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Selection and Analysis of the Typical Somatotype for the Development of a Torso Dummy for the Chinese Adult Women[+]

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Abstract

This research was motivated to provide the Korean apparel companies doing business in China with some basic data useful to the development of their apparel commodities. As a result of selecting the standard or 'A' somatotype based on the body measurement data of the Chinese women in their early 20's and then, analyzing the correlated distribution and the most frequent intervals, it was found that 'height 160,' 'bust circumference 84' and 'waist circumference 66' were most prevalent. It was found that their average body measurements almost coincided with the standard '160A-84/66.' As discussed above, the researcher selected 13 women corresponding to '160A-84/66' in reference to 2008 body measurement data, and chose 6 women among them secondarily. Then, the researcher comparatively analyzed the direct measurement data and the 3D measurement ones, while analyzing the vertical/horizontal sagittal and Median plane section drawings, it was found that Subject 4 showed the most common somatotype data, while her upper body bent backwards reflected the population most properly.

Key Words : torso measurement, chinese women, typical somatotype

I. Introduction

1. Need for the Research

The Chinese apparel markets are most vibrant in the world. Lately, Chinese apparel makers have been pursuing high added-values even in terms of materials and design creativity, attracting much attention from the world. In the recent 5 years, the Chinese apparel markets have recorded more than 10% every year, which

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means that the absolute scale of the markets has grown. Especially, the Korean apparel industry needs to pay attention to the consumption patterns of 'Bairingheou generation(In 1979, Deng Xioping began to implement 'One Family, One Child' campaign. Hence, 'Baringheou generation' means those who have been born since 1980. This young generation have grown up, enjoying the benefits of the rapid economic growth, being overprotected by their parents.)' as well as those of the 200 million middle-class people. In other words, the success of our apparel industry in the Chinese markets depends on whether they will be able to develop the apparel commodities fulfilling the primary Chinese consumers' desires and needs.[1] The Korean apparel companies that have advanced into the Chinese apparel markets or the fiercely competitive global markets are trying hard to develop the consumer-focused apparel commodities reflecting Chinese consumers' fashion trends and needs by taking advantage of their experiences and knowhow. If they could afford to sharpen their international competitiveness with more satisfactory apparel commodities and enhance the marketing competence of their brands, they would be able to turn the crisis into an opportunity in the Chinese apparel markets.[2]

Now, China is preparing herself for a vigorous leap toward an advanced fashion power. While the Chinese apparel industry is being rapidly globalized, the Chinese apparel industry policy aims to restructure the industry into a knowledge-based one with a higher added value. In such circumstances, the Korean apparel companies should be aware of the apparel fitting problems due to the fundamental differences of the somatotype between young Korean and Chinese women and thereupon, should resolve the problems at the stages of planning and production. As the living standards in China began to improve remarkably since 2000, the demands for the apparel fitting have been increasing considerably.[3] In response to such rapidly changing circumstances, the Korean apparel companies have been localizing their planning and production, which suggests that it is urgent to research into not only apparel designs but also somatotype and other commodity developments.

On the other hand, the Chinese apparel industry has continued to modernize its production facilities and construct a world-class apparel production basis, while foreign brands and their advanced apparel production technologies have been flowed into China. Despite the rapid development and modernization of the production lines and technologies, the basic database about torso measurements, somatotype, apparel pattern designs and dummy development are too poor to improve the apparel silhouette, wearing comfort and apparel fitting. Specifically, the Chinese apparel industry has still to construct the database about the somatotypes for apparel fitting, and moreover, has still to arrange systematic and standardized dummy.

In such circumstances, the researcher attempted to conduct an empirical research into young Chinese women's torso measurements and somatotype, based on the results of her theoretical researches so far, and thereupon, produce some torso dummy. Assuming that China is too vast for such empirical research, the researcher limited her survey to Shanghai, the largest economic and trade center of China. In addition, considering that those women in their early 20's have their own ideal or standard somatotype because they have grown well

physically, the subjects for this research were limited to them. Thus, this study was aimed at surveying and analyzing the torso measurements and somatotypes of the Chinese women in their early 20's and thereupon, determining the typical somatotypes and standard torso measurements for the development of the torso dummy, and thereby, providing for some useful data to the Korean apparel companies that try to develop their apparel commodities for the young Chinese women.

2. Contents

In order to determine the basic torso measurements for the development of some torso dummy for the Chinese women in their 20's, correlated distribution and prevalence by size were comparatively analyzed and thereby, the characteristics of the typical somatotype was defined.

1) Correlated distribution between stature and somatotype (Y·A·B·C somatotype of GB[4] criteria) and prevalence by size of bust and waist circumferences were comparatively analyzed, and thereby, a typical somatotype group was determined to set the criteria for the torso dummy and suggest the measurements of basic and referential body parts.

