

# A Study on Application for Dress Form Made from a Replica Method - A Comparison of the Satisfaction of Fit of Basic Dresses Using the Draping and Flat Pattern Methods

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## Abstract

*In this research, the fit of basic dresses was examined, by analyzing and comparing the satisfaction of fitness of basic dresses made by the draping method on a custom-made replica body form and that of a basic dress made by the flat pattern method. Basis dresses were produced by the draping method for each 52 subjects using custom-made body forms, and another kind basic dresses for each subjects were produced by the flat pattern method using measurements of body sizes. Both basic dresses received high scores for the satisfaction of fit, but the basic dresses produced by draping method received higher scores. Thus it is expected to produce a more successful fit by draping a basic dress on a custom-made body form. Future research using more subjects might confirm these results. A more concrete analysis through using additional satisfaction tests could be conducted. For example, each subject might also serve as an evaluator to rate her satisfaction of fit wearing each of the two custom-made dresses. Finally, examining various body forms is suggested.*

*Key words : body, flat pattern, draping pattern, replica method.*

## I . Introduction

As the industry of apparel develops, requirements of consumers are becoming more various, especially due to the molding characteristic the apparel has. When evaluating apparel, not only psychological factor but also social roles work as an index. Therefore, those who are in the apparel field should always be aware of the art style of each era and molding beauty that is held in it, respond properly to the cycle of latest fashion

and be sensitive to the consumer's emotions.

The apparel becomes perfect when the 3 conditions of design, pattern and sewing are satisfied. It can be said that design is preserved by the development of designer's creativity, pattern by scientific study of changing body form and sewing by development of machines and techniques.

Flat pattern was first become a device by the invention of tape measure, completed in Japan via England and the US and contributed to popularizing the apparel industry by being used to

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mass production of apparel.<sup>1)</sup>

Body was made for draping in the early 1900 and the interest became known to people as the bias cut was tried in the half sized body form of Madeleine Vionnet in 1930. But it can be said that draping actually started from the moment the cloth was slipped on in Greek period, and developed through the fitting process along with flat pattern.

The reason for this is because students can do more skillful draping after understanding the 3-dimensional relationship between human body and apparel as result of studying 2-dimensional pattern making.

The draping method, as a process used to create apparel is studied within the clothing and textiles field of study. Generally draping is mastered after mastering the flat pattern method of apparel design.

Body form is a basically necessary tool for draping method. Since it is a substitution for human body, it should carry factors that are most similar to human body. It doesn't have to be made realistically. Skeletal features such as a bulge of muscles could make it more difficult to use human body. Chic-Koike suggested 4 conditions for fine body. First, it must have a beautiful proportion. Second, it must be nude. Third, it must be composed of materials that are easy to be used. Forth, a color that represents skin is preferred.<sup>2)</sup>

When creating apparel by draping, a body form is a necessary piece of equipment. The body forms used in most colleges are industry standard forms, which are built from an aggregate set of body measurements. Although it's possible to order from Japan or USA, because of its high price, there is limitation in purchasing in mass.

Though flexible bodies are being produced by technique innovation developing business people at minor enterprise, they haven't been yet certified.<sup>3)</sup> For these reasons, the body forms used in Korca are duplicated from the ones of Japan or US, and thus, these are insufficient to satisfy the body forms of Korean.<sup>4)</sup>

It is expected that functional as well as aesthetically pleasing apparel will result from designs created by draping. Obtaining satisfaction in functional apparel is impossible without understanding complicated curves and movements of each parts of a human body. The human body is a solid form with complicated curves and it varies according to gender, age and era. When producing apparel by the draping method with the same body form, in spite of these kinds of individual variety, it is very difficult to get a satisfactory result.

Thus, in this research, two basic dresses were created to fit individual bodies: one produced by the draping method and another by the flat pattern method. The satisfaction of fit of the basic dress produced by the draping method was compared and analyzed to the basic dress produced by the flat pattern method.

## II. Method of the Research

### 1. Subject and Period of the Research

70 students from the Department of Apparel at Mokpo University were chosen. During the period from March 15, 2000 to October 15, 2001, the subjects body sizes were measured and custom-made body forms were produced. They were produced through 3 years subjecting students who entered the university in 1999~2001, verified by study of Oh, Ji-Young<sup>5)</sup> and used to

<sup>1</sup> Y. J. Jerng, *Draping* (Seoul: Gyohak Yeungusa, 2002), 3-7.

