

## A Comparative Analysis of Body Types between Chinese and Korean Men

Hee-Soon Sohn, Soon Lim\* and Jee-Yeon Kim\*\*

Professor, Dept. of Clothing & Textiles, Sookmyung Women's Univ.,

Professor, Dept. of Clothing & Textiles, Incheon Univ.\*,

Lecturer, Dept. of Clothing & Textiles, Sookmyung Women's Univ.\*\*

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### Abstract

*The purpose of this study is to provide for some basic data useful to production of the apparels fit and measured well for the Chinese men. For this purpose, Chinese adult men's body types and their changes over time which had been surveyed by preceding studies were compared by age group with those of Korean adult men which had been published in a report on National Anthropometric Survey of Korea in 1997.*

*The results of this study can be summarized as follows;*

- 1. As a result of comparatively analyzing the differences of body types between Chinese and Korean adult men, Chinese men have higher stature and arms, while weighing more.*
- 2. As a result of comparatively analyzing the differences of body types between Chinese and Korean adult men by age group, it was found that the changes of body types due to aging are similar between two groups. Namely, as they become older, their vertical sizes become smaller, while their horizontal sizes become larger gradually.*

*Key words: Chinese adult men's body types, Korean adult men, compared, vertical sizes, horizontal sizes.*

### I. Introduction

Since the establishment of Sino-Korean diplomatic relationship in 1992, numerous Korean apparel companies have advanced into the Chinese apparel markets due to the geographic and cultural advantages. Although China's economy has grown rapidly with their great socio-cultural changes, many Korean apparel companies have failed to establish in the Chinese apparel market due to poor understanding of Chinese consumers' needs and their fashion culture as well as institutional, custom-wise and cultural differences and various political, social

and cultural obstacles.

Now, Korean apparel companies who have learned lessons from their failures are attempting to shift from the low-price marketing strategy to the high-price strategy through license, collaboration or joint venture agreements with the local apparel companies. If Korean apparel companies want to sharpen their competitive edges against other foreign rivals in the great potential Chinese market being liberalized, they are requested to arrange a systematic and efficient business strategy based on their lessons learned from their failures. In order to advance effectively into the Chinese apparel market rapidly changing, it is necessary for the Korean apparel

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E-mail : pattern@sookmyung.ac.kr

companies to survey Chinese constitutions thoroughly, to develop the patterns fitting the constitutions by region, to reinforce the merchantability through development of creative and differential designs, to reduce the costs and enhance mobility through localization of the production bases, to maximize the sales efficiency by segmenting the target markets and to develop a unique marketing route through a longer-term investment strategy<sup>1)</sup>.

Efficient strategies for the Korean apparel companies to advance into the Chinese markets can be enumerated in multi-faceted ways as above, but it is essential to plan and develop high value-added commodities in order to sharpen their competitive edges. In this vein, it seems to be pre-requisite to develop the commodities fitting Chinese constitutions, and to this end, it is necessary to collect precise information on their constitutions and reflect them on apparel designs.

Likewise, if the Korean men's wear companies can advance into the Chinese markets effectively, it is essential to survey Chinese men's constitutions, sizes and patterns, but the database is very insufficient. Since China is very wide with various peoples, it may be reasonable to develop some unified apparel specifications and patterns not for all the population but for each region in order to enhance fitting and perfection of the apparels.

With such basic conceptions in mind, this study was aimed at improving the physical fitness of the Korean apparels for Chinese men and thereby, providing for some basic data useful to the Korean companies doing business in China. To this end, those men aged in their 20's, 30's and 40's and living in the Chinese capital, Beijing, and the Chinese fashion center, Shanghai, were sampled randomly and thereupon, According to a preceding study, any attempt

to determine the differences of constitutional characteristics or body types between Beijing and Shanghai adult men may not be useful, because the differences measured were little significant. Thus, this study was aimed at analyzing the differences of body types between Chinese and Korean adult men.

## II. Methods of Study

For the subjects of this study, 414 Chinese men aged between 20 and 50 and living in Beijing and Shanghai and engaged in office works or other professional jobs were randomly sampled and thereupon, 389 men were finally selected in consideration of age distribution. Then, the subjects' body sizes were measured from July 1 to 18, 2000.

