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The analysis of body type of Chinese women by the age
- Focusing on the Body Index -

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Abstract

This study aims at strengthening the national competitiveness of Korea's clothing industry as it provides substantial information on type characteristics and body types for Chinese women and improves the fitness of clothing, considering human proportion in the production of clothing products for export to China. This study measured for 1,381 women between 19 and 50 aged residing in Beijing and Shanghai, China from June 23 to August 7, 2004 by the simple random sampling. Data was analyzed by used SPSS/WIN 10.0 Program. As for the of method of this study, the technical statistical analysis, F-test, and Duncan-test were made.

The results of this study are as follows.

As age increases, the shoulders seem higher with less curvature on waist, while the front has turned into the straight silhouette with the side turned into the flat silhouette without curvature, and waist and belly turn into the body type of short and thick.

Key Words : body types, Chinese women, human proportion

Ⅰ. Introduction

Chinese apparel industry have constantly been growing recording 14.9 fold increase for the last 2 decades, consolidating its place to be the largest apparel exporting country since 1994[6]. Especially, after joining WTO in November, 2001[13], there were significant increase of foreign investment with reduction of taxation for foreigners and various merit of investment. This resulted in increase in economic power and consumer goods increase through increase in market demand which led to a rapid growth of apparel markets.

In the midst of the rapid transition of Chinese fashion market, most of Korea companies failed to penetrate into Chinese domestic market for the following reasons regard less of geographical and cultural advantages; that is, rapid economic growth and cultural transformation of China, lack of understanding of limitless potential of Chinese consumer market and lack of understanding of consumer psychology.

To place a high position in a high competition with other countries in a great market called

China which has limitless development potential, counter planand strategy for remarketing and organized and analytic research is strictly needed. Although there is a significant difference between Korean and Chinese women according to age and region, Korean fashion companies are still producing based on Korean standard which fails to reflect the differences of attributes. Therefore, understanding body compatibility problem created by the differences of body shape is critical.

To survive in competitive Chinese fashion market, the first step to be taken is to ensure information on specific body shape / size / pattern related measures and to accurately grasp the differences between Korean and Chinese women and reflect it in production. The previous studies on Chinese women includes the actual conditions of consumer consumption[1)2)3)], characteristics of body type[4)5)6)], sizing of clothing[7)8)], prototype development[9)10)] and Information on body sizes and characteristics and clothes sizing standard of chinese women[11)12)13)] based on the measurement information of chinese women[14)] which was also used in this study.

owever, the studies up to now only provide information on sizes and measurement of body shape through direct measuring. Therefore, as the next step, the study about characteristics of the body or body shape related promotion of Chinese women based on the given information is needed.

II. Review of literature

This study will use the measurements and analyze the proportion of each body parts of Chinese women to give detailed information on characteristics of body and shape. The objective is to enhance the fitting of the clothes that will be exported to China by taking into account to body proportion in process of production.

The detailed contents of this study is as follows.

1) Analysis of proportion of total group through the measurement based on body measuring of Chinese women

2) Analysis of body proportion of each age group thorough the measurement based on body measuring of Chinese women.

III. Research Method

1. Measurement of Body

This study measured for 1,381 women between 19 and 50 aged residing in Beijing and Shanghai, China from June 23 to August 7, 2004 by the simple random sampling. The measurement applied the R. Martin's body measurement method, survey report of national standard body in 1997 and the standard point and line of measurement set by the 5th Korean Body Size Survey (Size Korea, 2003), and the body measurement equipment designed by Martin is used for measurement.

The standard group of this study is Beijing 45.2% (624 persons), Shanghai 54.8% (757 persons) regionally and age group of 19-29, 42.1% (581 persons), 30-39, 26.5% (366 persons) and 45-50, 31.4% (434persons) where the largest group was 19-29 to 40-50 and 30-39 respectively.

The factors that were used in this study was height factor regarding height (20), width factor regarding height and waist width (17), depth factor regarding height and waist depth (15), girth factor regarding height and breast girth (17) and length factor regarding height(30), total of 99 factors.

2. Data Processing and Analysis Method

The data processing and analysis is statistically processed by using SPSS WIN 10.0 program.

To understand the proportion of Chinese women, the technical statistic analysis of total group and age group about the total 99 factors. To compared proportions of each age groups, the significant test was proved by F-test and Duncan-test.

IV. Results and Discussions

This study aims to examine the body type or body shape of Chinese women without dealing with the information on their body size or obesity level. To do this, this study focuses on the body proportion of the population (whole group) and each age group using the surveyed numerical index values.

1. Analysis of Body Index Values of the Population

Table 1 shows the results of analysis on the index values of 99 items including the height item over stature, the width item over stature and waist breadth, the thickness item over stature and waist depth, the circumference item over stature and bust circumference, and the length item over stature for Chinese women.

First, let us examine the proportion of height. In case stature is set as 100, the head length (stature minus the chin height) is 14.1. This means the average Chinese woman is 7.09 heads tall. Hip height is 49.2, which is about half of the stature. The proportion of the stature minus the chin height, the chin height minus the bust height, the bust height minus the waist height, and the waist height minus the hip height is represented as 1:1.03:0.62:0.94. The proportion of stature minus the chin height, the chin height minus the axilla height, the axilla height minus the waist height, and the waist height minus the hip height is shown as 1:0.82:0.84:0.93.

In case of the proportion of width, the proportion of the shoulder breadth, waist breadth, and hip breadth yields 1.41:1:1.35.

If the waist depth is set as 100 in terms of thickness proportion, the proportion of the breadth of bust, waist and hip yields 1.19:1:1.11. The abdomen depth is slightly thicker than the hip depth.

In case of the proportion of circumference, the proportion of the circumference of neck base, bust, waist, and hip is shown as 1:2.34:1.92:2.46.

In case of the proportion of length, the proportion of waist front length and waist back length yields 1:1.16, while the proportion of 'interscye fold, front' and 'back interscye fold, length' reveals 1:1.05.

For body flat rate, breast, waist, and heap are 0.84, 0.80, and 0.66 respectively. The upper body including waist is a round type.

2. Analysis of Body Index Value of Each Age Group

1) Comparison and Analysis of Body Index Value of Each Age Group.

Table 2 shows the results of analysis on the index values of a total of 99 items to examine the body type of Chinese women by each age group. Figure 1 is the front view by age.

In the height items over stature, the index values of the bust height, the bust-below height, waist height (Omphalion), abdomen height, and crotch height gradually rise the younger the women are. On the other hand, in the height

items over neck and shoulder, the index values of the front cervical height, side cervical height, shoulder height, and back cervical height generally decrease. The group in their 20's has relatively lower shoulder height over stature. The index in body proportion according to each age group does not vary much.

<Table 1> Analysis of Body Index Values of the Population

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
HEIGHT	chin height/stature	85.9	1.4	63.9	104.1	1.6	40.3
	front cervical height/stature	81.9	1.3	66.8	88.6	1.6	21.8
	chest height/stature	76.6	1.4	63.8	96.2	1.8	32.4
	bust height/stature	71.3	1.6	62.9	84.8	2.2	21.9
	bust-below height/stature	68.0	1.7	44.8	78.0	2.5	33.1
	waist height/stature	62.5	1.3	54.7	74.4	2.1	19.6
	waist height(Omphalion)/stature	58.4	1.7	38.3	66.5	2.9	28.3
	abdomen height/stature	55.7	1.5	47.5	62.8	2.7	15.3
	Iliac spine height/stature	58.2	2.0	26.0	66.3	3.4	40.3
	crotch height/stature	44.9	1.8	19.3	63.1	4.0	43.8
	knee height/stature	26.8	1.4	8.7	32.0	5.2	23.3
	side cervical height/stature	84.7	1.3	64.9	91.8	1.5	26.8
	shoulder height/stature	81.5	1.3	62.7	88.8	1.6	26.1
	axilla height/stature	74.3	2.0	65.8	107.6	2.7	41.8
	back cervical height/stature	85.2	1.4	75.5	104.4	1.6	28.9
	hip height/stature	49.2	1.9	38.4	82.1	3.9	43.7
	gluteal height/stature	43.7	2.3	18.8	63.8	5.3	45.0
	thigh height/stature	45.4	2.6	37.0	67.1	5.7	30.1
	calf height/stature	19.8	1.6	11.0	49.2	8.1	38.2
	(Stature minus chin height)/stature	14.1	1.4	-4.1	36.1	9.9	40.3
WIDTH	cervical breadth/stature	7.6	.6	6.2	12.9	7.9	6.7
	cervical breadth/waist breadth	50.4	5.9	33.6	88.0	11.7	54.4
	shoulder breadth/stature	21.5	1.1	15.5	29.8	5.1	14.3
	shoulder breadth/waist breadth	141.8	13.6	93.9	183.1	9.6	89.2
	chest breadth/stature	18.0	1.5	13.0	24.9	8.3	11.9
	chest breadth/waist breadth	118.8	10.1	83.8	170.1	8.5	86.3
	bust breadth/stature	17.2	1.6	10.6	37.5	9.3	26.8
	bust breadth/waist breadth	113.2	8.3	71.8	241.8	7.3	170.1
	bust-below breadth/stature	16.4	1.3	12.4	21.7	7.9	9.3
	bust-below breadth/waist breadth	107.7	7.2	71.4	144.6	6.7	73.1
	waist breadth/stature	15.3	1.8	11.8	23.1	11.8	11.3
	abdomen breadth/stature	19.5	1.6	12.8	26.1	8.2	13.2
	abdomen breadth/waist breadth	128.5	9.7	77.2	170.3	7.5	93.1
	hip width/stature	20.6	1.3	12.8	28.4	6.3	15.6
	hip width/waist breadth	136.0	12.5	85.1	193.0	9.2	107.9
	thigh breadth/stature	20.7	1.2	15.6	25.4	5.8	9.8
	thigh breadth/waist breadth	136.9	12.3	84.6	178.9	9.0	94.3