<sup>2</sup> Chic-Koike, ed. Hyojin Lee, *Draping for creator* (Seoul: Yehaksa, 1997), 12-13.

<sup>3</sup> <http://www.bikiu.ac.kr/index.php>

<sup>4</sup> S. H. Mun, and Boo Ja Shim, "Anthropometry and cluster analysis for figure construction," *Journal of the Korean Society of Clothing and Textiles* Vol. 15 No. 2. (1991): 151-162.

<sup>5</sup> Ji Young Oh, "A study on the upper body measurement method for clothing construction," (Masters' Thesis, Mokpo National Univ., 1999), 30-44.

draping, and plane method. The flat pattern method was used with measured sizes and basic dresses were produced on the custom-made body forms by the draping method.

## 2. Items of Measuring and Method<sup>6)</sup>

The Martin measuring tool was used in measuring. Categories and standards of measurements were used in reference to KS A 7003 and KS A 7004 of the Korean Industry Promoting Office.<sup>7,8)</sup>

## 3. Producing Model of Body Form by Replica Method<sup>9)</sup>

Torso body form for this study will be produced using plaster.

(1) Supplies needed: plaster gauze, vinyl, plaster cutting scissors, standard indicating tape, hair dryer, needle and sew, warm water (38℃), wax, polyurethane foam, knitted cotton, body form tape

(2) Caution;

<Table 1> Measuring Item

Item
Bust circumference
Waist circumference
Front waist length
Back length
Front intersected breadth
Back intersected breadth
Posterior shoulder length
Neck point to nipple length
Nipple to nipple length

① Check the health condition of the subject.

② Subject should be wearing underwears only, and be standing straight.

③ There should be 2 assistants to help the subject to maintain stable posture.

④ Skin of subject should be protected by wearing oil or vinyl cloak.

### (3) Procedures

① Plaster should be prepared in length of 4 to 5 times to the length of the standard line of human body. Prepare warm water in a bowl wide enough to wet the plaster tape.

② Put plaster band on the body surface.(Fig. 1~5)

③ Wrap the body surface with plaster gauze and use hair dryer to dry the plaster as quickly as possible, and mark the neck circumference, thigh and armor lines.

④ Cut up the center of the back of the mold and ease the mold off the model in the way the plaster shape can be maintained.(Fig. 6)

⑤ Seal the center line of back, neck circumference and armor circumference and dry the mold in shade with winds.(Fig. 7)

⑥ Supply the wax onto the inner surface of thoughtly dried mole and fill in with polyurethane foam.(Fig. 8)

⑦ After the polyurethane foam is hardened, separate the outer surface plaster, rearrange the surface neatly and mark the standard lines.

⑧ Cover the body form with cotton knit and complete by marking the standard point and lines.(Fig. 9, 10)

## 4. Producing Basic Dress by Flat Pattern Method and Draping Method

Material was cut in regular sizes; its strands were organized and were ironed in natural con-

<sup>6</sup> Young-Ja Lim, and Hyoung-Sook Lee, "The comparison of standard women's sizing systems between domestic and foreign country," *Journal of the Korean Society of Clothing and Textiles* Vol. 23 No .3 (1999): 393.

<sup>7</sup> Korea agency for technology and standards, *A Women Apparel Size of Korea Industry Promoting* (1999).

<sup>8</sup> Korea agency for technology and standards, *The National Body Shape Research* (1992).

<sup>9</sup> Nancy O. Bryant, "Rigid foam body forms," (Oregon: Oregon State University, 1995), 2-7.