2) The subjects with the typical somatotype were subject to a 3D body measurement for their lateral silhouette, cross-sectional and longitudinal measurements and thereby, some dummy model measurements and shapes were determined.

II. Methods and Procedures

1. Body measurements

The body measurements were used for the development of some torso dummy for the Chinese adult women with the typical somatotype.

210 women in their early 20's (aged between 19 and 24) living in Shanghai, the center of economy and trade of China, were sampled randomly to be subject to the body measurement. The subjects were attending Donghuo University in Shanghai, which means that they might well represent the somatotype of the Chinese women in their early 20's, considering the fact that the female students come from various regions in China. The body measurements of 189 subjects were used, excluding the extreme ones.

The body measurement was done by using the two methods: direct measurement and indirect (3D scanning) one.

2. Body measurement and its points

1) The direct measurement referred to R. Martin's method, and in view of base points/lines and methodology, referred to '1997 People's Standard Somatotype Report'[5], '2004 People's Standard Somatotype Report'[6], 'KS A 7003' (body measurement terminology), 'KS A 7004' (body measurement methods)[7] and 'Body Measurement Standard Terminology' for the 5th Korean People's Body Measurements (Size Korea)'. The subjects were postured to face front, converge the heels, open the tip toes as wide as 30 degrees and droop their arms.

2) Since the data from the indirect or 3D measurement might well be distorted due to breathing, muscular condition or hair condition, subjects' postures were controlled for the same measurement conditions. On the other hand, since the data from the inside of armpits could not well be distinguished from those from their

outside parts, the subjects were postured differently from when they were measured directly. They were postured to face front, open the tiptoes as wide as 20cm, put their arms on the support inside the scanner and open the palms with the fingers drooping. Body scanning took 10 seconds, 3D point clouding 18 seconds, and landmarking and data generating took 25 seconds. After the 3D measurement, 4 kinds of data - the extensions 'bin,' 'rbd,' 'wrl' and 'ord' - were generated.

3. Methods of processing and analyzing the data

The data collected were processed using the SPSS/WIN 12.0 program. In order to determine Chinese adult women's typical somatotype and its body measurements, the data from the survey in Shanghai were analyzed, and then, the correlated distribution of the typical or 'A' somatotype' was analyzed for stature x bust circumference, stature x waist circumference and bust circumference x waist circumference. 6 subjects meeting the conditions pre-set were selected, and then, their direct and 3D body measurements were comparatively analyzed to suggest the basic and referential body measurements for the development of some torso dummy. In particular, vertical and cross section drawings about 6 subjects' 3D measurements were comparatively analyzed using Rapidform, AutoCad, focusing on form and posture by body part.

III. Results

The researcher determined the typical or 'A' somatotype of the Shanghai women in their early 20's based on the data collected in 2008 and then, analyzed the correlated distribution among stature, bust and waist circumferences to define the most frequent intervals. The results of the research can be summarized as follows;

1. Correlated distribution for the typical somatotype

1) Correlated distribution between stature and bust circumference intervals <Tab. 1>

Among the entire subjects (189 women), 109 ones (56.7%) were determined as 'A' somatotype; 160-88 size was the most frequent interval (14.68%) in case of the correlated distribution between stature and bust circumference, followed by 155-80/ 160-84/ 165-84 sizes (9.17%), 160-80/165-80 sizes (8.26%), 155-84 size (7.34%) and 160-76 size (6.42%) in their order.

2) Correlated distribution between stature and waist circumference intervals <Tab. 2>

160-70 size was the most frequent interval (8.33%) in case of the correlated distribution between stature and waist circumference, followed by 165-64 size (7.41%), 160-62/160-68 size (6.48%) and 155-62/160-66/165-66 sizes (5.56%) in their order.

3) Correlated distribution between bust and waist circumference intervals <Tab. 3>

84-66 size was the most frequent interval (15.74%) in case of the correlated distribution between bust and waist circumferences, followed by 80-62 size (12.04%), 80-64/84-68 sizes (10.19%), 88-70 size (7.41%) and 88-68 size (6.48%) in their order.