<Table 1> continue

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
THICKNESS	chest depth/stature	11.9	1.1	6.5	17.0	9.2	10.5
	chest depth/waist depth	98.1	11.5	45.1	187.1	11.7	142.0
	bust depth/stature	14.5	1.6	10.0	20.7	11.0	10.7
	bust depth/waist depth	118.6	11.6	57.3	193.5	9.8	136.1
	bust-below depth/stature	12.9	1.6	9.0	18.9	12.4	9.9
	bust-below depth/waist depth	105.6	9.4	56.9	183.8	8.9	126.8
	waist depth/stature	12.3	2.0	7.7	20.2	16.3	12.5
	abdomen depth/stature	13.8	2.0	7.3	22.1	14.5	14.8
	abdomen depth/waist depth	112.6	9.6	56.0	198.7	8.5	142.7
	axilla depth/stature	6.6	.9	4.1	10.4	13.6	6.3
	axilla depth/waist depth	53.8	6.2	24.8	100.7	11.5	75.9
	hip depth/stature	13.6	1.7	6.7	21.4	12.5	14.7
	hip depth/waist depth	111.1	11.4	55.7	176.6	10.3	121.0
	hip-below depth/stature	10.3	1.1	6.2	17.3	10.7	11.2
	hip-below depth/waist depth	84.7	11.4	39.8	138.6	13.5	98.8
CIRCUMFERENCE	neck base circumference/stature	23.6	1.4	18.9	29.8	5.9	10.9
	neck base circumference/ bust circumference	42.9	2.7	35.0	52.7	6.3	17.7
	chest circumference/stature	54.0	4.2	44.4	72.0	7.8	27.6
	chest circumference/ bust circumference	97.9	3.4	80.9	125.3	3.5	44.4
	bust circumference/stature	55.3	5.0	43.4	73.4	9.0	30.0
	bust-below circumference/stature	48.6	4.5	35.3	66.5	9.3	31.2
	bust-below circumference/ bust circumference	88.1	3.4	62.0	106.5	3.9	44.5
	waist circumference/stature	45.4	5.8	32.8	67.1	12.8	34.2
	waist circumference/ bust circumference	82.0	5.2	56.6	134.1	6.3	77.6
	abdomen circumference/stature	55.1	5.7	42.4	74.5	10.3	32.1
	abdomen circumference/ bust circumference	99.8	5.4	78.0	131.0	5.4	53.1
	hip circumference/stature	58.1	3.9	39.3	73.5	6.7	34.2
	hip circumference/ bust circumference	105.6	5.6	69.6	137.9	5.3	68.3
	axilla circumference/stature	24.1	2.0	16.1	33.1	8.3	16.9
	axilla circumference/ bust circumference	43.8	2.8	28.6	55.1	6.4	26.5
	back neck circumference/stature	10.1	.8	6.8	13.9	7.9	7.1
	back neck circumference/ bust circumference	18.4	1.7	12.0	27.6	9.2	15.6
	waist front length/stature	20.5	1.2	14.1	28.6	5.9	14.5
	cervical to breast point length/ stature	16.6	1.5	11.4	24.2	9.0	12.8
	cervical to waist length/stature	25.2	1.3	17.6	29.6	5.2	12.0

<Table 1> continue

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
LENGTH	bishoulder to breast point length/ stature	14.7	1.4	7.9	26.0	9.5	18.0
	bishoulder, breast point to waist length/ stature	24.8	1.4	17.9	30.3	5.6	12.5
	front interscye, length/stature	20.4	1.3	14.1	28.1	6.4	14.0
	front interscye fold, length/stature	20.9	1.5	14.0	26.1	7.2	12.1
	bust point-bust point/stature	11.1	1.2	8.1	15.9	10.8	7.7
	crotch length/stature	46.4	2.8	32.4	57.3	6.0	24.9
	bishoulder, upperarm, to axilla length /stature	7.7	.8	4.7	12.6	10.4	8.0
	upperarm length/stature	18.8	1.0	11.9	25.2	5.3	13.3
	arm length/stature	33.2	1.3	9.8	39.5	3.9	29.7
	waist to hip length/stature	14.0	1.3	7.4	25.1	9.3	17.7
	outside waist mallelous length/ stature	59.8	1.3	46.5	66.0	2.2	19.5
	outside leg length/stature	63.6	1.3	51.6	70.7	2.0	19.1
	back cervical to outside shoulder length/ stature	12.1	.7	8.3	15.3	5.8	7.0
	side cervical to outside shoulder length/stature	8.0	.7	6.1	12.0	8.8	5.9
	bishoulder length/stature	24.9	1.5	17.6	30.9	6.0	13.3
	back interscye, length/stature	22.7	1.7	17.9	32.3	7.5	14.5
	back interscye fold, length/stature	21.9	2.0	16.5	30.8	9.1	14.3
	scye depth/stature	11.6	1.1	7.9	22.9	9.5	15.0
	waist back length/stature	23.8	1.2	18.6	28.6	5.0	10.0
	total length/stature	86.6	1.5	72.3	94.8	1.7	22.5
	bishoulder to scye, length/stature	16.2	1.1	12.2	25.9	6.8	13.7
	cervical to waist length/stature	25.5	1.3	18.9	30.5	5.1	11.7
	bishoulder, scapular, to back waist length/stature	25.6	1.4	17.5	32.7	5.5	15.3
	back waist to gluteal fold, length/stature	20.0	1.3	13.0	27.5	6.5	14.4
	thigh vertical length/stature	17.3	1.0	11.3	20.9	5.8	9.6
	(back neck circumference/2+side neck to waist circumference length)/stature	30.3	1.4	4.6	34.9	-6.4	12.5
	(back neck circumference/2+side neck to bust point length)/stature	21.6	1.6	16.3	29.5	7.4	13.2

In the width items over stature and waist breadth, the index value of the waist breadth increases as the women age, while the index values of the shoulder breadth, hip breath, and thigh breadth decrease over the increasing waist breadth. The front curve decreases, and the front view changes

into an H-shaped silhouette.

In the thickness item over stature and waist depth, the index values of all the thickness items indicate an upward trend while abdomen depth over waist depth also increases as the women become older. As a result, the side views including the abdomen look thick. Except for the abdomen depth over waist depth, the index values of all the thickness items indicate a downtrend, making the side view seem like a small-curved silhouette.

In the circumference items over stature and bust circumference, the cross section of the torso, waist, bust and abdomen drastically increases as the women get older. The hip circumference, on the other hand, decreases. As a result, the waist and abdomen become thick, making the body type look short and thick.

In the length item over stature, the index values of all the items except for the vertical thigh length increase, as the women get older.

