Improving apparel fit for older women: Comparison of fit differences between a parametric avatar and a dress form

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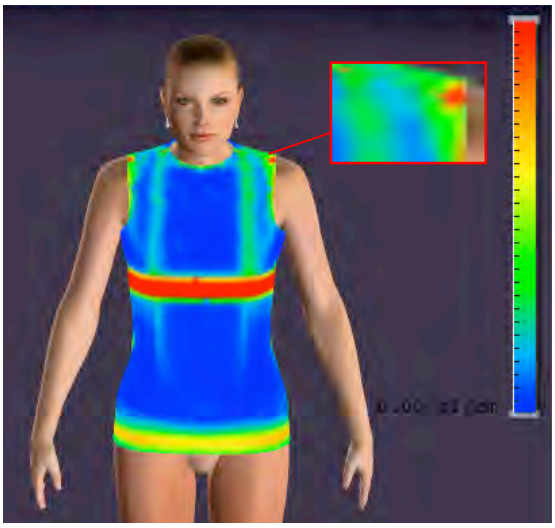
Keywords: Older women, apparel fit, virtual prototyping, 3D parametric avatar

Apparel fit plays a significant role in not only consumers' satisfaction with apparel (Eckman, Damhorst, & Kadolph, 1990), but also their apparel purchase decisions (Gardyn, 2003). Over two-thirds of older women are dissatisfied with fit of ready-to-wear garments since these garments are developed based on younger women's bodies and do not reflect the body changes such as shorter stature and a forward tilt of shoulders that older women go though (Goldsberry, Shim, & Reich, 1996). The population who are 65 years old or older is expected to increase from 40.2 million in 2010 to 88.5 million in 2050 (U.S. Bureau of the Census, 2010). In spite of the growing importance of this particular group, there has been little research on improving apparel fit for older women (Goldsberry et al., 1996). With the development of digital technologies in the apparel industry, there have been a variety of applications, such as virtual prototyping and custom pattern development, to improve apparel fit (Loker, Ashdown, Cowie & Schoenfelder, 2004). Therefore, the purpose of this study was to create a parametric avatar of an average older woman, develop upper garment patterns for the avatar and compare the results with the same patterns developed from a standard dress form, which is widely used in the industry to develop ready-to-wear garments. Our aim was to examine how older women's body changes could be reflected in apparel design to solve ready-to wear garments' fit problems.

In order to create a parametric avatar of an average size 6 older woman, standard body measurements from ASTM D5586/D5586M-10 for women aged 55 and older were used. Based on the ASTM standard data we manually morphed the default Optitex Eva parametric avatar to represent our target population. To evaluate the differences between a realistic body and a standard dress form, we used a parametric size 6 Optitex dress form. Upper body patterns were drafted directly on both of the 3D parametric models by using the Optitex Flattening module in PDS 12. For placing the same body landmarks on the two models, sagittal, frontal, and transverse planes were placed to divide the body into left and right, front and back, and upper and lower. A slanted transverse plane was also placed on the neck circumference to aid the design process (Figure 1). Following the drafting,

Figure 1. Sagittal, Frontal, and Transverse Planes



Fiaure 2. Tension

patterns were flattened and prepared for virtual stitching in the PDS 12 workspace. Both sets of the stitched patterns were placed on the average older woman's standard avatar (*Eva*) to check their fit by using the tension map tool in Optitex PDS12 (Figure 2).

The initial results showed that although the patterns acquired from the dress form were larger than the patterns developed from *Eva*, the tension map showed some tightness (indicated by red zones) around bust, shoulders, and hip when the patterns from the dress form were placed on *Eva*. Our findings supported the previous research which discussed that patterns developed for older women should reflect the body changes, which include shorter stature, thickened waist, and a forward tilt of the head and shoulders (Campbell & Horne, 2001). Even though we were not able to enter the precise degrees to display posture changes, which is one of the physical indicators of aging (Cambell & Horne, 2001), we were able to use the slider in the model properties window to create the forward tilt of the body. We measured the degrees afterwards by using the circumference measurement tool. Despite the software limitations, the findings of this study can have practical implications for fashion designers and retailers to improve older women's dissatisfactions with apparel fit due to their body changes.

References

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