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| **About the Measure** | |
| **Protocol Id** | 20802 |
| **Domain:** | Anthropometrics |
| **Measure:** | Hip Circumference |
| **Definition:** | Hip circumference is the measurement of the circumference of the hips at the level of the maximum extension of the buttocks. |
| **Purpose:** | The most common use of hip circumference is to calculate the waist-to-hip ratio. Waist-to-hip ratio has been associated with risk of a number of chronic conditions, such as type 2 diabetes. |
| **Essential PhenX Protocols:** | Current Age [10101] Sex Assigned at Birth [11601] Gender Identity [11801] |
| **Related PhenX Protocols:** | Ethnicity and Race [11901] Height - Knee Height [20701] Height - Recumbent Length [20702] Height - Standing Height [20703] Height - Self-Reported Height [20704] Weight - Measured Weight [21501] Weight - Self-Reported Weight [21502] Waist Circumference - Waist Circumference NHANES [21601] Waist Circumference - Waist Circumference NCFS [21602] Waist Circumference - Framingham Heart Study [21603] |
| **Measure Release Date:** | October 01, 2015 |

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| **About the Protocol** | |
| **Protocol Release Date:** | October 01, 2015 |
| **Protocol Review Date:** | October 01, 2015 |
| **PhenX Protocol Name:** | Hip Circumference - Hip Circumference |
| **Protocol Name From Source:** | National Health and Nutrition Examination Survey III (NHANES III), Body Measurements, 1988 |
| **Protocol Availability:** | Available |
| **Keywords:** | Anthropometrics; metabolic syndrome; Waist-To-Hip Ratio; WHR; NHANES |
| **Description:** | Measurement of the hip girth at the level of the maximum protrusion of the buttocks. |
| **Specific Instructions:** | The following protocol was taken from the Third National Health and Nutrition Examination Survey (NHANES III).The measurement is recorded to the nearest 0.1 cm.  The Expert Review Panel (ERP) recommends that researchers view the NHANES III video for anthropometric measures. The video includes a measure called Buttocks Circumference that is also hip circumference: [link[www.cdc.gov/nchs/video/nhanes3\_anthropometry/circumference/circumference.htm|http://www.cdc.gov/nchs/video/nhanes3\_anthropometry/circumference/circumference.htm]].  Notes from ERP:  The notion of recommending replicate measurements comes from the reduction in random errors of measurement and accompanying improved measurement reliability when the mean of multiple measurements is used rather than a single measurement. This improvement in measurement reliability, however, depends on the reliability of a single measurement in the hands of the data collectors in a particular study (Himes, 1989). For example, if a measure like recumbent length in a given study has a measurement reliability of 0.95 (expressed as an intraclass correlation coefficient), taking a second measurement and using the mean of the two in analyses will only improve the reliability to 0.97, yielding only a 2% reduction in error variance for the additional effort. If, in the same study, the reliability of a single triceps skinfold measurement was 0.85, using the mean (including a replicate measurement) would raise the reliability to 0.92 and yield a 7% reduction in error variance, a more than three-fold improvement compared with recumbent length. The intraclass correlation coefficient is specifically recommended here for assessing reliability because it takes account of both random and systematic errors of measurement, whereas the interclass correlation (e.g., Pearson correlation) takes account of only random errors of measurement.  Because the benefits of taking replicate measurements are so closely linked with the existing measurement reliability, it is recommended that as a part of the training of those who will be collecting anthropometry data, a reliability study be conducted that will yield measurement reliability estimates for the data collectors, protocols, settings, and participants involved in that particular study (Himes, 1989). If the measurement reliability for a single measurement is ≥ 0.95, the recommendation is that replicate measurements are not necessary and will yield little practical benefit. If the measurement reliability is < 0.95, the recommendation is to include replicate measurements as prescribed.  If replicate measurements are indicated because of relatively low reliability, a second measurement should be taken, including repositioning the participant. A third measurement should be taken if the first two measurements differ by > 0.5 cm. If it is necessary to take a third measurement, the two closest measurements are averaged. Should the third measurement fall equally between the first two measurements, all three should be averaged. |
| **Protocol:** | **Buttocks (Hip) Circumference**  The SP (study participant) stands erect with feet together and weight evenly distributed on both feet. The SP is holding up the examination gown. The recorder stands in back of the SP and gathers the side seams of the exam pants together above the hips and places the thumb in the fabric to make a fold. The recorder holds the folded sides of the pants snugly while the examiner squats on the right side of the SP and places the measuring tape around the buttocks. The tape is placed at the maximum extension of the buttocks (see Exhibit 1). The recorder then adjusts the sides of the tape and checks the front and sides so that the plane of the tape is horizontal. The zero end of the tape is held under the measurement value. The tape is held snug but not tight. The examiner takes the measurement from the right side and calls it to the recorder.  Figure 1.  [img[020802\_Hip\_Circumference\_1.jpg|]] |
| **Selection Rationale:** | The NHANES III protocol was selected as the best practice methodology and most widely used protocol to assess hip circumference. |
| **Source:** | National Health and Nutrition Examination Survey III (NHANES III). (1988, October). Body Measurements (Anthropometry). Rockville, MD: Westat, Inc. |
| **Language** | English |
| **Participant:** | 2 years of age and older |
| **Personnel and Training Required:** | Technicians should be trained in the basic techniques of anthropometric measurements. |
| **Equipment Needs:** | Flexible measurement tape that exceeds 200 cm. |
| **Standards** |  |
| **General References:** | Himes, J. H. (1989). Reliability of anthropometric methods and replicate measurements. *American Journal of Physical Anthropology*, 79(1), 77-80. |
| **Mode of Administration:** | Physical Examination |
| **Derived Variables:** | Waist-to-Hip Ratio (WHR) |
| **Requirements:** | |  |  | | --- | --- | | **Requirement Category** | **Required (Yes/No)** | | **Major equipment** | No | | **Specialized training** | No | | **Specialized requirements for biospecimen collection** | No | | **Average time of greater than 15 minutes in an unaffected individual** | No | |
| **Annotations for Specific Conditions:** | None |
| **Process and Review:** | The [link[phenxtoolkit.org/about/teams#erp1-members|Expert Review Panel #1]] reviewed the measures in the Anthropometrics, Diabetes, Physical Activity and Physical Fitness, and Nutrition and Dietary Supplements domains.  Guidance from the ERP includes:  • Replaced the protocol (different source)  • Changed unit of measurement  • Added replicate measure language  Back-compatible: there are changes to the Data Dictionary, previous version of the Data Dictionary and Variable mapping in Toolkit archive ([link[www.phenxtoolkit.org/domains/view/20000#tab5content|link]]) |