

## A study on the Blouse Pattern of High School Girls' Uniform<sup>+</sup>

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### Abstract

The purpose of this study was to provide a blouse pattern of high school girls' uniform for production of good silhouette and fitness blouse as well as functionality.

In this study, we compared blouse patterns of high school girls' uniform made in the three brands of higher market share being compared. The blouse was the most common design of high school girls' uniforms being sold. In addition, we compared characteristics of appearance and functionality of blouse patterns by the wearing test.

Based on the results of pattern comparison and wearing test of the blouses, the new blouse pattern for high school girls' uniform was developed.

The results of the wearing test for appearance showed that the developed blouse obtained statistically higher ratings than the existing brands in almost items. The results of the wearing test for functionality of the developed blouse showed that items related with sleeve cap were evaluated a rating below 3. In order to improve functionality, the developed blouse pattern was changed that the sleeve cap was lowered by 0.5cm and the sleeve breadth increased by 1cm. The drafting of the new blouse pattern was developed.

Key Words : pattern comparison, wearing test, development of blouse pattern

### 1. Purpose of Study

Interest in clothing and appearance is varied among individuals and greatly different by age. The adolescence is the period when interest in clothing and appearance increases, with its growing importance. As again in 1986, middle and high schools in Korea decided to have their

students wear uniforms, most middle and high school students in their adolescence wear school uniforms today<sup>1)</sup>.

Middle and high schools tend to value silhouette and fitness of uniform, which is reflected in TV commercials of school uniforms emphasizing physical elements of appearance such as long legs, small face, and ideal proportions

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of body. Cha-Young Han and Yun-Seon Namgung<sup>2)</sup> suggested that wearing brand uniforms serves as a factor to improve student's confidence and ability on the basis of appearance, citing appearance ideology as one of the meanings which TV commercials of school uniform put an emphasis on.

Accordingly, fitting appearance of middle and high school students' uniform is an important element in choosing the brand of uniform, which has made appropriate sizing of uniform more important. However, current uniform makers have a unique size system based on their own experience and know-how and the size systems are varied among companies, and as size is different although the size system is identical, youths feel confused about choosing the size fit for them<sup>3)</sup>. In addition, they tend to choose uniforms without a standardized set of criteria for uniforms with good silhouette and fitness, which sometimes results many inconveniences in functionality of uniforms.

Therefore, in order to provide blouse patterns for high school girls' uniform for production of good silhouette and fitness blouse as well as functionality, we compare blouse patterns by brands and analyze characteristics of appearance and functionality of blouse patterns by wearing test. In addition, we develop a new blouse pattern for high school girls' uniform.

## II. Methodology

### 1. Comparison of blouses of high school girls' uniform by brands

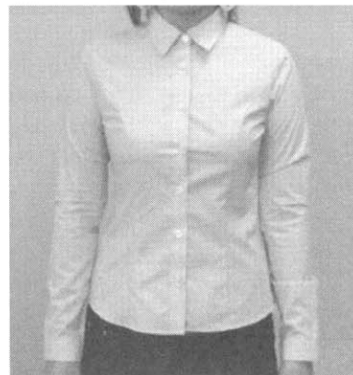
#### 1) Comparison of blouse patterns

In this study, in order to compare blouse patterns of high school girls' uniform, the most

common design of high school girls' uniforms being sold was selected, with the patterns of three brands of higher market share being compared.

In order to develop the blouse patterns, the bust line, the waist line, and the hip line were set as the reference lines, and the reference notches were set at the center line and seam of each panel.

Fig. 1 shows the blouse of uniform used for this study. The blouse has a 4-panel block design with armhole princess line, and shirts collar and sleeves. Also, the length of the blouse is equivalent to the hip line.



<Figure 1> Test Blouse Design

#### 2) Comparison of appearance and functionality of blouses by the wearing test

In addition, we compared characteristics of appearance and functionality of blouse patterns by the wearing test.

A wearing test was conducted on 2 high school girls who are 162 cm tall and with 82 cm of bust. Evaluations about appearances were conducted by 6 experts, and evaluations about functionality were conducted by themselves. For data analysis, ANOVA and duncan test were used.

## 2. Development of blouse patterns

Based on the results of pattern comparison and wearing test of the blouses for high school girls' uniform made in the three brands, the blouse pattern for high school girls' uniform was developed and conducted wearing test.

The method of the wearing test was the same as the one we conducted in the comparison of blouse of high school girls' uniform by brands.