After all, in case of 'A' somatotype, 160 was the most frequent interval for stature, 84 for

<Tab. 1> Correlated distribution between stature and bust circumference intervals for 'A' somatotype of Shanghai women in their early 20's in 2008

person(%)

bust circumference intervals \ stature intervals	145	150	155	160	165	170	175	total
72		1 0.92						1 0.92
76	1 0.92		2 1.83	7 6.42	2 1.83	1 0.92		13 11.93
80		1 0.92	10 9.17	9 8.26	9 8.26	1 0.92		30 27.52
84	1 0.92		8 7.34	10 9.17	10 9.17	3 2.75	2 1.83	34 31.19
88			2 1.83	16 14.68	1 0.92	2 1.83		21 19.27
92					5 4.59	1 0.92	1 0.92	7 6.42
96			1 0.92			2 1.83		3 2.75
total	2 1.83	2 1.83	23 21.10	42 38.53	27 24.77	10 9.17	3 2.75	109 100.00

<Tab 2.> Correlated distribution between stature and waist circumference intervals for 'A' somatotype of Shanghai women in their early 20's in 2008

person(%)

waist circumference intervals \ stature intervals	145	150	155	160	165	170	175	total
58		1 0.93	1 0.93	1 0.93				3 2.78
60			1 0.93	3 2.78	1 0.93	1 0.93		6 5.56
62	1 0.93		6 5.56	7 6.48	4 3.70	1 0.93		19 17.59
64		1 0.93	3 2.78	5 4.63	8 7.41			17 15.74
66	1 0.93		5 4.63	6 5.56	6 5.56	2 1.85	1 0.93	21 19.44
68			4 3.70	7 6.48	3 2.78	3 2.78	1 0.93	18 16.67
70				9 8.33				9 8.33
72			1 0.93	2 1.85	3 2.78	1 0.93		7 6.48
74			1 0.93	2 1.85	1 0.93		1 0.93	5 4.63
76			1 0.93		1 0.93			2 1.85
78						1 0.93		1 0.93
total	2 1.85	2 1.85	23 21.30	42 38.89	27 25.00	9 8.33	3 2.78	108 100.00

bust circumference, and 66 was the most frequent interval for waist circumference. <Tab. 4> shows the body measures of 'A' somatotype of the GB criteria, which may well be useful for the development of some torso dummy for the Chinese adult women.

2. Analysis of the typical ('A') somatotype selected as the research model

As a result of analyzing the average body measurements of 'A' somatotype (109 Shanghai women in their early 20's), it was found that their average body measurements were 160cm for stature, 84cm for bust circumference, and 66cm for waist circumference, and such finding coincided with the results from the analysis of the most frequent intervals. Thus, 'A' somatotype was determined as the model somatotype for the development of the torso dummy, and it was defined as '160A-84/66.' First, 13 women were selected as '160A-84/66' based on the data surveyed in 2008, and then, 6 women were reselected. Then, based on direct and indirect measurement data, body measurements were compared with front/side forms and silhouettes to suggest the basic and referential measurements for the development of the torso dummy for the young Chinese women.

<Tab. 3> Correlated distribution between bust and waist circumference intervals for 'A' somatotype of Shanghai women in their early 20's in 2008

person(%)

bust circumference intervals / waist circumference intervals	72	76	80	84	88	92	96	total
58	1 0.93	2 1.85						3 2.78
60		4 3.70	2 1.85					6 5.56
62		6 5.56	13 12.04					19 17.59
64		1 0.93	11 10.19	5 4.63				17 15.74
66			4 3.70	17 15.74				21 19.44
68				11 10.19	7 6.48			18 16.67
70				1 0.93	8 7.41			9 8.33
72					3 2.78	4 3.70		7 6.48
74					3 2.78	2 1.85		5 4.63
76						1 0.93	1 0.93	2 1.85
78							1 0.93	1 0.93
total	1 0.93	13 12.04	30 27.78	34 31.48	21 19.44	7 6.48	2 1.85	108 100.00

1) Analysis of subjects' body measurements

<Tab. 4> shows the body measurements of 6 Shanghai women with '160A-84/66' as of 2008.

2) Analysis of subjects' 3D measurements

The results of comparatively analyzing 6 subjects' body measurements by using Rapidform,

<Tab. 4> Comparison of body measurements between 'A' somatotype and other subjects' one

(cm)