<Table 2> Comparison and Analysis of Body Index Value of Each Age Group

Item	Statistics	20s		30s		40s		F-test	Duncan-test
		M	SD	M	SD	M	SD		
HEIGHT	chin height/stature	85.9	1.3	85.8	1.3	85.9	1.6	.99	
	front cervical height/stature	81.8	1.5	81.9	1.3	82.1	1.1	6.32**	b b a
	chest height/stature	76.6	1.4	76.6	1.5	76.7	1.5	1.42	
	bust height/stature	71.6	1.3	71.2	1.9	70.9	1.7	25.73***	a b c
	bust-below height/stature	68.2	1.7	67.8	1.9	67.7	1.5	12.87***	a b b
	waist height/stature	62.4	1.2	62.6	1.3	62.6	1.5	2.84	
	waist height(Omphalion)/stature	58.7	1.4	58.3	1.8	57.9	1.8	25.48***	a b c
	abdomen height/stature	56.0	1.5	55.5	1.6	55.6	1.5	12.94***	a b b
	Iliac spine height/stature	58.0	1.8	58.1	2.0	58.4	2.2	2.86	
	crotch height/stature	45.1	1.8	44.7	2.0	44.7	1.6	7.66***	a b b
	knee height/stature	26.9	1.4	26.8	1.2	26.8	1.5	1.02	
	side cervical height/stature	84.4	1.5	84.8	1.0	85.0	1.3	25.09***	b a a
	shoulder height/stature	81.2	1.4	81.6	1.2	81.7	1.1	29.24***	b a a
	axilla height/stature	74.4	2.3	74.2	1.3	74.3	2.3	2.09	
	back cervical height/stature	84.9	1.3	85.3	1.3	85.5	1.5	25.48***	c b a
	hip height/stature	49.4	2.2	48.9	1.4	49.2	1.8	6.12**	a b a
	gluteal height/stature	43.8	2.4	43.6	2.2	43.7	2.2	1.40	
	thigh height/stature	45.5	2.3	45.1	2.6	45.4	2.9	2.67	
	calf height/stature	19.8	1.0	19.8	2.1	19.9	1.7	1.61	
	(Stature minus chin height)/stature	14.1	1.3	14.2	1.3	14.1	1.6	.99	
WIDTH	cervical breadth/stature	7.6	.6	7.6	.6	7.7	.6	3.26*	b b a
	cervical breadth/waist breadth	53.2	5.6	49.5	5.1	47.3	5.3	157.61***	a b c
	shoulder breadth/stature	21.2	1.0	21.6	1.1	21.8	1.1	47.06***	a b c
	shoulder breadth/waist breadth	148.2	12.3	140.8	12.4	134.0	11.7	171.97***	a b c
	chest breadth/stature	17.4	1.2	18.1	1.3	18.9	1.5	148.97***	a b c
	chest breadth/waist breadth	121.8	9.6	117.5	9.7	115.9	9.8	51.28***	a b c
	bust breadth/stature	16.5	1.2	17.4	1.7	18.0	1.4	150.78***	c b a
	bust breadth/waist breadth	115.3	7.1	112.9	10.3	110.6	7.1	41.85***	a b c
	bust-below breadth/stature	15.7	1.1	16.6	1.2	17.2	1.2	230.84***	c b a

<Table 2> Continue

Item	Statistics	20s		30s		40s		F-test	Duncan-test
		M	SD	M	SD	M	SD		
WIDTH	bust-below breadth/waist breadth	109.4	7.1	107.5	7.0	105.4	6.9	40.42***	a b c
	waist breadth/stature	14.4	1.4	15.5	1.6	16.4	1.7	216.44***	c b a
	abdomen breadth/stature	18.7	1.4	19.7	1.5	20.4	1.5	181.77***	c b a
	abdomen breadth/waist breadth	130.8	9.5	128.2	9.3	125.5	9.5	39.04***	a b c
	hip width/stature	20.2	1.2	20.8	1.2	21.0	1.3	56.01***	c b a
	hip width/waist breadth	141.4	10.6	135.4	11.7	129.1	12.1	146.80***	a b c
	thigh breadth/stature	20.4	1.1	20.9	1.3	21.1	1.2	48.22***	c b a
	thigh breadth/waist breadth	142.8	10.5	135.8	11.5	129.9	11.4	171.05***	a b c
THICKNESS	chest depth/stature	11.4	.9	12.0	1.1	12.6	1.1	165.26***	c b a
	chest depth/waist depth	103.4	11.2	96.5	10.4	92.5	9.4	143.61***	a b c
	bust depth/stature	13.7	1.4	14.7	1.4	15.3	1.5	173.98***	c b a
	bust depth/waist depth	123.5	11.1	117.8	11.4	112.6	9.3	132.03***	a b c
	bust-below depth/stature	12.0	1.3	13.2	1.4	13.9	1.5	228.28***	c b a
	bust-below depth/waist depth	108.8	9.5	105.1	9.6	101.6	7.2	81.03***	a b c
	waist depth/stature	11.1	1.4	12.6	1.8	13.7	1.9	313.21***	c b a
	abdomen depth/stature	12.6	1.5	14.1	1.8	15.3	1.8	316.42***	c b a
	abdomen depth/waist depth	113.6	10.2	112.0	9.0	111.7	9.1	6.05**	b b a
	axilla depth/stature	6.2	.8	6.6	.8	7.0	.9	114.11***	c b a
	axilla depth/waist depth	56.2	5.9	52.8	5.7	51.4	5.8	93.49***	a b c
	hip depth/stature	12.8	1.3	13.6	1.5	14.6	1.6	174.63***	c b a
	hip depth/waist depth	115.8	11.0	108.9	10.8	106.7	9.8	103.36***	a b c
	hip-below depth/stature	10.0	1.1	10.4	1.1	10.6	1.2	40.29***	c b a
	hip-below depth/waist depth	90.5	10.2	83.0	9.9	78.2	10.2	191.37***	a b c
CIRCUMFERENCE	neck base circumference/stature	23.1	1.2	23.7	1.3	24.3	1.4	108.75***	c b a
	neck base circumference/ bust circumference	44.0	2.6	42.7	2.6	41.8	2.4	91.95***	a b c
	chest circumference/stature	51.8	3.4	54.5	3.7	56.6	3.9	214.32***	c b a
	chest circumference/bust circumference	98.5	3.3	97.9	3.4	97.2	3.4	19.08***	a b c
	bust circumference/stature	52.7	4.0	55.7	4.4	58.3	4.7	208.72***	c b a
	bust-below circumference/stature	46.1	3.5	49.1	3.9	51.7	4.2	273.98***	c b a
	bust-below circumference/ bust circumference	87.5	3.6	88.1	3.0	88.8	3.4	16.81***	c b a
	waist circumference/stature	41.9	4.1	46.1	5.0	49.5	5.4	322.16***	c b a
	waist circumference/bust circumference	79.5	4.6	82.6	4.7	84.9	4.7	167.16***	c b a
	abdomen circumference/stature	51.4	4.0	56.1	4.9	59.3	4.9	374.75***	c b a
	abdomen circumference/ bust circumference	97.7	4.8	100.7	5.6	101.8	5.0	87.45***	c b a
	hip circumference/stature	56.4	3.2	58.5	3.8	60.2	3.7	151.06***	c b a
	hip circumference/bust circumference	107.2	5.2	105.2	6.0	103.6	5.2	56.86***	a b c
	axilla circumference/stature	23.2	1.8	24.3	1.9	25.3	1.9	159.16***	c b a
	axilla circumference/bust circumference	44.1	2.8	43.6	2.9	43.4	2.7	6.90**	b b a
	back neck circumference/stature	10.0	.8	10.1	.8	10.2	.8	7.89***	b a a
	back neck circumference/ bust circumference	19.1	1.6	18.3	1.6	17.6	1.5	113.84***	a b c

