



## 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.

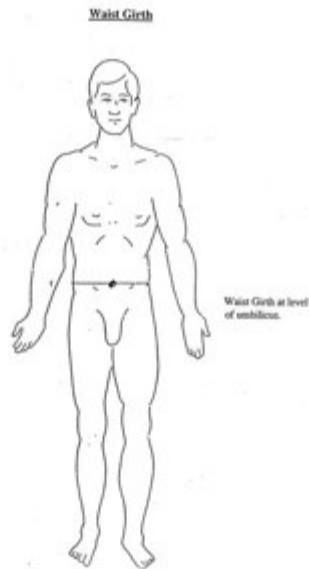
Note: Hospital gown or correct underclothing should be worn by the participant before measurement.

Waist circumference measured at the umbilicus:

The waist circumference is the horizontal plane centered on the umbilicus of the participant (see Exhibit 2). Note that the umbilicus may be embedded in sagging fat in extremely obese participants.

Follow the procedures below to obtain this measure.

1. Participant stands erect, arms hanging loosely at sides, weight equally distributed on both feet, head facing straight ahead.
2. The technician will take the gown from the back and place it over the shoulder of the participant. The technician will ask the participant to bend their arms at the elbow and hold the gown in place.
3. Apply anthropometric tape at the level of the umbilicus.
4. Apply tape snugly but not tightly.
5. Make sure the tape is horizontal and not twisted, checking from both the front and back by using 2 mirrors mounted to the wall.
6. Before recording measurement, ask the participant to fully relax their shoulders.
7. Record measurement to the nearest 0.1 cm. For off-site visits, the waist measurement will be done without using a mirror. A code should be entered to capture this as a protocol modification.



## Exhibit 2. Location of Measurement at Umbilicus

Graphic from the Framingham Heart Study. Personal Communication, J. Murabito.

### Interpretation of Findings

Waist circumference has become an important indicator of obesity and especially of abdominal obesity, including visceral and subcutaneous fat at the site measured. Often, it is compared with appropriate reference data for populations. The exact site, ages, and protocol used in the reference data need to be carefully identified; although several different body sites have been used, the actual measurement may differ considerably based on the site measured. Investigators should be sure to match the specific location of the waist circumference measurement with the reference data used.

Waist circumference is often a measurement criterion for defining metabolic syndrome. Because of the considerable changes in waist circumference with age and variation by gender, attention must be given to these factors when interpreting results.

Several references are provided as follows for discussions of appropriate applications of waist circumference measurements and applications related to waist-to-hip ratio and metabolic syndrome.

Protocol source: <https://www.phenxtoolkit.org/protocols/view/21603>