

## Comparison of 3D Scanned Anthropometric Data between Korean and American Adults by using Ratios and Indices

Kyong-Hwa Yi<sup>†</sup> · Cynthia Istook\*

Dept. of Clothing & Textiles, The Catholic University of Korea

\*Dept. of TATM, College of Textiles, North Carolina State University

## 지수치를 활용한 한국과 미국 성인의 3차원 인체치수 비교

이경화<sup>†</sup> · Cynthia Istook\*

가톨릭대학교 의류학 전공

\*Dept. of TATM, College of Textiles, North Carolina State University

(2008. 4. 28. 접수)

### Abstract

The body measurement ratios and indices used in this study are all 3D female measurement data of the two countries were obtained from Size Korea Project and SizeUSA Project. The purpose of the study is to compare and analyze body measurement data between two countries. The results of this research are helpful for the clothing manufacturer and company to trade with America. The samples were 1,988 Korean and 6,306 American females. Thirty-five body measurement ratios and indices were chosen as the principal measurements in making garments. The conclusion of this research was as follow; First, U.S. females have measurements that exceed Korean women, except for crotch length total and shoulder slope. Second, the correlation coefficients of height and weight are relatively higher than other measurements in the two countries' body measurements. Finally, American women's height ratios are significantly bigger than Korean women's in most height ratios. On the other hand, Korean are significantly bigger than American in weight ratios. The drop values of Korean females are also smaller than those of American. It was recognized that American women are much bigger, wider and more obese than Korean according to the results by utilizing the girth ratios, BMI, Rohrer and Vervaeck index.

**Key words:** 3D body scanning, Anthropometric, Body measurements, Ratios, Body indices; 3차원 인체 측정, 인체측정, 비율, 지수치

### I. Introduction

New developments within the apparel industry and

now enable the customization of clothing fit through automatic measuring with 3D body scanning, in addition to enabling a better understanding of the adjustments that need to be made that might allow better fit for mass market(Lee et al., 2007).

Laser scanning systems have the advantage of speed in comparison to measurement methods using measuring tapes and calipers(Istook & Hwang, 2001). These data obtained from 3D scanners are used in many ways, especially these are applicable to estab-

<sup>†</sup>Corresponding author

E-mail: ykh@catholic.ac.kr

This work was supported by the Korea Research Foundation Grant (KRF-2006-013-C00136). SizeUSA measurement data were provided by [TC]<sup>2</sup> and North Carolina State University. Size Korea measurement data were provided by Korean Agency for Technology & Standards.

lish sizing tables for garment (ASTM, 2006a, 2006b; ISO, 2006a, 2006b, 2006c; KATS, 2004b, 2004c).

Between 2003~2004, Korean government successfully finished a nationwide project: Size Korea to collect body measurements of Korean peoples from infants to the elderly people (KATS, 2004a). The U.S. also conducted SizeUSA project, which collected American adult body measurements using 3D scanner ([TC]<sup>2</sup>, 2004).

After Size Korea and SizeUSA, the apparel industry and relevant university researchers have utilized 3D body measurement data in each country. However, the comparative studies between Korean and American body measurements using these projects' data are extremely rare except for Yi's study in 2007.

Therefore, this study was conducted to compare the body characteristics between the U.S. women and Korean women by utilizing body measurement ratios and indices based on 3D body measurements. The findings obtained from this research probably are helpful for apparel manufacturers, exporters and importers to make garments. It also will be very helpful to understand body proportion and shapes as well as body traits in the two countries' females.

## II. Methods

### 1. Subjects

3D scanned anthropometric measurement data of 1,988 Korean female adults from Size Korea and 6,306 American female adults from SizeUSA were

analyzed in this study.

Demographic distribution of subjects by age groups and ethnic category is shown in <Table 1>.

### 2. Body Measurements

There are no nationwide current body measurement data based on 2D in U.S., owing to Conventional 2D body measurement was substituted by 3D scanning and measurement since 1990's. 3D scanned anthropometric data include not only body measurements also body shapes. However, 3D scanned body shapes are inaccessible in both countries because these data were very confidential to others except for a few researchers who were responsible for Size Korea or SizeUSA. Even body measurement data from 3D scanning were considered as the confidential data to foreign researchers in both countries. Therefore the scope of the research was limited to 3D body measurement data not 3D scanned shapes.