Div.	Measuring Items	basic somatotype '160A-84/66	subject1	subject2	subject3	subject4	subject5	subject6
HEIGHT	stature	160.96	160.60	162.30	159.60	159.60	158.80	160.20
	anterior neck heigh	130.97	130.60	134.10	130.30	129.10	129.30	130.20
	lateral neck heigh	134.96	134.50	137.60	134.10	132.90	133.10	133.90
	cervicale	135.85	136.10	139.40	136.00	133.40	134.10	136.70
	lateral shoulder heigh	130.44	129.40	132.30	129.80	128.10	129.10	129.80
	chest height	123.98	123.60	125.40	124.20	122.30	123.30	124.40
	bust height	114.69	113.40	115.50	113.60	114.20	115.40	115.40
	underbust height	109.29	108.90	109.80	108.10	109.60	109.40	109.90
	waist height	100.69	101.70	102.40	98.40	99.30	96.40	101.30
	abdomen height	89.88	89.60	90.60	89.50	90.20	86.30	89.60
	hip height	80.48	80.60	79.50	79.20	79.60	77.70	80.20
BREATH	neck breadth	13.44	13.20	13.50	13.60	13.00	13.80	12.60
	biacrominal breadth	34.46	34.50	35.10	33.60	33.70	35.30	34.70
	chest breadth	28.25	26.70	29.90	28.40	27.80	30.00	26.80
	bust breadth	26.25	25.60	28.90	25.90	25.60	26.60	26.20
	underbust breadth	25.04	24.30	24.90	25.10	24.40	25.40	25.50
	waist breadth	23.56	23.80	23.50	22.70	23.20	22.90	24.80
	abdomen breadth	29.49	28.10	31.00	30.50	28.50	30.10	30.10
	hip breadth	32.31	31.20	33.10	32.50	33.30	32.10	32.00
DEPTH & FLATNESS	neck base depth	10.73	10.40	10.60	10.70	11.00	11.50	9.70
	chest depth	17.25	19.10	17.60	16.80	17.50	17.00	19.00
	bust depth	21.19	20.50	20.90	21.10	21.20	20.50	22.60
	underbust depth	18.13	19.30	18.30	19.30	18.30	18.60	19.50
	waist depth	17.37	17.70	17.90	18.00	17.40	16.60	18.20
	abdomen depth	19.77	19.30	22.30	21.30	18.80	19.20	19.90
	hip depth	21.20	22.00	23.80	21.80	22.30	20.30	22.30
	bust flatness	0.81	0.80	0.72	0.81	0.83	0.77	0.86
	waist flatness	0.74	0.74	0.76	0.79	0.75	0.72	0.73
	hip flatness	0.66	0.71	0.72	0.67	0.67	0.63	0.70
CIRCUMFERENCE & DROP	neck base circumference	39.65	38.50	38.00	41.00	37.90	42.00	36.00
	chest circumference	81.76	80.30	81.30	78.50	80.00	84.20	84.50
	bust circumference	82.84	82.70	83.50	82.00	82.80	82.00	85.20
	underbust circumference	72.85	71.80	70.00	73.00	73.20	73.80	74.10
	waist circumference	66.82	67.20	65.80	65.30	65.40	65.00	70.60
	abdomen circumference	79.54	76.20	82.40	82.40	76.30	81.60	84.50
	hip circumference	89.89	87.50	92.00	90.30	91.80	91.30	93.0
	chest-bust circumference	-1.09	-1.40	-1.20	-2.50	-1.80	3.20	-0.70
	bust-waist circumference	16.03	14.50	16.70	15.70	16.40	16.00	14.60
	abdomen-waist circumference	12.73	9.00	16.60	17.10	10.90	16.60	13.60
	hip-waist circumference	23.08	20.30	26.20	25.00	26.40	26.30	22.40
	bust-underbust circumference	10.00	9.90	12.50	8.00	8.60	7.20	11.10
ANGLE & OTHERS	left shoulder slope	21.55	21.00	24.00	18.00	18.00	14.00	19.00
	right shoulder slope	21.42	23.00	23.00	20.00	16.00	18.00	20.00
	weight(kg)	51.26	51.00	52.00	50.50	49.00	50.00	52.00
	rohrer index	1.23	1.23	1.22	1.24	1.21	1.25	1.26
	BMI	19.76	19.77	19.74	19.83	19.24	19.83	20.26

<Tab. 4> continued

(cm)

Div.	Measuring Items	basic somatotype '160A-84/66	subject1	subject2	subject3	subject4	subject5	subject6
LENGTH	waist front length	32.34	30.30	32.00	34.00	32.30	33.40	32.30
	neck point to breast point	25.66	25.20	26.30	25.50	24.20	23..00	25.50
	neck point to breast poin to waistline	39.65	38.20	40.10	40.80	39.00	39.80	40.00
	front interscye length	31.81	30.70	32.30	32.30	31.40	32.80	30.00
	bust point-bust point	18.56	20.00	19.80	18.70	18.00	18.70	16.50
	waist back length	36.75	35.60	35.10	36.90	34.90	35.00	36.60
	shoulder length	11.76	11.80	12.50	10.80	12.30	11.80	11.50
	bishoulder length	38.87	40.00	40.20	37.20	37.00	38.80	36.00
	neck point-back waistline length	39.00	37.50	37.60	39.80	37.70	37.50	38.50
	back interscye length	36.07	36.50	36.00	33.50	33.50	36.70	32.00
	body rise	21.85	20.10	22.30	21.20	21.70	20.60	22.50
	waist-hip height	20.21	21.10	22.90	19.20	19.70	18.70	21.10
	waist back-waist front length	4.41	5.30	3.10	2.90	2.60	1.60	4.30
	back gnterscye fold - front gnterscye fold length	4.26	5.80	3.70	1.20	2.10	3.90	2.00