## III. Results and Discussion

### 1. Comparison of blouses of high school girls' uniform by brands

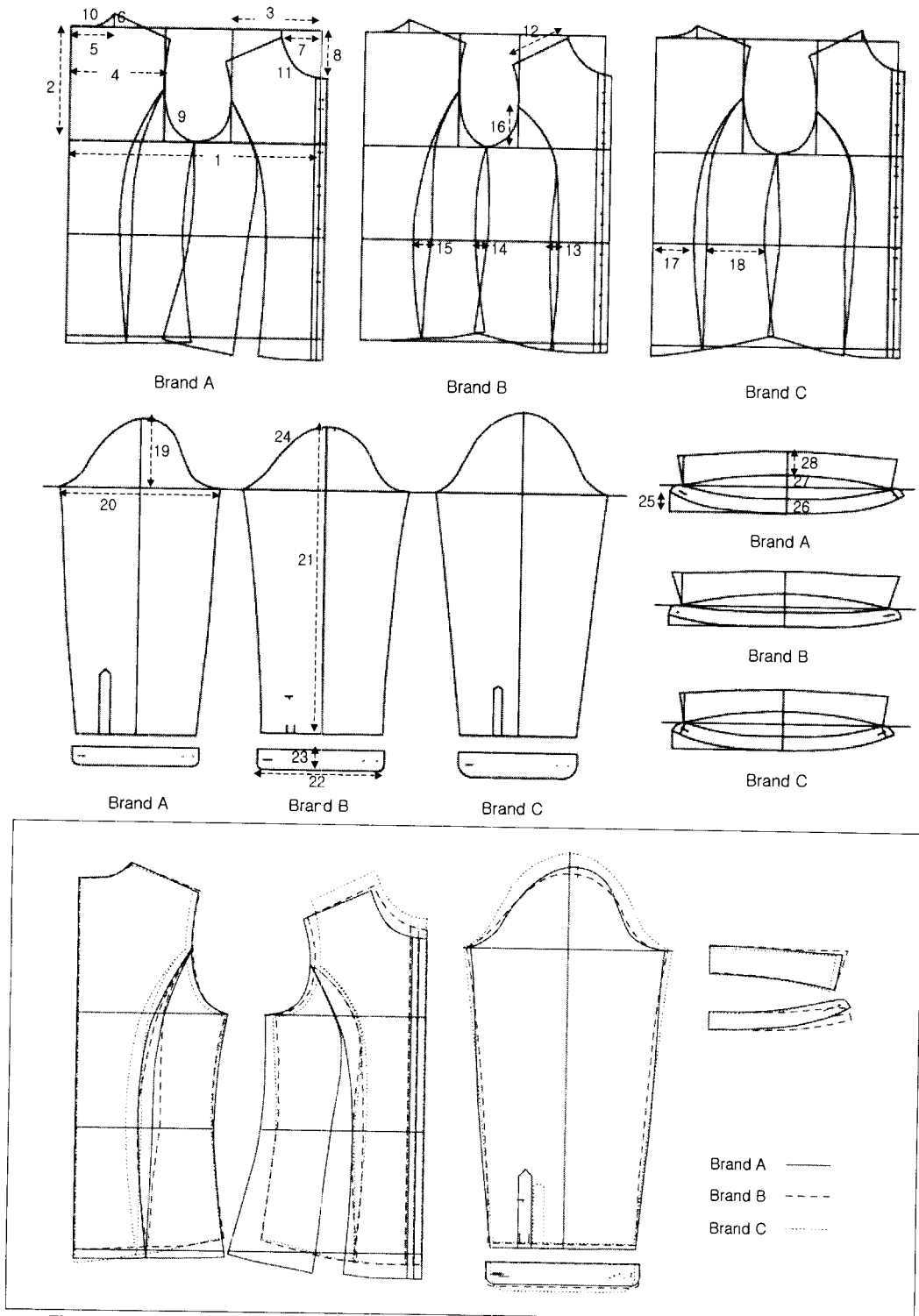
#### 1) Comparison of blouse patterns

Fig. 2 shows blouse patterns by brand, and sizes of individual sections of patterns are as in Tab. 1.