<Fig. 1>



<Fig. 2>



<Fig. 3>



<Fig. 4>



<Fig. 5>



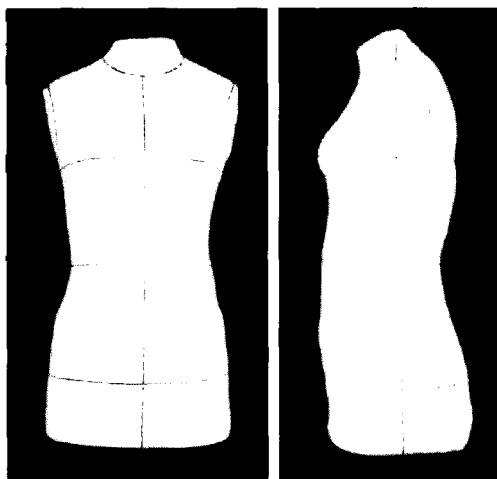
<Fig. 6>



<Fig. 7>



<Fig. 8>



<Fig. 9>

<Fig. 10>

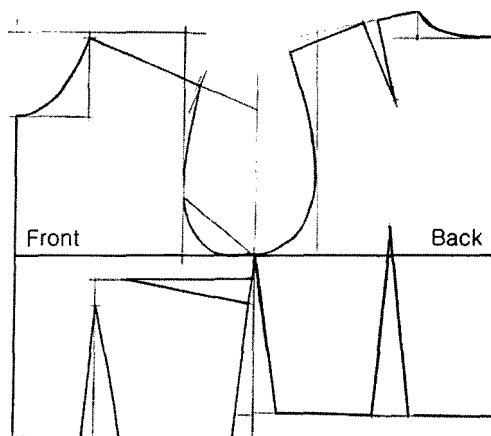
dition after being wet. Physical characteristic of material for producing basic dress is shown in <Table 2>.

**5. Producing Pattern**

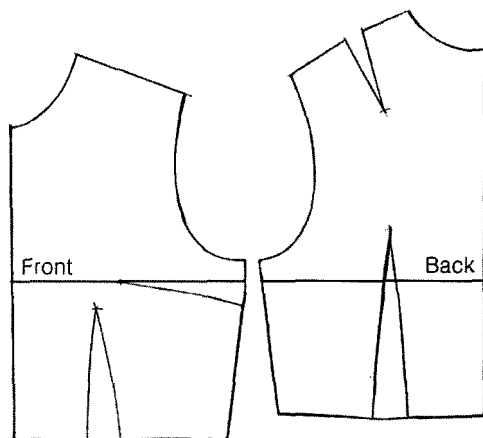
Production of the bodice basic patterns were based on original research pattern by Shim, Kue Nam<sup>10</sup> and the original forms of sleeves and skirt patterns were based on that of Park, Hye Sook<sup>11</sup>. As for the draping process, basic patterns of bodice and skirt were based on Nancy Bryant's method<sup>12</sup>. Basic bodice patterns drawing by two different methods are shown in <Fig. 11>.

**6. Evaluation When Worn**

A basic dress produced by the flat pattern



Studied Flat Pattern



Pattern by Draping

<Fig. 11> Basic Bodice Pattern.

method and a dress produced by the draping method was worn by each of the subjects. The

<Table 2> Characteristics of Material

Material	Weave	Weight (g/cm) (KS K0991)	Thickness (mm) (KS K0506)	Density (filaments/inch) (KS K0511)	
				Warp	Weft
Cotton 100%	Plain	2.98	0.31	62	64

<sup>10</sup> K. N. Shim, "The development of the basic bodice pattern for women in their early twenties using the ease-rate," (Ph. D. diss., Kon Kuk University, 1998), 72-82.

<sup>11</sup> H. S. Park, and M. H. Lee, *Western Clothing Construction* (Seoul: Soohaksa, 2002), 35-40.

<sup>12</sup> Nancy O. Bryant, *Draping*, (Corvallis Oreg.: Published OSU., 1995), 7-15.

degree of satisfaction of fit for each subject wearing both of the dresses was evaluated.<sup>13)</sup>

Evaluators were composed of 5 graduate students enrolled in the master's program.

There are 10 evaluation categories of basic dress and they are all basic categories of satisfaction evaluation.

Evaluating method: Each question was evaluated using a 5-point Likert scale: "Very much so" was converted to 5 points, "so-so" to 3 points and "not at all" to 1 point. The 2 categories of basic dresses produced by the flat pattern method and by the draping method were given random numbers so that evaluators could not recognize the dress categories.

#### 7. Statistical Result and Analysis

Evaluation on satisfaction of apparel was converted to scores, average and standard deviation were calculated and a *t*-test was executed. For

analyzing data, the statistic package SPSS 11.0 for Windows was used.

### III. Results and Discussion

#### 1. Production of Body Form

Body forms were produced with 80 subjects and 52 of them were selected as final subjects. Referring to Oh, Ji Young<sup>14)</sup> and Shim, Kue Nam<sup>15)</sup>, only those that had an error range less than 5% of each part's measurement could be used in the draping method.