Measurements used in this study were obtained from the 3D scanning.

Thirty five body measurement ratios and indices were selected and computed which were considered critical in analyzing body characteristics (Table 2). All variables were divided into 4 categories such as weight ratios, obesity ratios, height ratios and drop values.

The comparison of direct body measurements was done in previous study (Yi et al., 2007), some findings were summarized according to this previous study. Namely, it was determined that American

Table 1. Demographic distribution of the subjects used

	Korean		American									
			White		Black		Hispanic		Others		Group Total	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
18~25	463	23.3	707	1.2	293	4.6	271	4.3	266	4.2	1537	24.4
26~35	518	26.1	653	10.4	290	4.6	233	3.7	271	4.3	1447	22.9
36~45	382	19.2	686	10.9	268	4.2	176	2.8	210	3.3	1340	21.2
46~55	272	13.7	682	10.8	194	3.1	106	1.7	159	2.5	1141	18.1
56~65	194	9.8	413	6.5	54	.9	44	.7	94	1.5	605	9.6
66~	159	8.0	187	3.0	6	.1	8	.1	35	.6	236	3.7
Total	1988	100.0	3328	52.8	1105	17.5	838	13.3	1035	16.4	6306	100.0

**Table 2. Ratio measurements and computed value used**

	Measurements		Measurements
Weight ratios (9)	Bust girth/weight	Height ratios (16)	Back neck height/height
	Waist girth/weight		Bust height/height
	Abdomen girth/weight		Waist height/height
	Hip girth/weight		Abdomen height/height
	Mid neck girth/weight		Hip height/height
	Neck base girth/weight		Crotch height/height
	Armscye girth/weight		Waist length(front)/height
	Upper arm girth/weight		Waist length(back)/height
	Center trunk girth/weight		Across shoulder/height
Obesity ratios (7)	Bust girth/height		Cross-back width/height
	Waist girth/height		Cross-chest width/height
	Abdomen girth/height		Neck to bust point/height
	Hip girth/height		Trunk length/height
	BMI		Arm length/height
	Vervaeck		Arm length(BNP to wrist)/height
	Rohrer		Total crotch length/height
Drop values (3)	Bust girth-waist girth		
	Hip girth-waist girth		
	Hip girth-bust girth		

**Note:** 1) BMI=weight(Kg)/height(m<sup>2</sup>)  
 2) Vervaeck=[(weight+bust)/height]×100  
 3) Rohrer=weight/(height)<sup>3</sup>×10<sup>5</sup>

women were larger and longer than Korean women in all measurements except shoulder slope measurement. According to the t-tests of same age groups between Korean & American female measurements, American female measurements were larger and longer than Korean in all measurements except crotch length total, shoulder slope, “hip girth-bust girth” and “hip girth-waist girth”.

Even though t-tests between Korean and American body measurements are not conducted, the statistical significances of direct measurements in the two countries are expected to be very different from each other owing to distinct differences of each measurement. Therefore body measurement ratios and some indices were used to verify the discrimination of ratio and index values in this study.

### 3. Statistical Methods

Statistical data were analyzed using SPSS 15.0. T-

tests of Korean/American body measurement ratios and indices were utilized in the study to examine the differences in the two countries' data.

## III. Results and Discussion

### 1. Korean/American Comparison of Body Measurements

<Table 3> shows the differences between Korean and American females' body measurements through conducting t-tests of 30 anthropometric dimensions.

All measurements except “crotch length total” were significantly different between Americans and Koreans. In most measurements, American females were significantly higher, bigger and longer than Korean females. On the other hand, “shoulder slope” of American females was smaller than those of Korean females.

