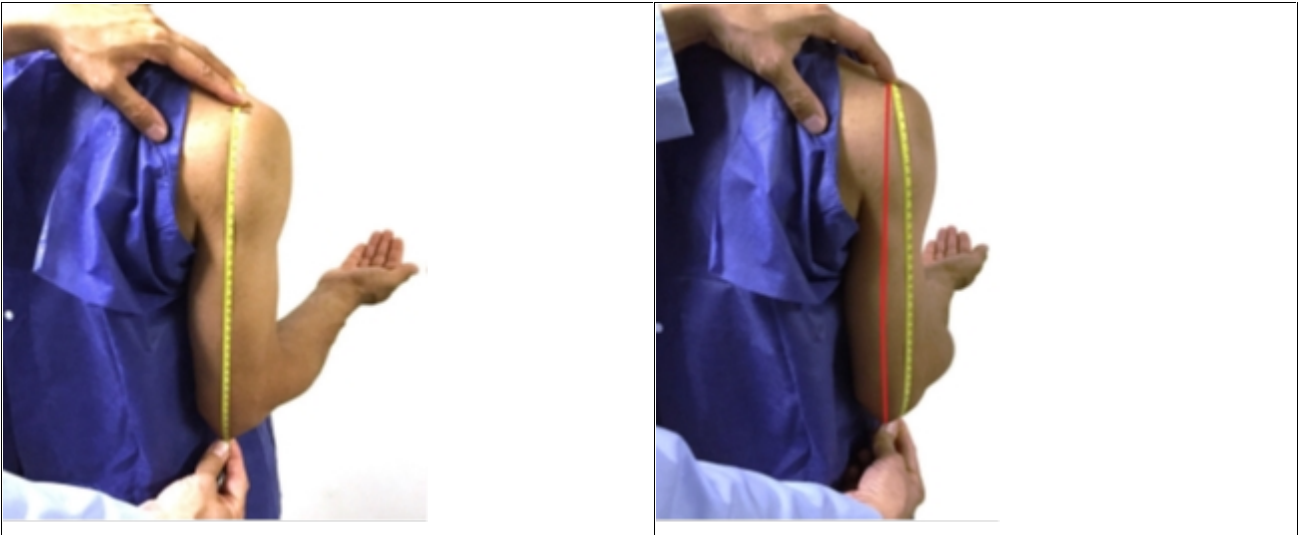
Exhibit 5. Infant upper arm length



Important: The tape must be centered on the posterior surface of the arm. Exhibit 6 shows the correct placement of the measuring tape centered on the posterior surface of the arm, whereas Exhibit 7 shows the measuring tape placed incorrectly.

Exhibit 6. CORRECT tape placement for upper arm length

Exhibit 7. INCORRECT tape placement for upper arm length



4. Record the Result. Call the result to the recorder, who will enter this number on the ISIS screen. Keep the measuring tape in position.

Mark the Midpoint. After the recorder enters the result, the application will divide the value in half to calculate the midpoint of the measured length. A computer-generated voice will repeat the measurement aloud and call out the midpoint. While the examiner holds the tape in place, the recorder will make a horizontal mark at the midpoint and cross this mark with a perpendicular line centered on the posterior surface of the arm (see Exhibit 3-13). This mark defines the site at which the arm circumference will be measured. Thus the examiner may need to remove the tape to allow the recorder to complete the appropriate cross mark. Finally, tell the SP to relax the right arm. Proceed to the arm circumference measure.

### Arm Circumference

The anthropometry protocol calls for three circumference measures: arm circumference on participants 2 months and older, abdominal or waist circumference on participants 2 years and older, and hip or buttocks circumference on participants 12 years and older. The arm circumference is measured on the right arm at the level of the upper arm mid-point mark. The examiner makes this mark on the posterior surface of the arm immediately after measuring the upper arm length. The procedures for making the mid-arm circumference mark are explained in above, Upper Arm Length, shown earlier. This section describes the procedures for measuring the arm circumference:

1. Position the SP. Ask the SP to turn so that you stand facing his or her right side. Have the participant stand upright with the weight evenly distributed on both feet, the shoulders relaxed, and the right arm hanging loosely at the sides. Flexing or tightening the arm muscles will yield an inaccurate measurement.
2. Take the Measurement. Continue to stand facing the right side of the SP. Do not stand behind the SP for this measurement. Wrap the measuring tape around the arm at the level of the upper arm mid-point mark. Position the tape perpendicular to the long axis of the upper arm. Pull the two ends of the overlapping tape together so that the zero end sits below the measurement value and the result lies on the lateral aspect of the arm (not the posterior surface). Check that the tape fits snugly around the arm but does not compress the skin. Exhibits 8 and 9 show the arm circumference measurement on an adult and infant, respectively. Take the measurement to the nearest 0.1 cm.
3. Record the Result. Call the result to the recorder, who will enter this number on the ISIS screen. Remove the tape measure. Proceed to the next circumference measure.

Exhibit 8. Adult arm circumference



Exhibit 9. Infant arm circumference



Protocol source: <https://www.phenxtoolkit.org/protocols/view/21102>