AutoCad can be summed as follows;

(1) Analysis of the vertical section drawings <Fig. 1>

① Sagittal section drawings

Because subjects moved a little during 3D scanning, the lines were not smooth. When analyzing the sagittal section drawings, the researcher considered that fact that subjects' statures differed and that their body parts were measured with their arms and legs opened. On the 3D data, the side line was set when the lateral waist circumference/2 was displaced 1cm backwards. Along with the base line, the front vertical section drawings were obtained to be compared with the direct measurements.

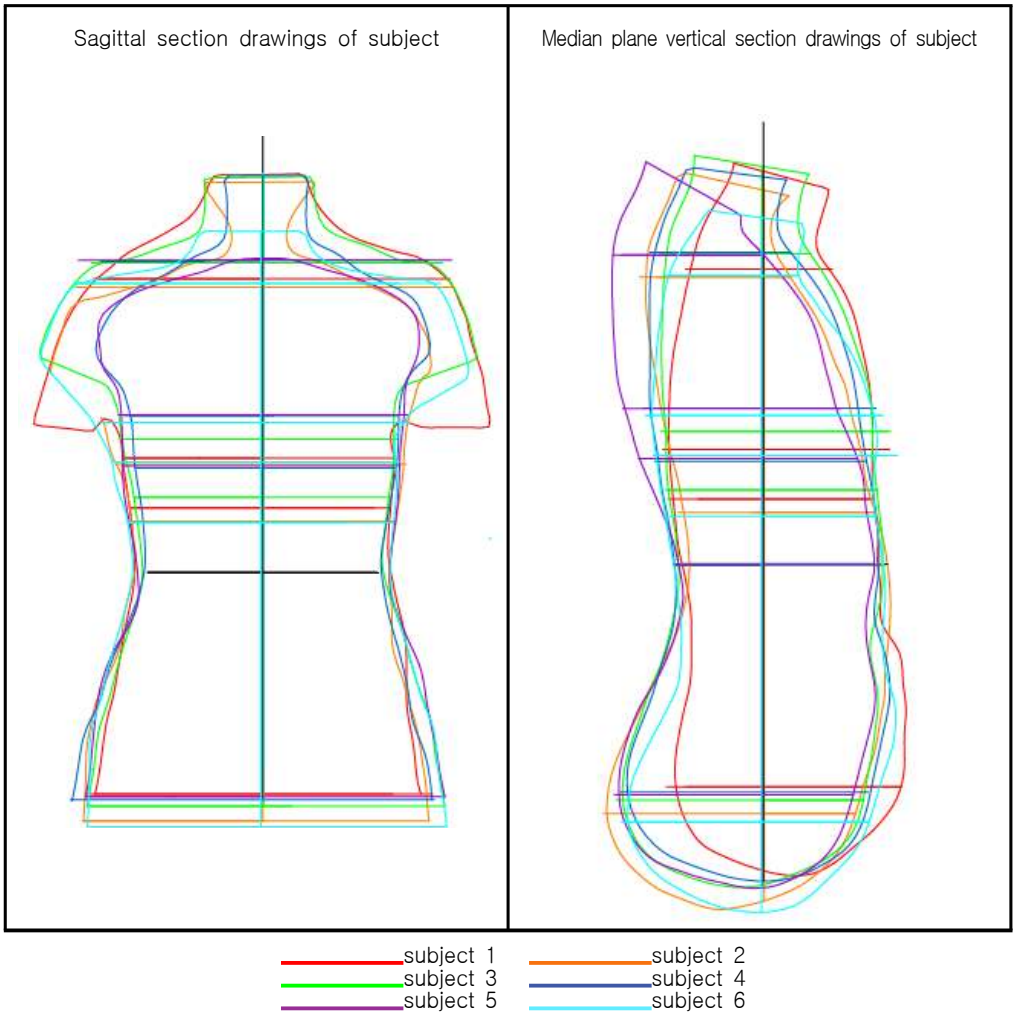
Upon analyzing the sagittal section drawings, it was found that the data about the forms and position of neck and shoulder were not significant. To be specific, the fitting of neck and shoulders was affected much by the differences of vertical length, inter-arm distance, shoulder angle and upper body posture. The drawing for Subject 6 did not show the neck, while that for Subject 2 showed a distorted neck part. As shown in <Tab. 4>, back and front lengths differed much between Subject 6 and 2 ((-1.50cm·-2.50cm). Namely, Subject 2 had a upper body bend more backwards. It was difficult to determine the precise position and form of neck and shoulders because the front vertical section drawing was obtained based on the lateral side line.