The measurement list required for understanding of Chinese adults' constitutions and manufacturing of their apparel patterns was determined in reference to the "National Anthropometric Survey of Korea" in 1997<sup>2)</sup> as well as their standard constitution measurement methods and terms before being referred to men's apparel pattern producers for advice.

Those living in Beijing accounted for 53.5% (208 persons) and those living in Shanghai accounted for 46.5% (181 persons). On the other hand, those in their 20's accounted for 47.5% (185 persons), those in their 30's for 31.4% (122 persons) and those in their 40's accounted for 21.1% (82 persons).

So far, Chinese adult men's body measurements have been compared with Korean adult men's body measurements to determine the difference of body types between two groups. To this end, 31 body measurements were sampled from the 'Report on National Anthropometric Survey of Korea' published in 1997, and thereby, the standard body measurements were

<sup>1</sup> Ministry of Industry and Resources, *Cooperation with China and Improvement of Competitiveness for Korean Apparel Companies in Their Trade with China*, 2001.

<sup>2</sup> Korea Standard Science Institute, *National Anthropometric Survey of Korea*, National Technology and Quality Institute, 1997.

analyzed by age group to be compared with Chinese men's body measurements.

### III. Results of Study and Discussions

According to another preceding study on Chinese adult men's body types, the older Chinese adult men are, their waist breadth, waist depth, abdomen circumference, waist circumference, upper chest circumference and weight are much larger, but the values of their vertical heights are smaller. In this study, Chinese adult men's body types and their changes over time which had been surveyed by preceding studies were compared by age group with those of Korean adult men which had been published in a report on National Anthropometric Survey of Korea in 1997.

#### 1. Comparative Analysis of Body Measurements between Chinese and Korean Adult Men

In order to determine the differences of body types between Chinese and Korean adult men, 31 body measurements were comparatively analyzed (Table 1). The results of this analysis can be summed up as follows;

##### 1) Heights

In all height measurements except hip height, Chinese adult men are about 2.0cm higher than their Korean counterparts, which suggests that Chinese adult men's vertical heights are larger than Korean adult men's. In particular, Chinese adult men's waist is higher (1.9cm) than their Korean counterparts, while Korean adult men's hip is 6.8cm higher than Chinese adult men. Such findings suggest that Chinese adult men's waist is higher but their hip is lower compared with Korean adult men.

##### 2) Breadths

In 3 breadth measurements (shoulder-to-shoulder length, waist breadth and hip breadth) out of 4 ones, Chinese men's measurements are larger than Korean men's. Only Korean men's upper

<Table 1> Comparison of Average Body Measurements between Chinese and Korean Adult Men

(Unit: cm)

Measurements		Statistical Value	
		Total	
		China	Korea
Height	Stature	172.2	170.0
	Shoulder height	140.4	137.5
	Neck height posterior	146.5	143.9
	Waist height	103.7	101.8
	Hip height	85.5	92.3
Breadth	Inter-shoulder length	39.3	39.1
	Upper chest breadth	31.0	32.5
	Waist breadth	28.7	28.4
	Hip breadth	33.7	32.1
Depth	Upper chest depth	23.0	22.0
	Waist depth	22.7	21.0
	Hip depth	25.0	22.4
Circumference	Neck circumference	37.5	36.4
	Upper chest circumference	93.2	94.1
	Abdomen circumference	84.6	84.5
	Waist circumference	82.9	81.2
	Hip circumference	95.4	93.0
	Thigh circumference	54.0	54.1
	Arm scye circumference	44.3	41.0
Upper arm circumference	29.8	29.8	
Length	Neckside-nipple-waist line	43.5	44.0
	Front interscye length	40.8	35.7
	Back interscye length	38.2	40.1
	Waist back length	45.8	43.9
	Neckside-waist line	48.6	48.5
	Neck back to wrist length	77.6	76.5
	Elbow length	32.7	33.3
	Arm length	56.6	54.6
Angle	Left shoulder slope(°)	20.0	21.1
	Right shoulder slope(°)	21.0	21.7
Weight	Weight(kg)	69.9	67.7

chest breadth is larger than Chinese men's. In particular, Chinese men hip slightly broader (1.6cm), while Korean men's upper chest is slightly broader (1.5cm). Such findings suggest that Chinese men have the lower body developed more, while Korean men have the upper

body developed more.