Conclusively, the result indicates that U.S. females

Table 3. American/Korean differences of the body sizes

(unit: cm, Kg, °)

Measurements	Korean		American		t-value
	Mean	S.D.	Mean	S.D.	
Bust girth	89.88	9.45	103.67	12.85	44.12***
Waist girth	76.60	10.87	87.40	13.83	31.40***
Hip girth	93.01	9.02	109.61	12.75	54.33***
Mid neck girth	32.62	3.35	35.77	3.51	35.15***
Neck base girth	37.55	3.62	38.32	3.21	7.86***
Armscye girth	35.14	3.73	42.27	5.11	57.64***
Elbow girth	23.16	2.19	26.39	3.20	41.88***
Thigh max girth	55.24	5.65	62.52	7.49	39.73***
Thigh mid girth	49.27	5.04	51.26	6.35	11.95***
Knee girth	35.04	3.40	39.06	3.80	42.37***
Calf girth	33.97	3.45	38.14	4.00	41.95***
Ankle girth	23.49	2.49	25.58	2.31	34.39***
<b>Height</b>					
Height	156.42	13.57	162.74	6.98	30.81***
Back neck point height	131.91	11.58	139.85	6.37	45.02***
Waist height	96.36	8.94	100.29	6.00	22.58***
Hip height	75.15	7.10	81.37	6.81	35.68***
Crotch height	69.59	6.66	73.42	4.77	28.85***
Knee height	39.97	3.75	44.31	3.04	55.78***
Ankle height	5.28	0.68	6.98	1.00	70.73***
Waist length front	32.27	2.91	37.57	4.23	52.33***
Waist length back	38.28	3.14	44.01	2.99	77.11***
Cross back width	35.22	3.18	36.75	3.72	15.86***
Cross chest width	33.66	3.08	37.75	4.94	34.49***
Arm length(Shoulder to wrist)	50.59	3.82	53.54	3.86	30.11***
Arm length(BNP to wrist)	71.13	5.13	72.64	4.47	11.79***
Bust point to bust point	15.56	1.69	21.04	2.41	95.14***
Neck to bust point	26.15	2.83	27.97	3.03	23.29***
<b>Weight(Kg)</b>					
Weight(Kg)	56.32	7.88	70.57	17.43	35.30***

\*\*\* $p < .001$ , \* $p < .05$ , NS: no significance

have measurements that exceed Korean women, except for crotch length total and shoulder slope.

However, the results from the comparison of the direct measurements between Korean and American females can be expected distinctly before the analysis will be done.

Therefore, the body ratios were used in this study for minimizing the relationship of most strong factors such as bust girth, waist girth, height and weight

influencing other body measurements' size according to previous researches(Kim & Choi, 2004; Yi & Choi, 1994).

## 2. Correlation Analysis for Extracting Representative Variables

<Table 4 and 5> illustrates the result of Correlation analysis of Korean and American women's major

measurements. These analyses were done to select representative ratios and indices. Previous researches (Kim & Choi, 2004; Yi & Choi, 1994) pointed that strong measurements such as weight, height and bust girth have higher correlation coefficients with other measurements. To reduce influences over other measurements, ratios and indices divided by these strong measurements should be analyzed. According to the results of <Table 4 and 5>, the correlation coefficients of height and weight are relatively higher than other measurements. It is concluded that height and weight measurements are most influential in other measurements not only in Korean but also in American.

Therefore, body measurement ratios divided by height and weight are more efficient to understand the body characteristics of each country's women.

In addition, several computed measurements and indices were used in this study because drop values and some indices show that obesity or body proportion is very effective for analyzing their body shapes.

### 3. Korean/American Comparison of Body Measurement Ratios and Indices

<Table 6> shows the differences of height ratios between two countries' women. Because bust height

**Table 4. Correlation coefficient of major measurements in Korean females**

Measurements	Height	Weight	Bust	Waist	Abdomen	Hip	Thigh	Waist length	Shoulder slope(R)	Arm length	Bust to bust
Height	1										
Weight	0.29**	1									
Bust girth	-0.10**	0.82**	1								
Waist girth	-0.23**	0.75**	0.92**	1							
Abdomen girth	-0.09**	0.77**	0.85**	0.88**	1						
Hip girth	0.32**	0.88**	0.66**	0.59**	0.68**	1					
Thigh girth	0.24**	0.76**	0.57**	0.49**	0.55**	0.85**	1				
Waist length(B)	0.31**	0.53**	0.41**	0.44**	0.40**	0.43**	0.31**	1			
Shoulder slope(R)	-0.02	-0.09**	-0.14**	-0.12**	-0.12**	-0.08**	-0.18**	-0.01	1		
Arm length	0.76**	0.31**	0.05**	-0.01	0.06**	0.28**	0.16**	0.27**	-0.06**	1	
Bust to bust	0.09**	0.56**	0.57**	0.45**	0.44**	0.48**	0.32**	0.22**	0.08**	0.13**	1