As a result of comparison of patterns and the sizes, characteristics of patterns by brands are as follows:

<Table 1> Comparison of blouse patterns size of high school girls' uniform by brands (cm)

		No.	Item	Brand A	Brand B	Brand C
Torso	Basic Line	1	Bust Circumference	44.2	43.3	46.3
		2	Scye Depth	20.0	20.0	20.2
		3	Interscye, front	16.1	15.7	15.6
		4	Interscye, back	16.8	16.9	16.9
		5	Neck Breadth, back	7.6	7.6	7.4
		6	Neck Height, back	2.4	2.4	2.1
		7	Neck Breadth, front	6.8	6.8	7.0
		8	Neck Depth, front	6.9	6.3	6.9
		9	Armhole	39.0	38.3	44.0
	10+11	Neck Circumference	38.0	36.4	37.2	
	12	Shoulder Length	11.0	11.0	11.0	
	Design Line	13	Waist Dart, front	3.2	1.8	1.6
		14	Waist Dart, side	1.8	1.5	1.7
		15	Waist Dart, back	2.1	3.3	2.4
		16	Length of starting point for princess line from Armscye line	front	7.7	7.3
back				9.3	9.9	9.9
17/18		Breadth of center front/side panel on Waist	front	9/10.5	7.8/11.3	7.8/12.6
	back		8.6/8.9	9.2/8	7.9/11.1	
Sleeve	19	Cap Height	12.1	11.1	14.1	
	20	Sleeve Breadth	29	29.8	30.9	
	21	Sleeve Length without cuffs	55.6	54.5	56.9	
	22	Cuffs Length	22.4	22.5	21.0	
	23	Cuffs Breadth	3.2	3.5	4.2	
	24	Armhole	40.0	39.0	44.0	
Collar	25	Height of collar band	3.4	1.6	3.1	
	26	Breadth of collar band	2.4	2.4	2.4	
	27	Height of Collar	2.1	2.1	2.2	
	28	Breadth of collar	3.9	3.7	3.6	



<Figure 2> Comparison of blouse patterns of high school girls' uniform by brands

The pattern of brand A uses a basic pattern with bust dart, and The patterns of brand B and C use a non-dart pattern without bust darts, while the pattern of brand C has more ease of armhole than that of brand B.

In regard to the ease of bust circumference (1/2) in blouse patterns of the uniform made by brand A, B, and C, brand A sets 3.2cm, brand B 2.3cm, and brand C 6cm, which revealed that both patterns of brand A and B use greatly small ease, while the pattern of brand A has the most wide interscye, front.

In terms of starting point of princess line, front block of brand B was lowest, while back block of brand A was lowest. Front and back block are divided by the princess line into two panels, and measurements of the line are shown in item 17/18 of Fig. 2, as the line has an impact on appearance evaluation.

It is thought possible to suggest patterns excellent in appearance and functionality, by comparing and analyzing pattern sizes above in connection with the wearing test.

## 2) Comparison of appearance and functionality of blouses by the wearing test

### (1) Wearing test for appearance

In terms of the bust size of the blouses, the blouse of brand A sets 83.6cm, that of brand B 83cm, and that of brand C 88.6cm. The bust size of the blouses of brand A and B was smaller than blouse size 85. Therefore, since it was too tight for the participant with 85cm of bust circumference, the other participant with 82cm of bust circumference wore it for the wearing test. The results of the wearing test are as in Tab. 2.

In the evaluation of the ease in the bust circumference, the rating of brand C was found

best, and the rating brand B about interscye, front was statistically significantly higher than the of the others. The reason why brand C was evaluated lower although pattern size of brand B and C was the same, was thought because of enlarged interscye, front by wider sleeve breadth. In the areas of position of waist circumference and shoulder point, ease of interscye, back, there was no difference among the three patterns, with as high score as 4 point.

In relation to princess line position, front block of brand B and back block of brand A were found best. The blouse of brand C with larger armhole and long sleeves was evaluated statistically significantly worse than that of brand A and B, while sleeve cap height of brand A was evaluated statistically significantly better than that of brand B and C.

### (2) Wearing test for functionality

The functionality of brand C topped the list, followed by brand B and A in order. The reason that the functionality of brand C was evaluated highest is because ease of its bust is larger, while functionality of brand B was evaluated better than brand A because its sleeve breadth is wider.

## 2. Development of blouse pattern

### 1) Development of blouse pattern drafting

The drafting for blouse pattern was developed based on the result of pattern comparison and wearing test for three different brands and based on the deduced calculation in reference to the female basic bodice and blouse drafting. The development was completed through three stages which were presented in Fig. 3, 4, and 5. Also, the body measurement used is shown in Tab. 3.