As a result of analyzing the positions of the major body parts based on subjects' waist circumference lines, it was found that Subject 6 had larger values of bust breadth, waist breadth

and hip breadth, while the other subjects had some similar values. On the other hand, the vertical positions differed significantly in terms of bust, underbust and hips. In particular, Subject 2 and 6 showed the lowest fitting in terms of hip position, which coincided with <Tab. 4>: highest waist and hips. In addition, it was interpreted that the position of bust was affected much by the front upper body length, bust form and upper body posture. Subject 5 had higher bust, which suggests that her upper body was bent backwards.

② Median plane vertical section drawing

Median plane vertical section drawings were obtained based on the front central lines. All in all, the lateral positions of shoulder points, side bust points and side hip points were not significant due to the different upper body postures and 3D scanning postures.



<Fig. 1> Sagittal and Median plane vertical section drawing by Subject

On the other hand, Subjects' postures could be distinguished relatively clearly. Subject 5 had the upper body bent most backwards, followed by Subject 2, Subject 3 and Subject 4 in their order. In contrast, Subject 6 was classified into erect form, while Subject 1 was divided into a stooped form. As <Tab. 4> shows, the lower back slope angle was 19.0° for Subject 5 with her upper body bend backwards, 10.0° for Subject 2, 9.5° for Subject 3, 11.0° for Subject 4 and 4.0° for Subject 1 with her upper body stooped. Namely, the more the upper body was bent backwards, the lower back slope angle was larger. In view of upper chest slope angles, Subject 5 and Subject 2 showed the high values (33.0° and 30.0°, respectively), while Subject 1 with her upper body stooped showed the lowest value or 19.0°. In terms of the lower chest slope angle, Subject 5 (-7.0°) and Subject 2 (-.1.0°) showed the low value and Subject 1 (5.5°) showed the highest value. Such results suggest that upper and lower chest slope angles are correlated with the posture of the upper body.

In terms of the hip protrusion from a lateral back, Subject 2 had the most protruded hips, while Subjects 5, 6, 3 and 4 had the similar hip protrusions. Subject 1 had the least protruded hips. On the other hand, the upper hip slope angle was 17.5° for Subjects 2 and 5, 26.0° for Subject 6 and 3.8° for Subject 1. Namely, hip protrusion was correlated with upper hip slope angle. In terms of abdominal protrusion from a lateral front, Subject 1 showed highest value (13.0°), while the other subjects had some similar values. Thus, it could be interpreted that the angle values by body part reflected not only the postures but also protrusions and forms.

(2) Analysis of the horizontal section drawings by body part

The horizontal section drawings were obtained for biacrominal horizontal circumference line, chest circumference line, bust circumference line, underbust circumference line, waist circumference line and hip circumference line. The drawings were compared among 6 subjects.

