



Develop a correct scaled body figure for global apparel product development

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Global ready-to-wear apparel production requires specifications of various information. Among many, flat is one of the most important key factors for design communication as it is used as a blue print of product development and production. In global apparel development and production, designs are presented and interpreted by flats and samples are developed based on details of flats. To be successful in fashion business, therefore, proportionally correct flats based on correct scaled human body figures are imperative. In reality, however, elongated figures (i.e., 8 or 9-head-figures), which are tall and slender than the real human body, are commonly used in apparel design and product development. Designers and pattern makers confirmed that distorted proportion of body figures have caused confusion and misinterpretation of flats and it frequently results in remaking proto-samples and ultimately lengthening the production time. (Kim et al., personal communication, February 8, 2014). Considering the current practice of global overseas sourcing, the issue is even greater. As those native workers in overseas are illiterate in English language they mainly lean on visuals (i.e., flats) as the main source of information in technical package for design interpretation. Thus, incorrect proportion of drawing will cause more issues further. In addition, recently the growing economic development in Asian countries brought special attention to their market, especially Chinese market. In the global apparel industry, Asian body type was fit by the existing petit size system. However, it was originally created to fit Caucasian body type thus it has its own limitations to comfortably fit to Asian somatotype. Therefore, it is imperative to develop proportionally correct body figure for Asian body type.

In this study the researchers were to develop a body template for flats for Asian body type especially for women. The researchers used the data from 'Size Korea' (5th), which is one of the series of Korean government apparel sizing projects to analyze Women's body measurements (age range 7-49). 5,217 women's measurements of major parts of their bodies were directly taken and analyzed in the project. The researchers selected direct measurements from the project and classified them into 7 groups based on the age categorizations from 7 to 49

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(i.e., 7, 9, 12, 17, 18-24, 25-34, 35-49). Descriptive statistics by SPSS was used for the analysis. Using the results of the analysis, a body figure(i.e., skeleton) for each group was created by PAD(Pattern Design Software) System 4.1 first. Then, muscle was added to the skeleton body figure created using Adobe Illustrator to ensure better visualization and convenience for the industry uses of drawing flats and technical sketches. In order to grade for each size group, young age group was selected as a representative standard as it is the group of more stability in body shape than other age groups. The average breast circumference for the group was calculated at the interval of 4cm and applied with the grade deviation of each size for the group.

In consideration of somatotype changes as it is related to age, an analysis of descriptive statistics (i.e., average, standard deviation, and variation coefficient) was applied for the 7 classified age groups with 13 height measurements, 5 width measurements, 6 length measurements, 8 circumference measurements, and 5 body measurements calculated. A body figure was created by using both height and width measurements. Height measurements were set first and the centerline was determined by the average value of width measurements for each age group. Compared to the existing body figures for flats currently used in the industry, the created body figure from the study has a significant difference in height measurements. The correct scaled body figure we developed from the study had a bigger head and it had shorter crotch height and waist length, and lastly, hip length and all other width measurements were longer than the one currently used in the industry. In particular, contrary to the real human body, legs seemed too long and the crotch was set at a half of the body height, which is not realistic. Compared to each age group, interestingly, the hip width of adult group (i.e., age 35-49) was narrower than young group (i.e., age 18-24).

The proportionally correct body figures created in this study clearly showed the proportional variation of the women's body in age groups. Ultimately, the correct scaled figures can be used as a foundation to develop well-fit apparel products for women, especially for Asian markets and Asian somatotypes for global apparel industry as they correctly reflect the real human body proportion. The results of this study also can support apparel retailers and manufacturers to develop and produce functionally well-fit and aesthetically pleasing apparel products by maximizing their budgets, reducing the lead time, and finally creating more revenues.