<Table 2> Results of the wearing test for appearance

(n=6)

Item		Brand A		Brand B		Brand C		F value
Overall	Ease of Bust Circumference	2.0	C	3.8	B	4.5	A	34.8***
	Ease of Waist Circumference	4.0	A	4.0	A	3.0	B	5.0*
	Position of Waist Circumference	4.0		4.5		4.2		0.9
	Position of Lateral Shoulder point	4.5		4.6		4.3		0.6
Front	Ease of Interscye, front	2.3	B	4.5	A	2.5	B	30.2***
	Position of starting point for princess line	2.5	B	4.0	A	3.5	A	10.5**
	Balance of center-front/side-panel on Waist	2.0	C	5.0	A	4.2	B	44.7***
	Front silhouette	2.0	C	4.5	A	3.5	B	28.5***
Back	Ease of Interscye, back	5.0		5.0		4.7		2.5
	Position of starting point for princess line	4.5	A	2.0	B	2.0	B	53.6***
	Balance of center-back/side-panel on Waist	5.0	A	4.0	B	2.0	C	52.5***
	Back silhouette	4.2	B	5.0	A	2.0	C	44.7***
Sleeve	Sleeve Length	4.5	B	5.0	A	2.3	C	65.0***
	Ease of Sleeve	5.0	A	5.0	A	1.8	B	361.0***
	Cap Height	5.0	A	2.5	B	2.3	B	73.0***
Collar	Ease of Neck Base Circumference	2.3	B	4.0	A	3.0	B	11.9**
	Breadth of Back Collar	4.3		4.0		4.0		0.6
	Appearance of Front Collar	3.0	B	4.5	A	3.5	B	10.5**

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001, Duncan test A>B>C  
 5 rating scale : 5 = being very good and 1 = being very bad

<Table 3> Body measurement for blouse pattern drafting

(cm)

Item	Measurement	Item	Measurement
Bust Circumference	82.0	Interscye, back	33.0
Waist Circumference	64.0	Interscye, front	31.0
Hip Circumference	88.0	Neck Point to Breast Point	24.0
Waist Back Length	36.5	Bust Point to Bust Point	15.0
Shoulder Point to Cervicale to Shoulder Point	36.0		

Fig. 3 shows the developed basic bodice drafting for high school girls, 2.5cm of ease was given to the bust circumference(1/2), and this value is the same as the minimal ease used in the basic bodice of Esmode<sup>4)</sup> and some companies<sup>5)6)</sup>. The reason for giving the minimal ease is because the high school girls nowadays turned out to prefer a tight uniform.

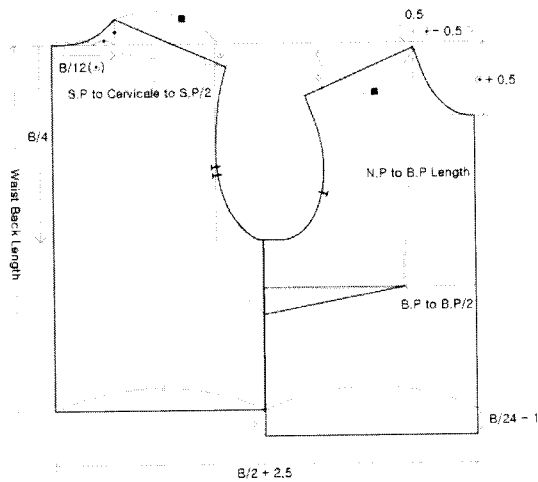
Fig. 4 is the modified form by manipulating the bust dart of the basic bodice to the armhole

ease and the front droop. Manipulating the bust dart was based on the result of the wearing test which showed that the pattern of brand B, which manipulated the bust dart to the armhole ease and the front droop, appeared better than the pattern of brand A, which maintained the bust dart in their original place.

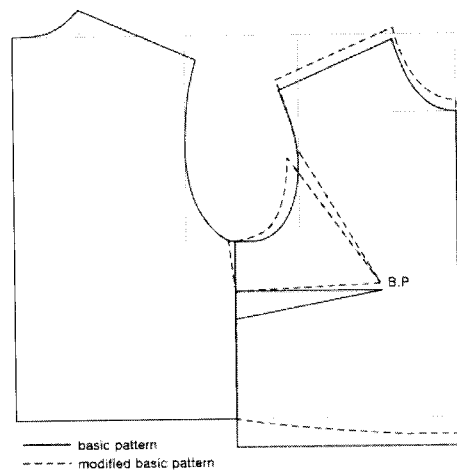
Fig. 5 shows the developed blouse pattern drafting for high school girls. The starting location of the princess line was 7.5cm above in

the front block of and 9.0cm above in the back block of the armscye line. The location of the princess line was 7.5cm apart from the center front line of the waist line. The extension was