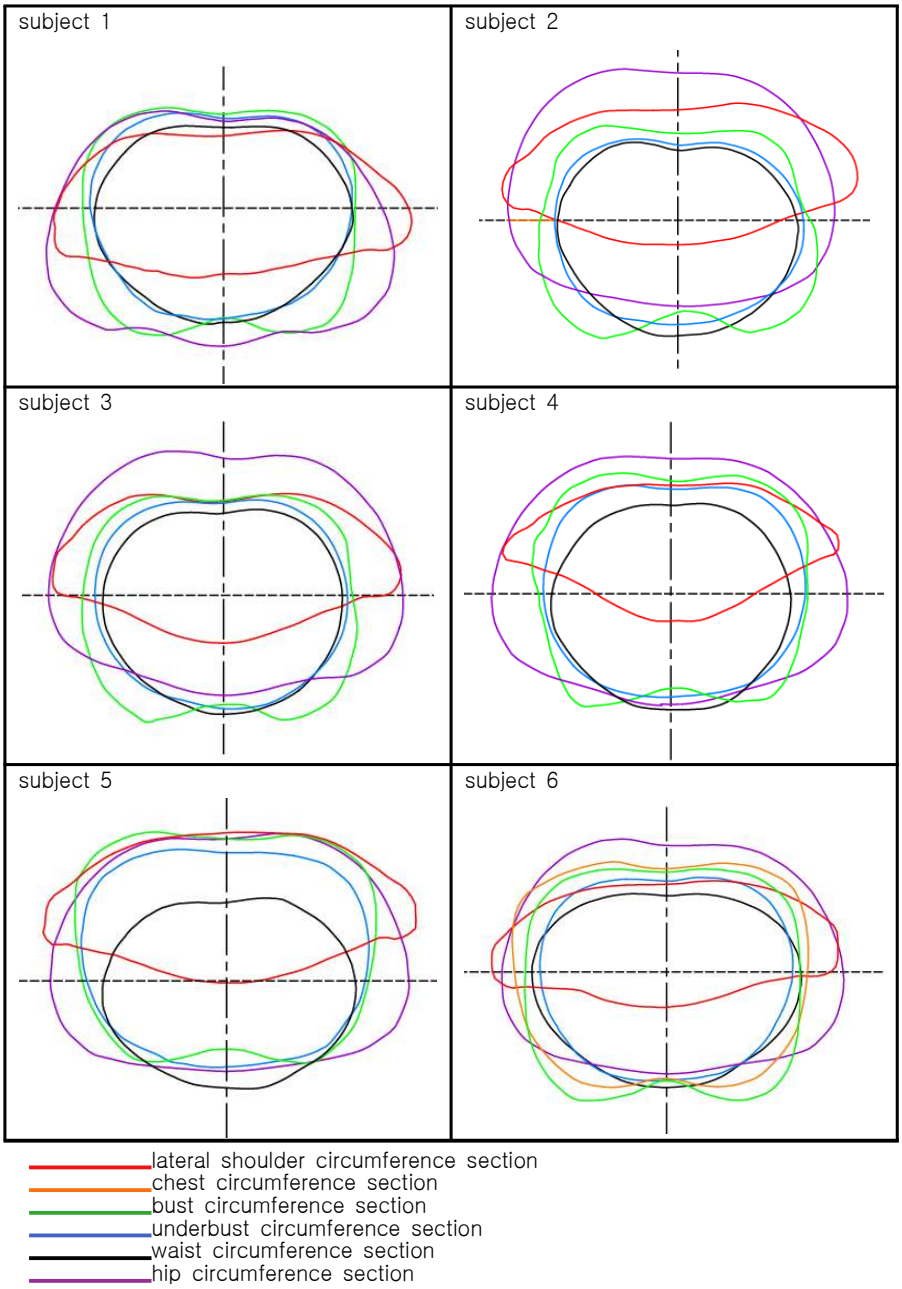
<Fig. 2> shows the horizontal section drawings of 6 subjects, and <Fig. 3> shows the drawings by body part. The results of analysis can be summed up as follows;

Shoulder breadth and depth did not much differ among 6 subjects, but the positions of the shoulder points differed much, which suggests that they were related with the upper body postures. Upon reviewing the longitudinal horizontal lines of the section drawings based on the lateral lines, it could be interpreted that the shoulder section of Subject 1 was positioned most forwards, while that of Subject 5 was positioned most backwards. Thus, it was interpreted that Subjects 5, 2 and 4 had their upper body bent.