### 3) Depths

Chinese men have deeper hip (2.6cm), waist (1.6cm) and upper chest (1.0cm) than Korean men. In other words, Chinese men are fatter than Korean men. More specifically, Chinese men's upper body is as deep as their waist, but is less deep than their lower body due to the deeper hip. In contrast, Korean men's upper body is as deep as their lower body, which means that Korean men look slender with little body curves.

### 4) Circumferences

It was found that Chinese men have larger neck circumference, abdomen circumference, hip circumference and arm scye circumference than their Korean counterparts. In particular, their arm scye circumference, hip circumference and waist circumference are larger by 3.2cm, 2.4cm and 1.7cm, respectively. When such measurements are combined with their well developed breadth and depth, it may well be inferred that Chinese men have thicker neck and well developed hip and waist.

### 5) Lengths

Out of 8 length measurements, Chinese men have larger measurements in front interscye length, waist back length, back interscye length, neck back to wrist length and arm length. In particular, their front interscye, arm, waist back and neck back to wrist are longer by 5.1cm, 2.0cm, 1.9cm and 1.1cm, respectively. Thus, it can be analyzed that Chinese men have more developed upper chest and waist back and have slightly longer arms than Korean men.

### 6) Angles

Chinese men were found to have left and right shoulder slope angles similar to Korean men's.

### 7) Weights

It was found that Chinese adult men weigh 2.2kg more than Korean adult men on average.

Such a finding seems to be consistent with the findings that Chinese men have scored higher than Korean men in almost all measurements of breadth, depth and circumference.

In overall terms, it was found that Chinese adult men have larger measurements but hip height than Korean adult men, in particular, have much larger measurements in such parts as waist, hip, front interscye, waist back and arms. In other words, Chinese men have higher stature and arms, while weighing more. In particular, they have well-developed upper chest and waist back muscles as well as hip muscles. So, it is necessary to take into such body types and thereby, determine the sizes and measurements when designing prototypes and patterns for Chinese adult men.

## 2. Comparative Analysis of Body

### Measurements by Age Group

In order to determine the differences of body types and their changes between Chinese and Korean adult men by age group, the two groups were divided into 20's, 30's and 40's (Table 2). The results of such an analysis can be summed up as follows;

#### 1) 20's

##### (1) Heights

It was found that Chinese men have larger neck height posterior (2.1cm), stature (1.7cm), waist height (1.4cm) and shoulder height (1.1 cm). In short, in all measurements but hip height, Chinese men in their 20's have larger heights than their Korean counterparts. While Chinese men in their 20's have a 1.4cm higher waist, they have a 8.0cm lower hip. In other words, Chinese men in their 20's have a higher waist but a lower hip compared with their Korean counterparts.

##### (2) Breadths

It was found that Chinese men in their 20's have larger waist breadth and hip breadth than

〈Table 2〉 Comparison of Average Body Measurements  
between Chinese and Korean Men by Age Group  
(Unit: Cm)