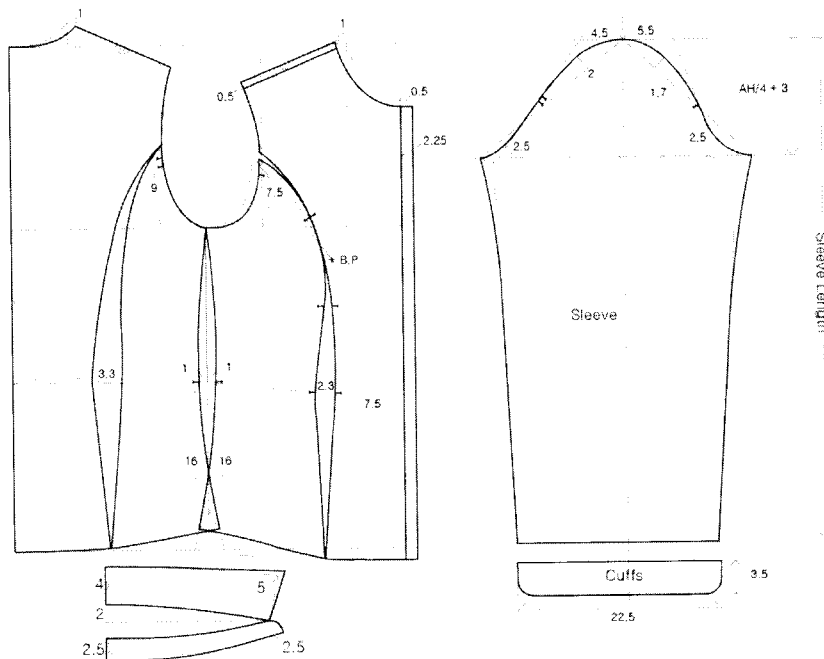
1.25cm. Using the result of the calculation using  $A.H./4+3$  equation, the sleeve cap was set as 12.5cm, the sleeve length was 54.5 cm, the cuffs length was 22.5cm, and the cuffs breadth was 3.5cm.



<Figure 3> Developed basic bodice pattern



<Figure 4> Modification of developed basic bodice pattern



<Figure 5> Developed blouse patterns

## 2) Wearing test of developed blouse pattern

## (1) Wearing test for appearance

The result of the wearing test for the appearance of the developed blouse and the existing blouse is shown in Tab. 4.

The results of the wearing test for the appearance showed that the developed blouse obtained statistically higher ratings than the existing brands in fourteen items. Among the items in evaluating the overall appearance of blouse, the ease of bust circumference for the developed blouse had a lower rating than brand C. This is because high school girls prefer a

tight uniform and thereby the ease was set as the minimal value of 2.5cm. Due to this design, the silhouette rating of the front part and the back part of the developed blouse appeared to be statistically higher than that of brand C.

The appearance of the front part of the developed blouse was based on the blouse pattern measurements of brand B, which had the highest rating among the brands, and therefore the appearance rating of the front part of the developed blouse showed a similarly high value to that of brand B. Also, the appearance rating of the back part of the developed blouse showed a similarly high value to that of brand A,

<Table 4> Results of the wearing test for appearance including developed blouse pattern

(n=6)

Item		Brand A		Brand B		Brand C		Developed		F value
Overall	Ease of Bust Circumference	2.0	C	3.8	B	4.5	A	3.8	B	26.8***
	Ease of Waist Circumference	4.0	A	4.0	A	3.0	B	4.0	A	3.8*
	Position of Waist Circumference	4.0		4.5		4.2		4.5		1.0
	Position of Lateral Shoulder point	4.5		4.7		4.3		4.5		0.4
Front	Ease of Interscye. front	2.3	B	4.5	A	2.5	B	4.7	A	33.3***
	Position of starting point for princess line	2.5	C	4.0	AB	3.5	B	4.3	A	12.1***
	Balance of center-front/side-panel on Waist	2.0	C	5.0	A	4.2	B	5.0	A	49.8***
	Front silhouette	2.0	C	4.5	A	3.5	B	4.7	A	28.4***
Back	Ease of Interscye. back	5.0		5.0		4.7		5.0		2.5
	Position of starting point for princess line	4.5	A	2.0	B	2.0	B	4.7	A	55.3***
	Balance of center-back/side-panel on Waist	5.0	A	4.0	B	2.0	C	5.0	A	60.0***
	Back silhouette	4.2	B	5.0	A	2.0	C	5.0	A	50.0***
Sleeve	Sleeve Length	4.5	B	5.0	A	2.3	C	5.0	A	68.5***
	Ease of Sleeve	5.0	A	5.0	A	1.8	B	5.0	A	361.0***
	Cap Height	4.5	A	2.5	B	2.3	B	4.7	A	33.0***
Collar	Ease of Neck Base Circumference	2.3	B	4.0	A	3.0	C	4.3	A	15.2***
	Breadth of Back Collar	4.3	A	4.0	A	4.0	B	4.5	A	1.1
	Appearance of Front Collar	3.0	A	4.5	B	3.5	B	4.7	A	12.1***