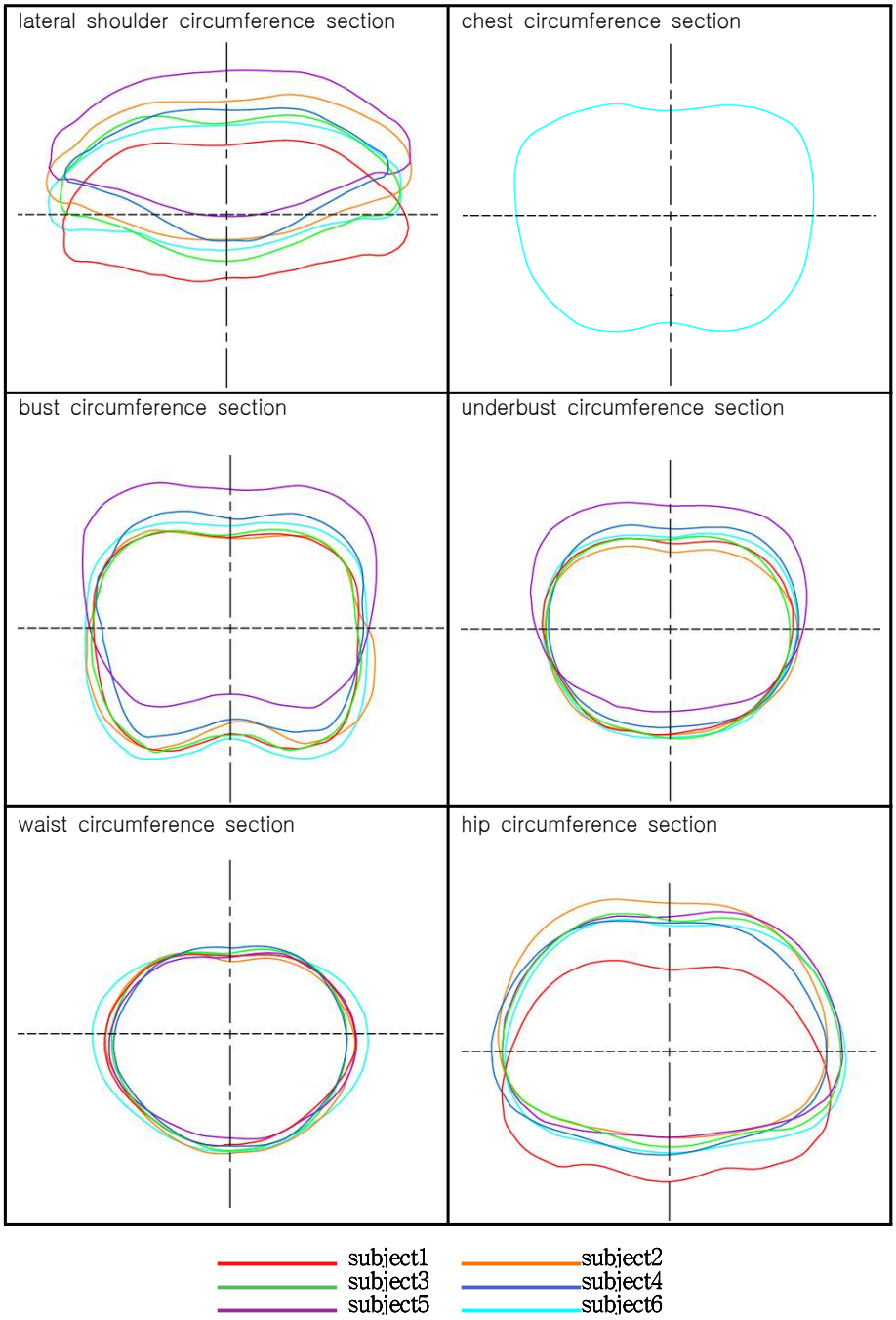
In case of Subject 5 with the lower back protruded most, bust and underbust circumference sections were positioned most backwards, followed by Subject 4. In other words, Subject 5 had the upper body bent most, followed by Subject 4. In view of the horizontal section drawings for bust and underbust circumferences, Subjects 1, 2 and 3 but Subjects 4 and 5 had the similar positions or depths and breadths.

Upon reviewing the horizontal waist circumference section drawings, it was found that the waists were positioned at some similar point and that the depths and breadths did not show any significant difference. Merely, Subject 6 showed some different waist circumference. Upon reviewing the horizontal hip circumference section drawings, it was found that the hip

section was positioned most forwards only in case of Subject 1 and positioned most backwards in case of Subject 2. The other subjects' hip sections were positioned at some similar point.



<Fig. 2> Horizontal section drawings by body part



<Fig. 3> Horizontal section drawings for subjects.

Since the overall sections of Subject 1 were positioned forwards, her somatotype was deemed 'stooped.' In case of Subjects 4 and 5, the shoulder and chest sections were positioned most backwards, while the other sections below the waist were positioned at a point similar to the other subjects'. Hence, Subject 5 had the upper body bent most backwards, followed by Subject 4.

As discussed above, among 6 subjects having the standard somatotype 160A-84/66,' Subject 4 showed the most common somatotype data, while her upper body bent backwards reflected the population most properly. Thus, she was selected as the model somatotype for the development of a Chinese women's torso dummy.

IV. Conclusion and Suggestions

This research was motivated to provide the Korean apparel companies doing business in China with some basic data useful to the development of their apparel commodities. To this end, the researcher analyzed the somatotype data of the Chinese women in their 20's in reference to GB/T 1335.2-1997. This research can be concluded as follows;

1. As a result of selecting the standard or 'A' somatotype based on the body measurement data of the Chinese women in their early 20's and then, analyzing the correlated distribution and the most frequent intervals, it was found that 'height 160,' 'bust circumference 84' and 'waist circumference 66' were most prevalent. Thus, the researcher suggested the body measurements of 'A' somatotype for the development of a torso dummy for the Chinese adult women.

2. As a result of analyzing the average body measurements of 'A' somatotype (109 women), it was found that their average body measurements almost coincided with the standard '160A-84/66.' As discussed above, the researcher selected 13 women corresponding to '160A-84/66' in reference to 2008 body measurement data, and chose 6 women among them secondarily. Then, the researcher comparatively analyzed the direct measurement data and the 3D measurement ones, while analyzing the vertical/horizontal sagittal and Median plane section drawings, it was found that Subject 4 showed the most common somatotype data, while her upper body bent backwards reflected the population most properly. Thus, she was selected as the model somatotype.

Based on the above findings, the following suggestion was put forwards;

In order to systemize the somatotype data across the vast continent China, it is deemed necessary to expand and diversify the sample regions and thereby, construct a more reliable database for each sample

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