<Table 2> Continue

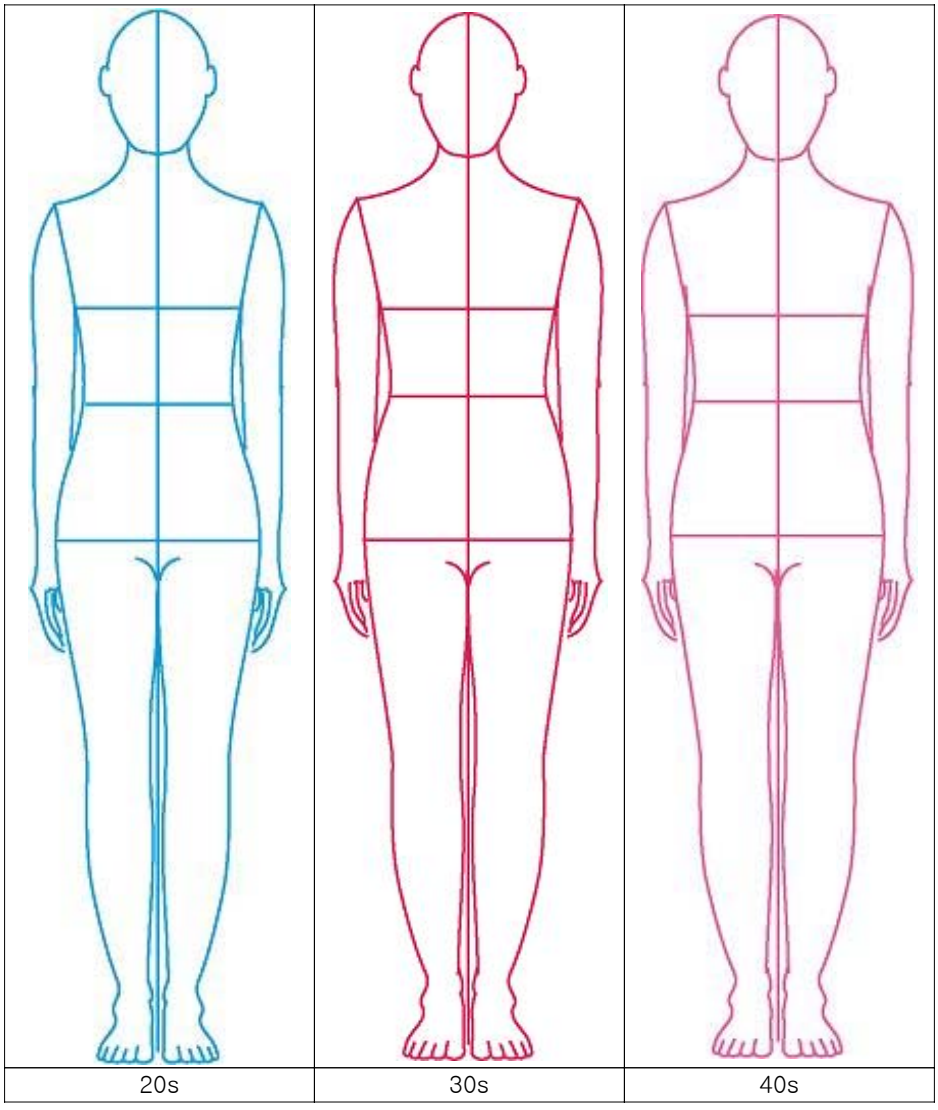
	Item \ Statistics	20s		30s		40s		F-test	Duncan-test
		M	SD	M	SD	M	SD		
LENGTH	waist front length/stature	20.5	1.1	20.4	1.2	20.7	1.3	5.60**	b b a
	cervical to breast point length/stature	15.8	1.2	16.8	1.3	17.5	1.5	212.66***	c b a
	cervical to waist length/stature	25.0	1.2	25.3	1.3	25.6	1.4	29.38***	c b a
	bishoulder to breast point length/stature	14.0	1.2	14.9	1.3	15.4	1.4	145.74***	c b a
	bishoulder, breast point to waist length/stature	24.5	1.2	24.9	1.3	25.2	1.5	41.06***	c b a
	front interscye, length/stature	20.0	1.2	20.4	1.1	20.9	1.4	79.61***	c b a
	front interscye fold, length/stature	20.5	1.4	20.9	1.5	21.4	1.6	45.07***	c b a
	bust point-bust point/stature	10.7	1.0	11.0	1.2	11.7	1.3	89.68***	c b a
	crotch length/stature	45.0	2.3	46.8	2.7	47.8	2.8	150.37***	c b a
	bishoulder, upperarm, to axilla length/stature	7.4	.7	7.9	.8	8.1	.7	126.75***	c b a
	upperarm length/stature	18.6	.8	18.9	1.1	18.9	1.0	14.52***	b a a
	arm length/stature	32.9	1.5	33.2	1.2	33.5	1.1	25.98***	c b a
	waist to hip length/stature	13.8	1.4	14.2	1.2	14.1	1.3	11.63***	b a a
	outside waist mallelous length/stature	59.8	1.3	59.9	1.4	59.9	1.4	.72	
	outside leg length/stature	63.5	1.3	63.6	1.3	63.6	1.5	1.17	
	back cervical to outside shoulder length/stature	11.9	.7	12.2	.7	12.3	.7	43.00***	c b a
	side cervical to outside shoulder length/stature	7.8	.6	8.0	.6	8.2	.7	40.64***	c b a
	bishoulder length/stature	24.4	1.3	25.1	1.5	25.4	1.5	60.95***	c b a
	back interscye, length/stature	22.0	1.5	22.8	1.6	23.5	1.6	113.41***	c b a
	back interscye fold, length/stature	21.1	1.8	22.2	1.9	22.8	1.8	115.48***	c b a
	scye depth/stature	11.1	.9	11.8	.9	12.2	1.1	174.56***	c b a
	waist back length/stature	23.4	1.0	24.0	1.2	24.2	1.2	70.20***	c b a
	total length/stature	86.1	1.5	86.9	1.3	87.2	1.3	92.09***	c b a
	bishoulder to scye, length/stature	15.7	.9	16.4	1.1	16.7	1.0	132.18***	c b a
	cervical to waist length/stature	25.0	1.1	25.7	1.2	26.0	1.2	86.49***	c b a
	bishoulder, scapular, to back waist length/stature	25.3	1.3	25.7	1.4	26.1	1.5	39.48***	c b a
	back waist to gluteal fold, length /stature	19.8	1.2	20.1	1.3	20.1	1.3	11.95***	b a a
	thigh vertical length/stature	17.4	1.0	17.2	1.0	17.2	1.0	7.82***	a b b
	(back neck circumference/2+side neck to waist circumference length)/stature	30.0	1.3	30.3	1.4	30.7	1.5	33.59***	c b a
	(back neck circumference/2+side neck to bust point length)/stature	20.8	1.3	21.8	1.4	22.6	1.6	201.80***	c b a

- The letters indicate the groups that yielded significant statistical difference of p≤.05 using the Duncan-test.(a>b>c)
- *p≤.05, **p≤.01, ***p≤.001

2) Analysis of Body Index Value for Chinese Women in Their 20s

Table 3 shows the results of analysis on the index values of 99 items for Chinese 20s women. Figure 2 is the front view for 20s women.

First, let us examine the proportion of height. In case stature is set as 100, the head length (stature minus the chin height) is 14.1. This means the average Chinese woman is 7.09 heads tall. Hip height is 49.4, which is about half of the stature. The proportion of the stature minus the chin height, the chin height minus the bust height, the bust height minus the waist height, and the waist height minus the hip height is represented as 1: 1.01: 0.65: 0.92. The proportion of stature minus



<Figure 1> Front Body Silhouette of Chinese Women for Each Age Group

the chin height, the chin height minus the axilla height, the axilla height minus the waist height, and the waist height minus the hip height is shown as 1: 0.81: 0.85: 0.92.

<Table 3> Analysis of Body Index Value for Chinese Women in Their 20s

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
HEIGHT	chin height/stature	85.9	1.3	80.4	104.1	1.5	23.8
	front cervical height/stature	81.8	1.5	66.8	87.2	1.8	20.4
	chest height/stature	76.6	1.4	65.5	83.0	1.8	17.4
	bust height/stature	71.6	1.3	66.1	77.4	1.8	11.3
	bust-below height/stature	68.2	1.7	57.7	78.0	2.5	20.2
	waist height/stature	62.4	1.2	57.3	68.6	1.9	11.2
	waist height(Omphalion)/stature	58.7	1.4	52.8	66.5	2.4	13.8
	abdomen height/stature	56.0	1.5	47.5	62.5	2.7	15.0
	Iliac spine height/stature	58.0	1.8	45.1	62.9	3.1	17.8
	crotch height/stature	45.1	1.8	19.3	55.9	4.0	36.6
	knee height/stature	26.9	1.4	8.7	32.0	5.2	23.3
	side cervical height/stature	84.4	1.5	64.9	91.1	1.8	26.1
	shoulder height/stature	81.2	1.4	62.7	84.7	1.7	22.0
	axilla height/stature	74.4	2.3	65.8	107.6	3.1	41.8
	back cervical height/stature	84.9	1.3	79.2	104.4	1.5	25.2
	hip height/stature	49.4	2.2	38.4	82.1	4.5	43.7
	gluteal height/stature	43.8	2.4	18.8	63.8	5.5	45.0
	thigh height/stature	45.5	2.3	37.1	61.2	5.1	24.1
	calf height/stature	19.8	1.0	15.5	26.7	5.1	11.3
	(Stature minus chin height)/stature	14.1	1.3	-4.1	19.6	9.2	23.8
WIDTH	cervical breadth/stature	7.6	.6	6.2	12.9	7.9	6.7
	cervical breadth/waist breadth	53.2	5.6	33.9	88.0	10.5	54.1
	shoulder breadth/stature	21.2	1.0	15.7	25.8	4.7	10.1
	shoulder breadth/waist breadth	148.2	12.3	104.2	183.1	8.3	78.8
	chest breadth/stature	17.4	1.2	13.2	24.2	6.9	11.0
	chest breadth/waist breadth	121.8	9.6	85.5	167.4	7.9	81.9
	bust breadth/stature	16.5	1.2	10.6	23.7	7.3	13.1
	bust breadth/waist breadth	115.3	7.1	71.8	152.0	6.2	80.2
	bust-below breadth/stature	15.7	1.1	12.4	20.2	7.0	7.8
	bust-below breadth/waist breadth	109.4	7.1	71.4	139.4	6.5	68.0
	waist breadth/stature	14.4	1.4	11.9	21.1	9.7	9.2
	abdomen breadth/stature	18.7	1.4	12.8	24.1	7.5	11.2
	abdomen breadth/waist breadth	130.8	9.5	77.2	169.5	7.3	92.3
	hip width/stature	20.2	1.2	12.8	28.4	5.9	15.6
	hip width/waist breadth	141.4	10.6	98.1	180.9	7.5	82.8
	thigh breadth/stature	20.4	1.1	16.9	25.0	5.4	8.2
	thigh breadth/waist breadth	142.8	10.5	100.0	178.9	7.4	78.9
	chest depth/stature	11.4	.9	8.8	16.5	7.9	7.7
	chest depth/waist depth	103.4	11.2	58.4	187.1	10.8	128.8
	bust depth/stature	13.7	1.4	0.0	18.5	10.2	8.4