Measurements		20's		30's		40's	
		China	Korea	China	Korea	China	Korea
Height	Stature	173.2	171.5	171.1	170.5	171.0	167.9
	Shoulder height	140.0	138.9	139.7	137.6	139.9	136.8
	Neck height posterior	147.3	145.2	145.5	143.8	145.8	142.8
	Waist height	104.5	103.1	102.7	101.8	103.3	100.5
	Hip height	85.7	93.7	85.2	92.4	85.5	90.9
Breadth	Inter-shoulder length	39.1	39.5	39.3	38.8	39.4	39.1
	Upper chest breadth	30.6	32.0	31.1	32.7	31.4	32.7
	Waist breadth	27.4	27.2	29.0	28.4	29.6	29.5
	Hip breadth	33.4	31.1	34.0	32.4	33.8	32.7
Depth	Upper chest depth	22.3	21.1	23.3	22.0	23.9	22.8
	Waist depth	20.7	19.0	22.9	21.3	24.1	22.7
	Hip depth	24.5	21.1	25.3	22.7	25.5	23.3
Circum- ference	Neck circumference	36.7	35.7	38.0	36.4	38.5	37.0
	Upper chest circumference	90.8	93.2	94.4	94.2	96.6	94.9
	Abdomen circumference	79.2	80.9	85.6	85.4	88.9	87.3
	Waist circumference	78.6	75.6	85.7	82.8	88.1	85.1
	Hip circumference	94.0	92.2	96.1	93.3	97.1	93.5
	Thigh circumference	53.0	53.9	54.3	54.1	54.7	54.4
	Arm scye circumference	43.1	40.9	44.7	41.0	46.1	41.2
Upper arm circumference	28.6	29.4	30.0	29.6	30.9	30.3	
Length	Neckside-nipple-waist line	43.4	44.5	43.6	43.9	43.6	43.5
	Front interseye length	39.7	35.7	41.2	35.4	41.5	35.9
	Back interseye length	37.6	40.3	38.7	39.6	38.9	40.5
	Waist back length	45.6	43.9	46.0	43.8	45.7	43.9
	Neckside-waist line	48.3	48.4	48.9	48.3	48.7	48.8
	Neck back to wrist length	77.8	77.1	77.2	76.4	77.9	76.1
	Elbow length	32.2	33.4	32.1	33.3	32.5	33.1
	Arm length	56.9	55.0	56.2	54.5	56.8	54.2
Angle	Left shoulder slope(°)	19.7	21.1	19.8	20.6	20.6	21.6
	Right shoulder slope(°)	20.7	22.2	20.8	21.6	21.6	21.4
Weight	Weight(kg)	66.1	65.9	70.7	68.2	72.9	69.0

their Korean counterparts. In particular, their hip is 2.3cm broader than their Korean counterparts', and their upper chest is 1.4cm broader. Such findings suggest that Chinese men in their 20's have more developed lower body, while their Korean counterparts have more developed upper body.

### (3) Depths

Chinese men in their 20's scored higher in hip depth (3.4cm), waist depth (1.7cm) and upper chest depth (1.2cm). In short, Chinese men in their 20's are fatter than their Korean counterparts. In other words, Chinese men in their 20's have deeper lower body than upper

body, while Korean men's upper body depth is similar to their lower body depth.

#### (4) Circumferences

Out of 8 measurements related to circumferences, Chinese men in their 20's have larger sizes in 3 measurements: waist (3.0cm), arm scye (2.2cm) and hip (1.8cm). Their Korean counterparts have larger sizes in 5 measurements: upper chest (2.4cm), abdomen (1.7cm), neck (1.0cm), thigh (0.9cm) and upper arms (0.8cm). When such findings are associated with those regarding breadths and depths, it can be analyzed that Chinese men in their 20's have thicker waist and hip, while their Korean counterparts have thicker upper chest, abdomen, neck, thigh and upper arms.

#### (5) Lengths

Out of 8 measurements related to lengths, Chinese men in their 20's have larger sizes in 4 measurements: front interscye (4.0cm), arms (1.9cm), waist back (1.6cm) and neck back to wrist (0.7cm). On the other hand, their Korean counterparts have larger sizes in 3 measurements: back interscye (2.7cm), elbow (1.2cm), neck side-nipple-waist line (1.1cm). In other words, Chinese men in their 20's have more developed chest and longer arms, while their Korean counterparts have longer elbows and more developed shoulders and waist back.

#### (6) Angles

Chinese men in their 20's were found to have left and right shoulder slope angles similar to their Korean counterparts'.

#### (7) Weight

The difference of weight between Chinese men in their 20's and their Korean counterparts is very small or 0.6kg.

Summing up, it can be concluded that Chinese men in their 20's have higher stature and longer arms with more developed chest and waist back. In particular, they have broader, deeper and larger hip. In contrast, their Korean

counterparts have more developed upper chest, abdomen and neck as well as thicker thighs and upper arms.

### 2) 30's

#### (1) Heights

It was found that Chinese men have larger shoulder height (2.1cm), neck height posterior (1.7cm), waist height (0.9cm) and stature (0.6cm). Unlike those in their 20's, Chinese men in their 30's have a stature similar to their Korean counterparts, but their vertical body size is slightly larger than their Korean counterparts. In particular, their waist is 0.9cm higher but their hip is 6.8cm lower than their Korean counterparts. In short, Chinese men in their 30's have a higher waist but lower hip, too.