\*\**p*<.001

**Table 5. Correlation coefficient of major measurements in American females**

	Height	Weight	Bust	Waist	Abdomen	Hip	Thigh	Waist length	Shoulder slope(R)	Arm length	Bust to bust
Height	1										
Weight	0.30**	1									
Bust girth	0.11**	0.91**	1								
Waist girth	0.09**	0.91**	0.93**	1							
Abdomen girth	0.09**	0.91**	0.91**	0.95**	1						
Hip girth	0.18**	0.94**	0.86**	0.89**	0.94**	1					
Thigh max girth	0.24**	0.89**	0.75**	0.75**	0.79**	0.89**	1				
Waist length(B)	0.45**	0.12**	0.03**	0.12**	0.10**	0.05**	0.03*	1			
Shoulder slope	0.09**	-0.06**	-0.12**	-0.06**	-0.03**	-0.04**	-0.05**	0.15**	1		
Arm length	0.68**	0.52**	0.43**	0.41**	0.39**	0.43**	0.42**	0.26**	0.03**	1	
Bust to bust	0.13**	0.74**	0.83**	0.74**	0.72**	0.70**	0.63**	0.02*	-0.09**	0.38**	1

\*\**p*<.001

was not measured in the U.S. females, bust height/height ratio was not compared in this study. By the result from t-tests between Korean women and U.S. women, significant differences were observed at 99.9% significance level in all measurement ratios except for waist height/height and arm length(BNP to wrist)/height.

American women's height ratios are significantly bigger than Korean women's in most height ratio

such as back neck height/height, abdomen height/height, hip height/height, crotch height/height, waist length(front)/height, waist length/height, cross-chest width/height and arm length/height. On the other hand, Korean women's body measurement ratios significantly differ from American women's in a few height ratios such as across shoulder/height, trunk length/height and cross-back width/height.

Conclusively, it can be summarized that American

**Table 6. Comparison of height ratios in Korean & U.S. females**

Measurement ratio	Korea(n=1981)				U.S.(n=6306)				t-value
	Min	Max	Mean	S.D.	Min	Max	Mean	S.D.	
Back neck height/height	0.82	0.86	0.84	0.01	0.68	1.03	0.86	0.01	-158.81***
Bust height/height	0.66	0.75	0.71	0.01					
Waist height/height	0.57	0.66	0.62	0.01	0.41	0.75	0.62	0.02	0.00 <sup>NS</sup>
Abdomen height/height	0.49	0.64	0.55	0.02	0.37	0.68	0.56	0.02	-39.70***
Hip height/height	0.43	0.53	0.48	0.01	0.38	0.63	0.50	0.04	-39.70***
Crotch height/height	0.40	0.49	0.44	0.01	0.32	0.58	0.45	0.02	-39.70***
Waist length(front)/height	0.17	0.26	0.21	0.02	0.12	0.46	0.23	0.03	-52.94***
Waist length(back)/height	0.12	0.29	0.24	0.01	0.20	0.51	0.27	0.02	-119.11***
Across shoulder/height	0.12	0.31	0.25	0.01	0.16	0.34	0.24	0.02	39.70***
Cross-back width/height	0.19	0.29	0.24	0.01	0.14	0.36	0.23	0.02	39.70***
Cross-chest width/height	0.18	0.26	0.22	0.01	0.09	0.47	0.23	0.03	-26.47***
Neck to bust point/height	0.11	0.23	0.17	0.02	0.11	0.29	0.17	0.02	0.00 <sup>NS</sup>
Trunk length/height	0.84	1.10	0.95	0.04	0.73	1.22	0.93	0.06	26.47***
Arm length/height	0.29	0.36	0.32	0.01	0.25	0.42	0.33	0.02	-39.70***
Arm length(BNP to wrist)/height	0.41	0.50	0.45	0.01	0.34	0.55	0.45	0.02	0.00 <sup>NS</sup>
Total crotch length/height	0.39	0.60	0.46	0.02	0.16	0.72	0.45	0.05	15.88***