<Table 3> Continue

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
THICKNESS	bust depth/waist depth	123.5	11.1	57.3	193.5	9.0	136.1
	bust-below depth/stature	12.0	1.3	9.2	18.9	10.8	9.7
	bust-below depth/waist depth	108.8	9.5	56.9	179.0	8.7	122.1
	waist depth/stature	11.1	1.4	7.7	20.2	12.6	12.5
	abdomen depth/stature	12.6	1.5	7.3	19.3	11.9	12.0
	abdomen depth/waist depth	113.6	10.2	56.0	198.7	9.0	142.7
	axilla depth/stature	6.2	.8	4.1	9.7	12.9	5.5
	axilla depth/waist depth	56.2	5.9	34.5	100.7	10.5	66.2
	hip depth/stature	12.8	1.3	6.7	19.1	10.2	12.4
	hip depth/waist depth	115.8	11.0	55.7	176.5	9.5	120.8
	hip-below depth/stature	10.0	1.1	6.3	16.0	11.0	9.7
	hip-below depth/waist depth	90.5	10.2	50.5	138.6	11.3	88.1
CIRCUMFERENCE	neck base circumference/stature	23.1	1.2	18.9	29.6	5.2	10.7
	neck base circumference/ bust circumference	44.0	2.6	36.4	52.7	5.9	16.3
	chest circumference/stature	51.8	3.4	44.4	67.4	6.6	23.0
	chest circumference/bust circumference	98.5	3.3	85.7	118.5	3.4	32.8
	bust circumference/stature	52.7	4.0	43.4	70.5	7.6	27.1
	bust-below circumference/stature	46.1	3.5	35.3	65.7	7.6	30.4
	bust-below circumference/ bust circumference	87.5	3.6	62.0	106.5	4.1	44.5
	waist circumference/stature	41.9	4.1	32.8	66.1	9.8	33.3
	waist circumference/bust circumference	79.5	4.6	64.5	134.1	5.8	69.6
	abdomen circumference/stature	51.4	4.0	42.4	72.2	7.8	29.8
	abdomen circumference/ bust circumference	97.7	4.8	78.0	122.6	4.9	44.6
	hip circumference/stature	56.4	3.2	41.6	70.8	5.7	29.2
	hip circumference/bust circumference	107.2	5.2	75.6	128.6	4.9	53.1
	axilla circumference/stature	23.2	1.8	17.0	33.1	7.8	16.1
	axilla circumference/bust circumference	44.1	2.8	33.7	54.4	6.3	20.8
	back neck circumference/stature	10.0	.8	6.8	13.9	8.0	7.1
	back neck circumference/ bust circumference	19.1	1.6	12.0	27.6	8.4	15.6
LENGTH	waist front length/stature	20.5	1.1	14.7	26.7	5.4	12.0
	cervical to breast point length/stature	15.8	1.2	11.4	19.7	7.6	8.3
	cervical to waist length/stature	25.0	1.2	18.7	29.6	4.8	10.9
	bishoulder to breast point length/stature	14.0	1.2	7.9	20.8	8.6	12.9
	bishoulder, breast point to waist length/stature	24.5	1.2	20.0	30.3	4.9	10.3
	front interscye, length/stature	20.0	1.2	14.1	25.0	6.0	10.8
	front interscye fold, length/stature	20.5	1.4	17.2	25.5	6.8	8.3
	bust point-bust point/stature	10.7	1.0	8.1	14.7	9.3	6.6
	crotch length/stature	45.0	2.3	37.5	53.5	5.1	16.0

<Table 3> Continue

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
LENGTH	bishoulder, upperarm, to axilla length /stature	7.4	.7	4.7	12.5	9.5	7.8
	upperarm length/stature	18.6	.8	12.1	21.3	4.3	9.2
	arm length/stature	32.9	1.5	9.8	36.1	4.6	26.3
	waist to hip length/stature	13.8	1.4	7.4	25.1	10.1	17.7
	outside waist mallelous length/stature	59.8	1.3	46.5	66.0	2.2	19.5
	outside leg length/stature	63.5	1.3	56.2	70.7	2.0	14.5
	back cervical to outside shoulder length/stature	11.9	.7	8.3	14.3	5.9	6.0
	side cervical to outside shoulder length/stature	7.8	.6	6.1	11.9	7.7	5.8
	bishoulder length/stature	24.4	1.3	19.6	28.9	5.3	9.3
	back interscye, length/stature	22.0	1.5	17.9	32.3	6.8	14.5
	back interscye fold, length/stature	21.1	1.8	16.5	30.8	8.5	14.3
	scye depth/stature	11.1	.9	7.9	14.4	8.1	6.5
	waist back length/stature	23.4	1.0	19.1	27.6	4.3	8.5
	total length/stature	86.1	1.5	72.3	92.8	1.7	20.5
	bishoulder to scye, length/stature	15.7	.9	12.4	19.2	5.7	6.8
	cervical to waist length/stature	25.0	1.1	18.9	29.8	4.4	10.9
	bishoulder, scapular, to back waist length/stature	25.3	1.3	18.9	32.7	5.1	13.8
	back waist to gluteal fold, length /stature	19.8	1.2	13.0	26.5	6.1	13.4
	thigh vertical length/stature	17.4	1.0	12.3	20.7	5.7	8.3
	(back neck circumference/2+side neck to waist circumference length)/stature	30.0	1.3	23.8	34.9	4.3	11.0
	(back neck circumference/2+side neck to bust point length)/stature	20.8	1.3	16.3	25.8	6.3	9.5

In case of the proportion of width, the proportion of the shoulder breadth, waist breadth, and hip breadth yields 1.46: 1: 1.4.

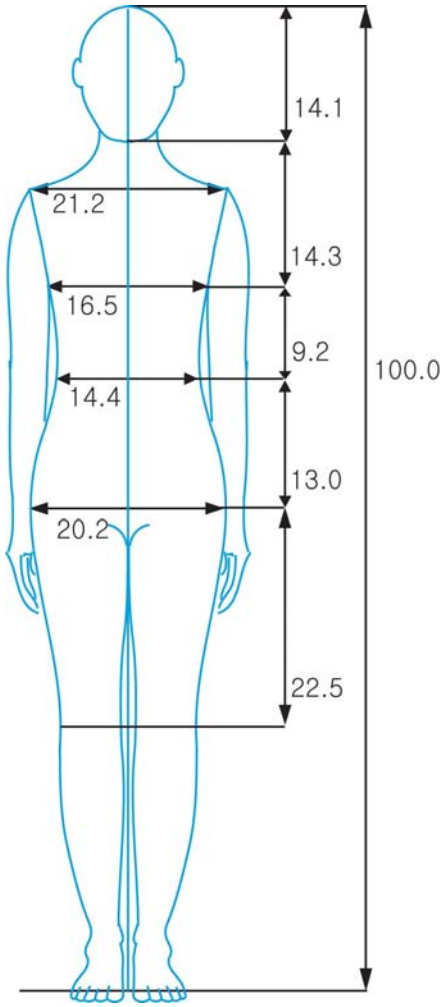
If the waist depth is set as 100 in terms of thickness proportion, the proportion of the breadth of bust, waist and hip yields 1.24: 1: 1.16. The abdomen depth is slightly thicker than the hip depth.

In case of the proportion of circumference, the proportion of the circumference of neck base, bust, waist, and hip is shown as 1: 2.28: 1.81: 2.44.

In case of the proportion of length, the proportion of waist front length and waist back length yields 1: 1.14, while the proportion of 'interscye fold, front' and 'back interscye fold, length' reveals 1: 1.03.

3) Analysis of Body Index Value for Chinese Women in Their 30s

Table 4 shows the results of analysis on the index values of 99 items for Chinese 30s women. Figure 3 is the front view for 30s women.



<Figure 2> Front Body Proportion of Chinese Women in Their 20s

First, let us examine the proportion of height. In case stature is set as 100, the head length (stature minus the chin height) is 14.2. This means the average Chinese woman is 7.04 heads tall. The proportion of the stature minus the chin height, the chin height minus the bust height, the bust height minus the waist height, and the waist height minus the hip height is represented as 1: 1.03: 0.6: 0.96. The proportion of stature minus the chin height, the chin height minus the axilla height, the axilla height minus the waist height, and the waist height minus the hip height is shown as 1: 0.82: 0.82: 0.96.