#### (2) Breadths

It was found that Chinese men in their 30's have broader hip (1.6cm), waist (0.6cm) and larger inter-shoulder length, while their Korean counterparts have a broader upper chest (1.6cm). Like those in their 20's, Chinese men in their 30's have more developed hip, while their Korean counterparts have more developed upper chest.

#### (3) Depths

Chinese men in their 30's were found to have larger sizes in hip depth (1.6cm), waist depth (1.6cm) and upper chest depth (1.3cm), which suggests that their body is slightly fatter than their Korean counterparts. In other words, although Chinese men in their 30's have thicker lower body than upper body like their Korean counterparts, they seem to have more developed hip.

#### (4) Circumferences

Chinese men in their 30's have larger sizes in all measurements related to body circumferences, particularly in arm scye circumference (3.6 cm), waist circumference (2.9cm), hip circumference (2.8cm) and neck circumference (1.6

cm). Unlike those in their 20's, Chinese men in their 30's have far larger neck, waist back and hip circumferences, although their chest, abdomen, thighs and upper arms are as much thick as their Korean counterparts'.

#### (5) Lengths

Chinese men in their 30's have longer front interscye (5.8cm), waist back (2.2cm), arms (1.7cm) and neck back to wrist, while Korean men in their 30's have longer elbows (1.2cm) and back interscye (0.9cm). All in all, Chinese men in their 30's have more developed upper chest and longer arms than their Korean counterparts, and more developed waist back than Chinese men in their 20's.

#### (6) Angles

Chinese men in their 30's were found to have left and right shoulder slope angles similar to their Korean counterparts'.

#### (7) Weight

Chinese men in their 30's were found to weigh 2.5kg more than their Korean counterparts, which suggests that they are much fatter than their Korean counterparts.

Summing up, both Chinese and Korean men in their 30's have smaller vertical body sizes with more developed lower body than upper body compared with those Chinese and Korean men in their 20's. Merely, thickness of chest, abdomen, thighs and upper arms are similar between two age groups. Such findings suggest that both Chinese and Korean adult men begin to be fat when they are in their 30's. In particular, Chinese men in their 30's are as high as their Korean counterparts, but their weight and chest/hip sizes are much larger than those in their 20's. In other words, obesity is very conspicuous in Chinese men in their 30's.

### 3) 40's

#### (1) Heights

Chinese men in their 40's were found to have

larger measurements in all heights but hip height: stature or shoulder height (3.1cm), neck height posterior (3.0cm) and waist back height (2.8cm). Such differences are highest between two peoples' age groups. In particular, Chinese men in their 40's have 2.8cm higher waist back than their Korean counterparts, while their hip height is 5.4cm lower than their Korean counterparts. Like those in their 20's and 30's, Chinese men in their 40's have a higher waist back but lower hip. However, such a difference of height between waist back and hip is not much large compared with those in their 20's and 30's.

#### (2) Breadths

Chinese men in their 40's have a slightly broader hip (1.1cm), while Korean men in their 40's have a slightly broader upper chest. Inter-shoulder and waist back breadths are similar between two groups. Like those in their 20's and 30's, Chinese men in their 40's have more developed hip, while their Korean counterparts have more developed upper chest.

#### (3) Depths

Chinese men in their 40's have deeper hip (2.2cm), waist back (1.4cm) and upper chest (1.1cm) than their Korean counterparts. Like those in their 20's and 30's, Chinese men in their 40's seem to be fatter than their Korean counterparts. However, when viewed centering around the waist, both groups have similar upper body depth, but Chinese group has deeper lower body than Korean group.

#### (4) Circumferences

In all 8 measurements related to circumferences, Chinese men in their 30's were found to have longer circumferences than their Korean counterparts, like those in their 30's. In particular, their arm scye circumference (4.9cm), hip circumference (3.6cm), waist back circumference (3.0cm), upper chest circumference (1.7cm), abdomen circumference (1.6cm) and neck circumference (1.5cm) are far larger than their Korean

counterparts'. Such findings suggest that Chinese men in their 40's have thicker chest, abdomen, hip, waist back and neck than their Korean counterparts. However, unlike those in their 20's and 30's, Chinese men in their 40's have thighs and upper arms as thick as their Korean counterparts.