\* p < 0.05 \*\* p < 0.01 \*\*\* p < 0.001, Duncan test A>B>C

5 rating scale : 5 = being very good and 1 = being very bad



based on which the back princess line of the developed blouse was located. The silhouette of the back part of the developed blouse showed an improved rating.

The appearance rating of the sleeve was higher in the developed blouse because it had a higher sleeve cap than the existing brands. The rating for the sleeve ease of the developed blouse was statistically higher than brand C because brand C had more sleeve ease than other brands.

(2) Wearing test for functionality

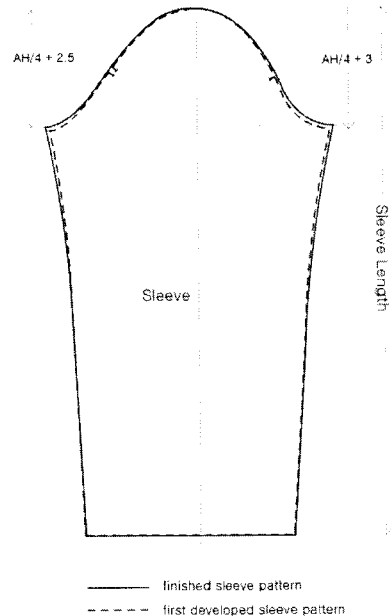
The results of the wearing test for the functionality of the developed blouse and the existing blouse is shown in Tab. 5.

The results of the wearing test for functionality of the developed blouse showed a rating below 3 in four items.

The reason is that these are related to the sleeve cap and sleeve breadth, and that the developed blouse had a higher sleeve cap and narrower sleeve breadth than the existing blouses. The developed pattern was changed that the sleeve cap was lowered by 0.5cm and the sleeve breadth increased by 1cm. The test clothes was manufactured again with a changed pattern and the wearing test for the appearance and functionality related to sleeve was performed. The results showed that the appearance rating

did not change, but in five items related functionality, all ratings showed more than 3.5, demonstrating improvement in functional performance.

The drafting of the finished sleeve pattern is shown in Fig. 6.



<Figure 6> Finished sleeve pattern

IV. Conclusion and suggestion

The purpose of this study was to provide blouse pattern of high school girls' uniform for production of good silhouette and fitness blouse

<Table 5> Results of the wearing test for functionality including developed patterns (n=2)

Item	Brand A	Brand B	Brand C	Developed
Sitting on a chair with the hands on the desk	2.0	3.0	5.0	3.0
Raising arm forward, 90°	1.5	3.0	4.0	2.5
grabbing a handhold in a bus	1.0	2.5	4.0	2.5
Raising arm side, 90°	3.0	3.5	4.5	3.5
Folding arms	3.0	3.5	4.5	3.0

5 rating scale : 5 = being very good and 1 = being very bad

as well as functionality.

In this study, we compared blouse patterns of high school girls' uniform made in the three brands of higher market share being compared. The blouse was the most common design of high school girls' uniforms being sold. In addition, we compared characteristics of appearance and functionality of blouse patterns by the wearing test.

Based on the results of pattern comparison and wearing test of the blouses, the new blouse pattern for high school girls' uniform was developed.

The results of the wearing test for appearance showed that the developed blouse obtained statistically higher ratings than the existing brands in almost items. The results of the wearing test for functionality of the developed blouse showed that items related with sleeve cap were evaluated a rating below 3. In order to improve functionality, the developed blouse pattern was changed that the sleeve cap was lowered by 0.5cm and the sleeve breadth increased by 1cm.

The drafting of the new blouse pattern is shown in Fig. 5, 6.

The developed blouse pattern for high school girls' uniform in this study was developed with the bust size of 82 as the reference, and the future study will aim to present a grading rule for each size through research of the body shape of high school girls.

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