In case of the proportion of width, the proportion of the shoulder breadth, waist breadth, and hip breadth yields 1.39: 1: 1.34.

If the waist depth is set as 100 in terms of thickness proportion, the proportion of the breadth of bust, waist and hip yields 1.18: 1: 1.09. The abdomen depth is slightly thicker than the hip depth.

In case of the proportion of circumference, the proportion of the circumference of neck base, bust, waist, and hip is shown as 1: 2.35: 1.95: 2.47.

In case of the proportion of length, the proportion of waist front length and waist back length yields 1: 1.18, while the proportion of 'interscye fold, front' and 'back interscye fold, length' reveals 1: 1.06.

<Table 4> Analysis of Body Index Value for Chinese Women in Their 30s

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
H	chin height/stature	85.8	1.3	79.5	92.0	1.5	12.6
E	front cervical height/stature	81.9	1.3	74.5	87.8	1.6	13.3
I	chest height/stature	76.6	1.5	63.8	82.6	2.0	18.7
G	bust height/stature	71.2	1.9	62.9	84.8	2.7	21.9
H	bust-below height/stature	67.8	1.9	44.8	71.1	2.8	26.3
T	waist height/stature	62.6	1.3	56.3	66.6	2.1	10.3

<Table 4> Continue

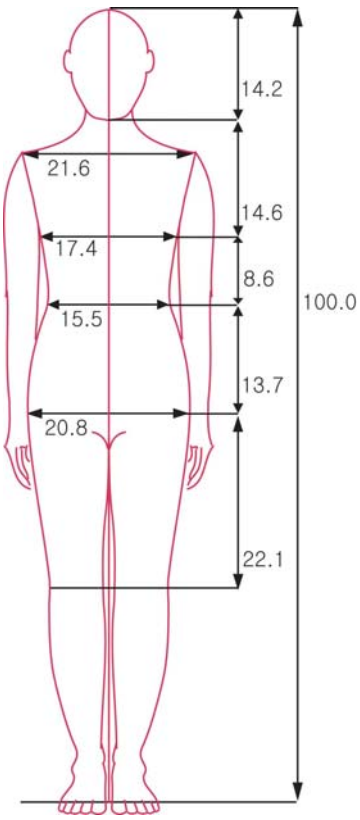
Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
HEIGHT	abdomen height/stature	55.5	1.6	47.7	62.8	2.9	15.0
	Iliac spine height/stature	58.1	2.0	44.8	66.3	3.4	21.5
	crotch height/stature	44.7	2.0	20.6	56.6	4.5	35.9
	knee height/stature	26.8	1.2	20.9	30.1	4.5	9.3
	side cervical height/stature	84.8	1.0	79.4	88.9	1.2	9.5
	shoulder height/stature	81.6	1.2	74.4	87.6	1.5	13.3
	axilla height/stature	74.2	1.3	67.1	83.1	1.8	16.0
	back cervical height/stature	85.3	1.3	75.5	94.2	1.5	18.6
	hip height/stature	48.9	1.4	44.4	53.6	2.9	9.3
	gluteal height/stature	43.6	2.2	28.9	59.8	5.0	30.9
	thigh height/stature	45.1	2.6	37.0	67.1	5.8	30.1
	calf height/stature	19.8	2.1	11.0	44.1	10.6	33.2
	(Stature minus chin height)/stature	14.2	1.3	8.0	20.5	9.2	12.6
WIDTH	cervical breadth/stature	7.6	.6	6.3	11.6	7.9	5.3
	cervical breadth/waist breadth	49.5	5.1	33.9	73.5	10.3	39.7
	shoulder breadth/stature	21.6	1.1	18.8	29.8	5.1	11.0
	shoulder breadth/waist breadth	140.8	12.4	96.2	180.5	8.8	84.3
	chest breadth/stature	18.1	1.3	13.0	24.5	7.2	11.5
	chest breadth/waist breadth	117.5	9.7	83.8	159.4	8.3	75.6
	bust breadth/stature	17.4	1.7	14.0	37.5	9.8	23.5
	bust breadth/waist breadth	112.9	10.3	82.4	241.8	9.1	159.5
	bust-below breadth/stature	16.6	1.2	12.4	20.2	7.2	7.8
	bust-below breadth/waist breadth	107.5	7.0	75.8	130.5	6.5	54.7
	waist breadth/stature	15.5	1.6	11.8	23.1	10.3	11.3
	abdomen breadth/stature	19.7	1.5	13.2	24.6	7.6	11.4
	abdomen breadth/waist breadth	128.2	9.3	79.3	155.7	7.3	76.4
	hip width/stature	20.8	1.2	14.1	24.7	5.8	10.6
	hip width/waist breadth	135.4	11.7	92.7	193.0	8.6	100.3
	thigh breadth/stature	20.9	1.3	15.6	25.4	6.2	9.8
	thigh breadth/waist breadth	135.8	11.5	84.6	163.1	8.5	78.5
THICKNESS	chest depth/stature	12.0	1.1	6.5	17.0	9.2	10.5
	chest depth/waist depth	96.5	10.4	45.1	129.7	10.8	84.6
	bust depth/stature	14.7	1.4	10.9	19.9	9.5	8.9
	bust depth/waist depth	117.8	11.4	67.0	177.8	9.7	110.8
	bust-below depth/stature	13.2	1.4	9.0	18.8	10.6	9.9
	bust-below depth/waist depth	105.1	9.6	68.3	183.8	9.1	115.4
	waist depth/stature	12.6	1.8	9.0	20.0	14.3	11.0
	abdomen depth/stature	14.1	1.8	9.4	19.9	12.8	10.5
	abdomen depth/waist depth	112.0	9.0	70.0	179.0	8.0	109.1
	axilla depth/stature	6.6	.8	4.2	9.8	12.1	5.6
	axilla depth/waist depth	52.8	5.7	24.8	70.6	10.8	45.8
	hip depth/stature	13.6	1.5	9.6	19.6	11.0	10.0
	hip depth/waist depth	108.9	10.8	63.7	176.6	9.9	113.0
	hip-below depth/stature	10.4	1.1	6.2	13.7	10.6	7.5
	hip-below depth/waist depth	83.0	9.9	42.8	116.7	11.9	73.9

<Table 4> Continue

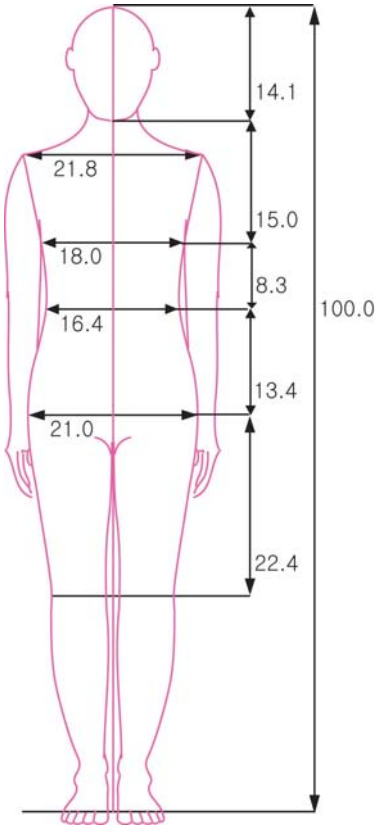
Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
CIRCUMFERENCE	neck base circumference/stature	23.7	1.3	20.6	28.3	5.5	7.7
	neck base circumference/ bust circumference	42.7	2.6	35.7	52.1	6.1	16.4
	chest circumference/stature	54.5	3.7	45.8	65.0	6.8	19.2
	chest circumference/bust circumference	97.9	3.4	87.3	125.3	3.5	38.0
	bust circumference/stature	55.7	4.4	44.2	70.0	7.9	25.8
	bust-below circumference/stature	49.1	3.9	39.3	64.4	7.9	25.1
	bust-below circumference/ bust circumference	88.1	3.0	77.3	100.0	3.4	22.7
	waist circumference/stature	46.1	5.0	35.8	67.0	10.8	31.2
	waist circumference/bust circumference	82.6	4.7	70.2	114.3	5.7	44.1
	abdomen circumference/stature	56.1	4.9	42.6	71.5	8.7	29.0
	abdomen circumference/ bust circumference	100.7	5.6	85.3	131.0	5.6	45.7
	hip circumference/stature	58.5	3.8	39.3	70.8	6.5	31.6
	hip circumference/bust circumference	105.2	6.0	69.6	137.9	5.7	68.3
	axilla circumference/stature	24.3	1.9	16.1	31.3	7.8	15.2
	axilla circumference/bust circumference	43.6	2.9	28.6	55.1	6.7	26.5
	back neck circumference/stature	10.1	.8	8.2	13.1	7.9	4.9
	back neck circumference/ bust circumference	18.3	1.6	14.2	24.9	8.7	10.6
LENGTH	waist front length/stature	20.4	1.2	14.1	25.6	5.9	11.6
	cervical to breast point length/stature	16.8	1.3	13.4	21.3	7.7	7.9
	cervical to waist length/stature	25.3	1.3	19.5	29.2	5.1	9.7
	bishoulder to breast point length/stature	14.9	1.3	12.1	21.1	8.7	9.0
	bishoulder, breast point to waist length/stature	24.9	1.3	18.9	28.5	5.2	9.6
	front interscye, length/stature	20.4	1.1	15.3	23.5	5.4	8.3
	front interscye fold, length/stature	20.9	1.5	16.7	25.7	7.2	9.1
	bust point-bust point/stature	11.0	1.2	8.5	14.8	10.9	6.4
	crotch length/stature	46.8	2.7	32.4	57.1	5.8	24.6
	bishoulder, upperarm, to axilla length /stature	7.9	.8	5.2	12.6	10.1	7.5
	upperarm length/stature	18.9	1.1	11.9	25.2	5.8	13.3
	arm length/stature	33.2	1.2	24.7	37.2	3.6	12.5
	waist to hip length/stature	14.2	1.2	10.8	19.5	8.5	8.7
	outside waist mallelous length/stature	59.9	1.4	51.2	64.7	2.3	13.5
	outside leg length/stature	63.6	1.3	57.4	67.3	2.0	9.8
	back cervical to outside shoulder length/stature	12.2	.7	9.6	14.6	5.7	5.0
	side cervical to outside shoulder length/stature	8.0	.6	6.2	9.9	7.5	3.6
	bishoulder length/stature	25.1	1.5	19.8	29.9	6.0	10.0
	back interscye, length/stature	22.8	1.6	18.9	28.1	7.0	9.1
	back interscye fold, length/stature	22.2	1.9	17.2	28.8	8.6	11.6

