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| **Arm Span** |
| **Protocol Id** | 020101 |
| **Description of Protocol** | Individual stands with arms outstretched at shoulder level, and measurement of the arm span is the maximum distance between the extended middle fingers of the right and left hands, measured across the back. |
| **Specific Instructions** | None |
| **Protocol Text** | There are several overarching, critical issues for high-quality data collection of anthropometric measures that optimize the data in gene-environment etiologic research. These issues include: (1) the need for training (and retraining) of study staff in anthropometric data collection; (2) duplicate collection of measurements, especially under field conditions; (3) use of more than one person for proper collection of measurements, where required; (4) accurate recording of the protocols and measurement units of data collection; and (5) use of required and properly calibrated equipment.Under usual field conditions, for reliability, the Anthropometrics Working Group suggests that the measurements are taken in duplicate. A third measurement should be taken if the first two measurements differed by >1.0 cm (1/4") for participants 12 years or older or >0.5 cm (1/8") for participants 11 years and younger. 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.\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*This protocol is part of an examination survey. It requires a tape measure at least 2 m long, a flat surface (usually a wall), and an adjustable block that is fixed to the wall. The spool of the tape measure is fixed to the adjustable block. The block serves as the contact point for the middle (longest) finger of the right hand, which is in contact with the block when the participant is positioned. The block must be movable so that it can be adjusted vertically to accommodate individuals of varying stature. The block is adjusted to bring the tape to the shoulder level for the subject, and then the tape is pulled horizontally along the wall. The participant stands with the feet together so that his or her back is against the wall. The arms are outstretched laterally and maximally at the level of the shoulders, in contact with the wall, and with the palms facing forward. The tip of the middle (longest) finger (excluding the fingernail) of the right hand is kept in contact with the block, while the zero end of the tape is set at the tip of the middle (longest) finger (excluding the fingernail) of the left hand. Two people (measurers) are necessary, one at the zero end of the tape to be sure the tape end is positioned correctly and the other at the block end to make the reading. The measurement is recorded to the nearest 0.1 cm (1/4"). Occasionally, a small stool may be required for the measurers to make this measurement on tall subjects (when the measurer is shorter than the study subject).When making this measurement, it is imperative that the participant’s arms be outstretched maximally and that they are held in this position until the reading is taken. Special care must be taken with young children and older individuals as they tend to lower their arms during the measurement.\* Please note that there might be high levels of participant discomfort (see Burden Table) for the elderly and young children who may not be as flexible. |
| **Selection Rationale** | This Arm Span measurement protocol was published in the *Anthropometric Standardization Reference Manual*, a commonly used standard for the collection of anthropometric variables. |
| **Source** | Lohman, T. G., Roche, A. F., Martorell, R. (Eds.). (1988). *Anthropometric standardization reference manual.* Champaign, IL: Human Kinetics Books. |
| **Language** | English |
| **Participant** | Participant, aged 2 years and older |
| **Personnel and Training Required** | Technicians should be trained in the basic techniques of anthropometric measurements. |
| **Equipment Needs** | Measurement tape that is at least 2 meters long and block positioned on a wall where it is possible to move the block vertically. |
| **Standards** |

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| **Standard** | **Name** | **ID** | **Source** |
| Common Data Elements (CDE) | Person Arm Span value | 2794253 | [CDE Browser](https://cdebrowser.nci.nih.gov/CDEBrowser/search?elementDetails=9&FirstTimer=0&PageId=ElementDetailsGroup&publicId=2794253&version=1.0) |
| Logical Observation Identifiers Names and Codes (LOINC) | PhenX - arm span protocol | 62404-9 | [LOINC](http://s.details.loinc.org/LOINC/62404-9.html?sections=Web) |

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| **General References** | None |
| **Protocol Type** | Physical Measurement |
| **Derived Variables** | None |
| **Requirements** |

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| **Requirement Category** | **Required** |
| Average time of greater than 15 minutes in an unaffected individualAverage time of greater than 15 minutes in an unaffected individual | No |
| Major equipmentThis measure requires a specialized measurement device that may not be readily available in every setting where genome wide association studies are being conducted. Examples of specialized equipment are DEXA, Echocardiography, and Spirometry | No |
| Specialized requirements for biospecimen collectionThis protocol requires that blood, urine, etc. be collected from the study participants. | No |
| Specialized trainingThis measure requires staff training in the protocol methodology and/or in the conduct of the data analysis. | No |

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