#### 2. Result of Evaluation when Worn of Basic Dress Produced by Flat Pattern Method and Draping Method

As for the general evaluation of each category, basic dresses produced by the flat pattern method received an overall score of 3.92 and basic dresses produced by the draping method

<Table 3> Item of Appearance Test

No	Item of Appearance Test	5pt	4pt	3pt	2pt	1pt
1	Is the bust line in a proper position and does it have a proper ease?					
2	Is the waist line in a proper position and does it have a proper ease?					
3	Is the hip line in a proper position and does it have a proper ease?					
4	Is the sleeve length and back waist length proper?					
5	Are there no unnecessary wrinkles in the back width area?					
6	Are there no unnecessary wrinkles in the bust area?					
7	Is the width of shoulder proper?					
8	Are there no unnecessary wrinkles in the upper area of the hip line?					
9	Are there no unnecessary wrinkles in the upper area of the front waistline area?					
10	Is the total body silhouette natural and with comfortable ease?					

<sup>13)</sup> Y. H. Lee, "A Study on the Evaluation for Jacket Pattern of Working Women," *Journal of the Korean Society of Clothing and Textiles* Vol. 21 No. 8, (1997): 1365-1375.

<sup>14)</sup> Ji-Young Oh, "A Study on the Upper Body Measurement Method for Clothing Construction," (Master's Thesis, Mokpo National Univ. 1999)

<sup>15)</sup> Kue-Nam Shim, "Standardization of Graded Sizes through Comparing Bodice Patterns by Draping Method and Studied Flat Pattern Method," *Journal of The Korean Society for Clothing Industry* Vol. 6 No 3, (2004): 401.

〈Table 4〉 The Results of the External Sensory Evaluation

Item	Flat Pattern		Draping		T-Value	P
	M	SD	M	SD		
1	4.31	0.98	4.52	0.83	2.807	.067
2	3.93	2.95	4.17	1.01	1.765	.080
3	3.82	0.88	3.98	0.99	1.986	.346
4	4.18	0.90	4.34	1.04	1.679	.096
5	3.96	0.96	4.30	0.86	1.190	.053
6	3.75	0.79	3.87	0.89	1.109	.915
7	3.83	1.06	3.93	0.96	0.090	.927
8	3.85	0.76	3.92	1.01	1.621	.108
9	3.80	0.90	3.92	0.98	0.676	.501
10	3.80	0.96	3.91	1.05	0.722	.470
	3.92		4.09			

\*  $0.01 < \alpha < 0.05$  \*\*  $0.001 < \alpha < 0.01$  \*\*\*  $\alpha < 0.001$ .

received an overall score of 4.09. This result shows that the degree of satisfaction of fit of basic dresses produced by the draping method is better, and the result has a similar tendency as was found in studies by Lee, Young Woon<sup>16)</sup>, and Shim, Kue Nam<sup>17)</sup>. However, only the basic bodice was the subject of the preceding study, and there were differences in evaluating categories. Therefore, these two studies cannot be considered as equal. Similar tendencies can be seen.

There is not much difference in the degree of satisfaction of fit in the categories of circumference and length. But in the categories of breadth, although there is no difference in similarity, there are differences in the scores. The measuring method for width and length categories used for the flat pattern method was rela-

tively easy and thus precise. The reason seems to be as following, presuming the conclusion of study of Ji young Oh<sup>18)</sup>. While width and length categories were measured accurately due to the easy method of flat pattern, the width of back, shoulder and bust were inaccurate due to imprecise region of measurement or lack of technical skill. Moreover, it is presumed that flat pattern does not concern the degree of slant of shoulder or the characteristic of body form.

#### IV. Conclusion

This study intended to investigate the possibility of using individual body form produced by replica method practically. The investigation was done by comparing and analyzing degree of fitness of the basic dresses produced by draping method and flat pattern method.

To begin with the study, basic dresses were produced by both draping method based on the body forms of 52 selected subjects and plane method based on the measured body sizes.

A group of 5 satisfaction evaluators composed of students majoring in study of apparel structure evaluated the degree of fitness by applying basic dress produced by each flat and draping method to the subjects.

There are 10 evaluation categories of basic dress and they are all basic categories of satisfaction evaluation.

Basic dresses produced by draping and flat pattern method got high scores on every categories except the fitness of shoulder region of bodice. Especially the one produced by draping method got higher score than the one by flat pattern method. This conclusion suggests that individual body form has the possibility of being practically used as draping method and correction. Still there needs to be more continuous study-through investigation based on body

<sup>16</sup> Young-Woon Lee, "A Study on Application for Dress Form made from a Replica-By Comprising to the Flat and Draping Method," (Master's Thesis, Mokpo National University, 2001), 28-37.

<sup>17</sup> Kue-Nam Shim, *Op. cit.*, (2004): 402.

<sup>18</sup> Ji-Young Oh, *Op. cit.*, 30-44.

type and more subjects- for production of body form which can be commercially used.

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