<Table 4> Continue

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
LENGTH	scye depth/stature	11.8	.9	8.8	15.0	7.6	6.2
	waist back length/stature	24.0	1.2	21.2	28.6	5.0	7.5
	total length/stature	86.9	1.3	80.7	93.3	1.5	12.6
	bishoulder to scye, length/stature	16.4	1.1	14.0	25.9	6.7	11.8
	cervical to waist length/stature	25.7	1.2	22.2	30.5	4.7	8.3
	bishoulder, scapular, to back waist length/stature	25.7	1.4	17.5	30.4	5.4	12.9
	back waist to gluteal fold, length /stature	20.1	1.3	14.5	27.5	6.5	13.0
	thigh vertical length/stature	17.2	1.0	11.3	19.9	5.8	8.7
	(back neck circumference/2+side neck to waist circumference length)/stature	30.3	1.4	24.4	34.1	4.6	9.7
	(back neck circumference/2+side neck to bust point length)/stature	21.8	1.4	18.0	27.0	6.4	9.0



<Figure 3> Front Body Proportion of Chinese Women in Their 30s



<Figure 4> Front Body Proportion of Chinese Women in Their 40s

4) Analysis of Body Index Value for Chinese Women in Their 40s

Table 5 shows the results of analysis on the index values of 99 items for Chinese 40s women. Figure 4 is the front view for 40s women.

First, let us examine the proportion of height. In case stature is set as 100, the head length (stature minus the chin height) is 14.1. This means the average Chinese woman is 7.09 heads tall. The proportion of the stature minus the chin height, the chin height minus the bust height, the bust height minus the waist height, and the waist height minus the hip height is represented as 1: 1.06: 0.59: 0.95. The proportion of stature minus the chin height, the chin height minus the axilla height, the axilla height minus the waist height, and the waist height minus the hip height is shown as 1: 0.82: 0.83: 0.95.

In case of the proportion of width, the proportion of the shoulder breadth, waist breadth, and hip breadth yields 1.33: 1: 1.28.

If the waist depth is set as 100 in terms of thickness proportion, the proportion of the breadth of bust, waist and hip yields 1.13: 1: 1.07. The abdomen depth is slightly thicker than the hip depth.

In case of the proportion of circumference, the proportion of the circumference of neck base, bust, waist, and hip is shown as 1: 2.4: 2.03: 2.48.

In case of the proportion of length, the proportion of waist front length and waist back length yields 1: 1.17, while the proportion of 'interscye fold, front' and 'back interscye fold, length' reveals 1: 1.07.

<Table 5> Analysis of Body Index Value for Chinese Women in Their 40s

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
HEIGHT	chin height/stature	85.9	1.6	63.9	94.1	1.9	30.2
	front cervical height/stature	82.1	1.1	76.3	88.6	1.3	12.3
	chest height/stature	76.7	1.5	69.3	96.2	2.0	26.9
	bust height/stature	70.9	1.7	66.0	83.1	2.4	17.1
	bust-below height/stature	67.7	1.5	61.4	72.4	2.2	11.0
	waist height/stature	62.6	1.5	54.7	74.4	2.4	19.6
	waist height(Omphalion)/stature	57.9	1.8	38.3	64.7	3.1	26.4
	abdomen height/stature	55.6	1.5	50.9	61.6	2.7	10.7
	Iliac spine height/stature	58.4	2.2	26.0	64.2	3.8	38.2
	crotch height/stature	44.7	1.6	35.0	63.1	3.6	28.0
	knee height/stature	26.8	1.5	9.0	30.8	5.6	21.8
	side cervical height/stature	85.0	1.3	71.7	91.8	1.5	20.0
	shoulder height/stature	81.7	1.1	76.7	88.8	1.3	12.1
	axilla height/stature	74.3	2.3	67.6	99.0	3.1	31.3
	back cervical height/stature	85.5	1.5	77.4	98.5	1.8	21.1
	hip height/stature	49.2	1.8	42.1	63.2	3.7	21.0
	gluteal height/stature	43.7	2.2	36.2	63.4	5.0	27.3
	thigh height/stature	45.4	2.9	37.5	64.6	6.4	27.0
	calf height/stature	19.9	1.7	16.7	49.2	8.5	32.5
	(Stature minus chin height)/stature	14.1	1.6	5.9	36.1	11.3	30.2

<Table 5> Analysis of Body Index Value for Chinese Women in Their 40s

Item	Statistics	M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
WIDTH	cervical breadth/stature	7.7	.6	6.3	11.5	7.8	5.2
	cervical breadth/waist breadth	47.3	5.3	33.6	75.7	11.2	42.1
	shoulder breadth/stature	21.8	1.1	15.5	25.3	5.0	9.8
	shoulder breadth/waist breadth	134.0	11.7	93.9	170.3	8.7	76.4
	chest breadth/stature	18.9	1.5	13.1	24.9	7.9	11.7
	chest breadth/waist breadth	115.9	9.8	84.0	170.1	8.5	86.1
	bust breadth/stature	18.0	1.4	14.7	25.1	7.8	10.4
	bust breadth/waist breadth	110.6	7.1	80.2	150.0	6.4	69.8
	bust-below breadth/stature	17.2	1.2	14.0	21.7	7.0	7.7
	bust-below breadth/waist breadth	105.4	6.9	76.6	144.6	6.5	68.0
	waist breadth/stature	16.4	1.7	12.4	22.9	10.4	10.5
	abdomen breadth/stature	20.4	1.5	14.3	26.1	7.4	11.8
	abdomen breadth/waist breadth	125.5	9.5	85.9	170.3	7.6	84.4
	hip width/stature	21.0	1.3	14.3	24.6	6.2	10.3
	hip width/waist breadth	129.1	12.1	85.1	169.8	9.4	84.7
	thigh breadth/stature	21.1	1.2	18.1	24.7	5.7	6.6
	thigh breadth/waist breadth	129.9	11.4	96.3	171.5	8.8	75.2
THICKNESS	chest depth/stature	12.6	1.1	7.4	15.7	8.7	8.3
	chest depth/waist depth	92.5	9.4	46.7	121.9	10.2	75.2
	bust depth/stature	15.3	1.5	11.4	20.7	9.8	9.3
	bust depth/waist depth	112.6	9.3	83.0	156.8	8.3	73.9
	bust-below depth/stature	13.9	1.5	10.8	18.7	10.8	8.0
	bust-below depth/waist depth	101.6	7.2	73.0	141.8	7.1	68.8
	waist depth/stature	13.7	1.9	9.5	19.6	13.9	10.1
	abdomen depth/stature	15.3	1.8	10.7	22.1	11.8	11.4
	abdomen depth/waist depth	111.7	9.1	75.2	160.4	8.1	85.2
	axilla depth/stature	7.0	.9	4.6	10.4	12.9	5.8
	axilla depth/waist depth	51.4	5.8	32.4	78.1	11.3	45.6
	hip depth/stature	14.6	1.6	11.2	21.4	11.0	10.2
	hip depth/waist depth	106.7	9.8	72.0	170.5	9.2	98.6
	hip-below depth/stature	10.6	1.2	6.4	17.3	11.3	11.0
	hip-below depth/waist depth	78.2	10.2	39.8	124.6	13.0	84.8
CIRCUMFERENCE	neck base circumference/stature	24.3	1.4	20.0	29.8	5.8	9.8
	neck base circumference/bust circumference	41.8	2.4	35.0	48.8	5.7	13.8
	chest circumference/stature	56.6	3.9	46.6	72.0	6.9	25.3
	chest circumference/bust circumference	97.2	3.4	80.9	112.9	3.5	32.0
	bust circumference/stature	58.3	4.7	46.8	73.4	8.1	26.6
	bust-below circumference/stature	51.7	4.2	42.8	66.5	8.1	23.7
	bust-below circumference/ bust circumference	88.8	3.4	76.5	103.7	3.8	27.2
	waist circumference/stature	49.5	5.4	35.1	67.1	10.9	31.9
	waist circumference/bust circumference	84.9	4.7	56.6	107.0	5.5	50.4
	abdomen circumference/stature	59.3	4.9	46.5	74.5	8.3	28.1
	abdomen circumference/bust circumference	101.8	5.0	85.4	116.9	4.9	31.5

