

# **BODY MEASUREMENT TERMINOLOGY USED IN THE APPAREL INDUSTRY**

**Su-Jeong Hwang, Cynthia L. Istook**

**North Carolina State University, Raleigh, NC 27659**

A standard body measurement method is essential for apparel manufacturers in order to produce customized garments. Without the clarity of standard body measurement terminology, the method can be time consuming, invasive, and often inaccurate, based on who took the measurements and how they took them. The purpose of this study was to evaluate body measurement terminology and standards used in the apparel industry. The evaluation was to uncover inconsistencies and potential problems.

Standard terminology and body measurement methods for apparel sizing were collected from ASTM D 5219-99, ISO 8559 and anthropometry. ASTM D 5219-99 standard terminology relating to body dimensions for apparel sizing is based on ISO 8559 relating to garment construction and anthropometric surveys for body dimension, and ISO 3635 relating to size designation of clothes, definitions and body measurement procedures. These two standard body measurement methods used for apparel were based on traditional anthropometry. In addition, current body measurement methods used for technical references, education references, and Auto CAD patterns were compared with the standard body measurement methods. All measurement terminology and methods were categorized into girth, length, and width and we analyzed them in following seven cases: Not available terminology in standards (NA), all the same terminology (S), different terminology and methods (DTM), different terminology (DT), different methods (DM), only ASTM terminology (ASTM), and only ISO terminology (ISO).

The results from this analysis were NA 45.22%, S 11.30%, DTM 18.26%, DT 10.43%, DM 6.09%, ISO 6.96 % and ASTM 1.74 %. Only a few definitions in girth and length matched each other with the same terminology and the same methods. Technical references for the apparel industry, education, Auto CAD pattern development, and anthropometry showed that 45.22% of total body measurement parts were not in either of two standards. Different terminology and methods (DTM) significantly impacted other parts of measurements or fit. Waist girths and lines with unclear landmarks caused different lengths. The interpretation of that meaning will significantly impact fit.

In our findings, the ISO 8559 and other traditional body measurement methods had three limitations on description. First, traditional body measurement methods for apparel have been based on "feel" by hand. Measurements based on feel only work when the measurer is trained to know what he or she is feeling or when the body is not too padded to cover important landmarks. Second, to measure elbow girth, shoulder to elbow length, and arm length, a bent arm was necessary. Different measurement methods and definitions of arm length appeared in all traditional standard measurements for apparel because the length can be obtained in different positions. And third, imaginary lines such as "side seam to side seam" appeared as unclear descriptions for abdomen width in ASTM.

We found that there was a lack of consensus of terminology and acceptance of standard measurements for apparel. Therefore, a set of measurement standards is needed for both apparel producers and 3D body scanning system developers in the future. Standardization of body measurements in different industries relating to apparel will increase efficiency in CAD garment sizing, pattern development, and alteration process.