#### (5) Lengths

Chinese men in their 40's have longer front interscye (5.6cm), neck back to wrist (1.8cm), waist back (1.8cm) and arms (1.6cm), but have shorter back interscye (1.6cm) and elbows (0.6 cm). Namely, Chinese men in their 40's have more developed chest and longer arms, while their Korean counterparts have slightly more developed waist back.

#### (6) Angles

Chinese men in their 40's were found to have left and right shoulder slope angles similar to their Korean counterparts'.

#### (7) Weight

Chinese men in their 40's were found to weigh 3.9kg more than their Korean counterparts, which suggests that they are fatter than their Korean counterparts.

All in all, compared with those in their 20's and 30's, Chinese men in their 40's are much higher than their Korean counterparts and weigh more. Their thighs and upper arms are as much thick as their Korean counterparts, but their chest, abdomen, hip, waist back and neck are more developed.

### IV. Conclusions and Suggestions

This study was aimed at providing for some basic data useful to designing of the apparels fitting Chinese adult men well. To this end, 389 Chinese adult men aged between 20 and 50 living in Beijing and Shanghai were sampled to be measured for their body sizes. And the results were compared by age group with the average Korean adult men's body sizes publi-

shed in the 'National Anthropometric Survey of Korea' in 1997. The results of this study can be concluded with its limits.

1. As a result of comparatively analyzing the differences of body types between Chinese and Korean adult men, Chinese men have higher stature and arms, while weighing more. In particular, they have well-developed upper chest and waist back muscles as well as hip muscles. So, it is necessary to take into such body types and thereby, determine the sizes and measurements when designing prototypes and patterns for Chinese adult men.
2. As a result of comparatively analyzing the differences of body types between Chinese and Korean adult men by age group, it was found that the changes of body types due to aging are similar between two groups. Namely, as they become older, their vertical sizes become smaller, while their horizontal sizes become larger gradually. However, the speed of such body type changes differ between two groups. Namely, in case of Chinese adult men, their vertical sizes become rapidly smaller in their 20's and 30's, while their horizontal sizes become rapidly larger. In case of Korean adult men, such changes are gradual. Since Chinese adult men become shorter and more obese in their 30's, it is necessary to take such a trend into consideration when designing apparels for Chinese adult men.

To summarize the above findings, the trend of body changes over aging is very similar between Chinese and Korean adult men. Namely, as they become older, their vertical sizes become smaller, while their horizontal sizes become larger gradually.

However, although the trend of body type changes is similar between two groups, their physical developments by age are different from each other. That is, in case of Korean adult men, as they become older, their vertical sizes become smaller gradually, while their horizontal sizes becomes larger



gradually. In contrast, Chinese men's vertical sizes become rapidly smaller in their 20's and 30's, while their horizontal sizes become rapidly larger.

In terms of the relationship between physical changes and aging, Chinese men become conspicuously shorter and fatter in their 30's. So, it is necessary to refer to such a trend when designing the apparels for Chinese adult men.

The points to be complemented by future studies and the limits of this study can be summed up as follows;

1. Since the sample size (389 Chinese adults aged between 20 and 50 living in Beijing and Shanghai) was very small - China may be divided into 6 living spheres - the results of this study may not well be generalized. It is hoped that this study will be followed up by future studies using larger sample sizes and regions to enhance the fitness of the apparels designed for Chinese adult men.
2. Since only 31 body measurements were used for this comparative analysis of Chinese and Korean adult men's body types, it should be careful to generalize the results of this study. In this sense, it is hoped that this study will be followed up by future studies which will use more diverse body measurements and methods as well as systematic, positive and scientific testing methods.
3. As the ground for domestic apparel businesses become weaker, it is essential for Korean apparel manufacturers to secure some production bases in China, while competing with Chinese local apparel manufactures. Thus, it is required of Korea apparel manufacturers to obtain quality information on Chinese consumers. In this regard, it is hoped that this study will be followed up by continued future studies aiming to provide some basic and useful information on Chinese apparel markets for Korean apparel businesses, and that such studies will be positively supported by the Korean government as well as colleges and industries.

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