<Table 5> Continue

Item \ Statistics		M	SD	Min. Value	Max. Value	Coefficient of Variation	Range
CIRCUMFERENCE	hip circumference/stature	60.2	3.7	52.8	73.5	6.1	20.6
	hip circumference/bust circumference	103.6	5.2	83.9	118.3	5.0	34.4
	axilla circumference/stature	25.3	1.9	19.4	32.2	7.5	12.9
	axilla circumference/bust circumference	43.4	2.7	33.7	53.1	6.2	19.4
	back neck circumference/stature	10.2	.8	8.4	12.5	7.8	4.1
	back neck circumference/bust circumference	17.6	1.5	13.5	22.4	8.5	9.0
LENGTH	waist front length/stature	20.7	1.3	14.9	28.6	6.3	13.7
	cervical to breast point length/stature	17.5	1.5	12.7	24.2	8.6	11.6
	cervical to waist length/stature	25.6	1.4	17.6	29.3	5.5	11.7
	bishoulder to breast point length/stature	15.4	1.4	12.2	26.0	9.1	13.8
	bishoulder, breast point to waist length/stature	25.2	1.5	17.9	29.7	6.0	11.9
	front interscye, length/stature	20.9	1.4	15.8	28.1	6.7	12.3
	crotch length/stature	47.8	2.8	38.0	57.3	5.9	19.3
	bishoulder, upperarm, to axilla length /stature	8.1	.7	6.0	10.0	8.6	4.0
	upperarm length/stature	18.9	1.0	12.3	24.5	5.3	12.2
	arm length/stature	33.5	1.1	27.0	39.5	3.3	12.5
	waist to hip length/stature	14.1	1.3	9.5	20.5	9.2	11.0
	outside waist mallelous length/stature	59.9	1.4	48.7	64.1	2.3	15.4
	outside leg length/stature	63.6	1.5	51.6	70.1	2.4	18.5
	back cervical to outside shoulder length/stature	12.3	.7	10.1	15.3	5.7	5.2
	side cervical to outside shoulder length/stature	8.2	.7	6.4	12.0	8.5	5.6
	bishoulder length/stature	25.4	1.5	17.6	30.9	5.9	13.3
	back interscye, length/stature	23.5	1.6	19.5	27.9	6.8	8.4
	back interscye fold, length/stature	22.8	1.8	18.3	27.9	7.9	9.6
	scye depth/stature	12.2	1.1	9.4	22.9	9.0	13.6
	waist back length/stature	24.2	1.2	18.6	28.0	5.0	9.3
	total length/stature	87.2	1.3	82.3	94.8	1.5	12.5
	bishoulder to scye, length/stature	16.7	1.0	12.2	20.8	6.0	8.6
	cervical to waist length/stature	26.0	1.2	20.3	30.4	4.6	10.1
	bishoulder, scapular, to back waist length/stature	26.1	1.5	20.9	30.7	5.7	9.8
	back waist to gluteal fold, length /stature	20.1	1.3	14.2	26.5	6.5	12.4
	thigh vertical length/stature	17.2	1.0	11.5	20.9	5.8	9.3
	(back neck circumference/2+side neck to waist circumference length)/stature	30.7	1.5	22.4	34.5	4.9	12.1
	(back neck circumference/2+side neck to bust point length)/stature	22.6	1.6	17.6	29.5	7.1	11.8

V. Conclusions

Women in their 20s have 7.09 HHR (Head to Height Ratio) as they have slimmer waist girth than breast girth. They have lower body flat rate, compared to the entire group. Women in their 30s have 7.04 HHR as they have rather thicker waist girth than heap girth and have larger waist girth than breast girth. They have a rounder body type than women in their 20s. Women in their 40s have 7.09 HHR as they have thicker waist girth than heap girth and have double waist girth than neck girth. They have larger waist girth than breast girth. They have a rounder body type than women in their 20s and 30s.

As age increases, the shoulders seem higher with less curvature on waist, while the front has turned into the straight silhouette with the side turned into the flat silhouette without curvature, and waist and belly turn into the body type of short and thick.

limitations and recommendation for future studies are as follows.

1. This study is mainly subjected to 1381 people who is 19-50 of age and live in Beijing and Shanghai and there should be cautions taken when expanding the realm.

2. The future study based on extended regions should be conducted to increase the reliability.

3. In terms of future body shape studies, there should be more scientific and in-depth study will be required based on measurements derived from more diverse factors.

References

1) Hye-Won, Park, Chun-Ji Zhang, Hye-Bong Shin (2005), "A Comparative Study on the Clothing Purchase Behavior of Career Women in Big Cities of China - Focused on 20-30's Women in Beijing, Shanghai, Shenzhen, and Changchung -", *Journal of the Korean Society of Clothing and Textiles*, 29(1), pp.124-135.

2) Hyo-Sook Kim (2000), "A Study on the Design Perference of Clothing of Chinese Women", *Journal of the life and art*, 23, pp.103-114.

3) Fushi Shen, Haekyung Yu (2002), "Clothing Purchasing Behavior and Life Style of Korean-Chinese College Students in YanBian Region of China", *Journal of the Korean Society of Clothing and Textiles*, 26(8), pp.1141-1152.

4) Soon Im, Hye-Jung Seok (2004), "A Study on the Body Types of Chinese Adult Women (Part II) - With the Focus on the Comparison of the Women Residing in Beijing and Shanghai by the Age Range -", *Journal of the Korean Society of Clothing and Textiles*, 28(11), pp.1361-1371.

5) Soon Im, Hee-Soon Sohn, Hye-Jung Seok (2003), "The Comparision of the Body Measurements of Chinese Adult Wemen by the Age - with the Focus on the Wemen Residing in Beiging and Shanghai -", *The Research Journal of the Costume Culture*, 11(6), pp.889-991.

6) Hee-Soon Sohn, Hye-Jung Wee, Eun-Hee Kim, Yeon-Kyung Kang (2005), "A Study on the Body Shape of Chinese Adult Women - Focusing on Resident in Beiging and Shanghai -", *Journal of Fashion Business*, 9(1), pp.137-151.

7) Hee-Soon Sohn, Soon Im, Hyo-Sook Kim, Hee-Jung Son, Young-Sook Kim, Hee-Kyung Jang, and Ryung Jung (1999), "A Study on the Comparison of Apparel Size among Korea, Chinese and Chosunjok College Women", *Journal of Fashion Business*, 3(4), pp.131-138.
8) Young-Ja Kwon, Boo-Ja Shim (2003), "Body Size Differences in Variouse Areas of China - Height, Bust Girth, Waist Girth -", *Journal of Fashion Business*, 7(5), pp.66-82.
9) Hee-Soon Sohn, Hye-Jung Wee (2003), "A Study on the Basic Bodice Block for Adult Women in Chinese - Focusing on Resident in Beiging and Shanghai -",J*ournal of Fashion Business*, 7(4), pp.129-141.
10) Hee-Kyung Jang (2001), *"A Study on the Development of a Torso Prototype for Chinese Women",* Graduate School of Sookmyung Women's University.
11) "The Strategy of Optimizing Sizes of Chinese Fashion Products", (2004), *Korea Fashion Industry Association.*
12) "Analysis Data of Body Size of Chinese", (2004), *Korea Fashion Industry Association.*
13) Hye-Jung Wee (2005), *"A Study on Development of Apparel Sizing System for Chinese Adult Female - focused on the Residents in Beijing and Shanghai* -"Graduate School of Sookmyung Women's University.
14) As one of the project of '2004 Chinese Body Shape Research to Increase Exportation to China' sponsored by Ministry of Commerce, and subjected by Apparel Business Association, this information was researched by Samsung Fashion Institute and Sookmyung Women's University Garment Composition Research Center in co-operation.

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