\*\*\* $p < .001$ , NS: no significance

**Table 7. Comparison of weight ratios in Korean & U.S. females**

Measurement ratio	Korea(n=1981)				U.S.(n=6306)				t-value
	Min	Max	Mean	S.D.	Min	Max	Mean	S.D.	
Bust girth/weight	1.15	2.71	1.62	0.14	0.84	6.71	1.51	0.21	41.59***
Waist girth/weight	0.95	2.35	1.38	0.14	0.68	5.92	1.27	0.16	54.59***
Abdomen girth/weight	1.11	2.54	1.58	0.14	0.87	7.22	1.49	0.20	35.73***
Hip girth/weight	1.22	2.88	1.69	0.16	0.96	7.80	1.60	0.23	31.07***
Mid neck girth/weight	0.41	1.20	0.59	0.07	0.27	2.76	0.53	0.10	47.64***
Neck base girth/weight	0.45	1.39	0.68	0.09	0.27	2.93	0.57	0.10	87.34***
Arm scye girth/weight	0.45	1.11	0.63	0.06	0.30	3.08	0.62	0.11	7.22***
Upper arm girth/weight	0.38	1.06	0.57	0.06	0.24	2.18	0.45	0.06	158.81***
Center trunk girth/weight	1.76	4.89	2.69	0.29	1.02	11.10	2.23	0.40	91.31***

\*\*\* $p < .001$



females have longer lower limbs and wider body trunk compared to Korean.

<Table 7> illustrates the comparison of weight ratios between Korean and American females.

This result shows that all weight ratios of Korean females are significantly bigger than those of American at level 99.9%.

According to <Table 3>, American women are bigger and longer than Korean women in all girth and length measurements. However, weight ratios for same girth and length measurements used in the previous study are totally different from the result of direct measurements.

Conclusively, it can be summarized that Korean women are bigger and longer than American in comparison of each girth and length for weight.

The differences of drop values between Korean and American females are given in <Table 8>. Drop values are good criteria to discriminate the shapes of body trunk. By the result of t-tests between Korean and American females, the statistical significances of each country were recognized in all drop value. Namely, Korean females were much smaller than American in aspect of drop values. This result indicates that American women's body shapes are much

more curved in their body trunk than Korean. In addition, it is determined that hip girth and bust girth of American are bigger than those of Korean.

<Table 9> indicates the comparison of ratio for judging obesity in Korean & U.S. females. There are statistical significances between Korean and American females by the results of the differences in two countries. It is recognized that American women are much bigger than Korean in bust, waist, abdomen, and hip ratio for height. In aspects of BMI and Rohrer index, it can be concluded that American women have a tendency of being overweight or obese. Lastly, it is verified that American women have much wider body trunk shape compared to Korean women.

#### IV. Conclusions

This research aims to compare the U.S. females' body measurements with Korean females' in order to understand the body characteristics of each countries' females.

Thirty-five body measurement ratios and some indices of Korean and American females were used

**Table 8. Comparison of drop values in Korean & U.S. females**

Measurement ratio	Korea(n=1981)				U.S.(n=6306)				t-value
	Min	Max	Mean	S. D.	Min	Max	Mean	S. D.	
Bust girth-waist girth	25.10	13.31	4.03	36.28	16.26	4.87	25.10	13.31	-125.70***
Hip girth-waist girth	33.00	16.74	7.98	46.23	22.20	6.08	33.00	16.74	-118.68***
Hip girth-bust girth	19.50	3.41	5.92	34.09	5.94	6.56	19.50	3.41	-316.22***

\*\*\*p<.001

**Table 9. Comparison of ratios for judging obesity in Korean & U.S. females**

Measurement ratio	Korea(n=1981)				U.S.(n=6306)				t-value
	Min	Max	Mean	S.D.	Min	Max	Mean	S.D.	
Bust girth/height	0.45	0.77	0.57	0.06	0.43	1.01	0.64	0.08	-69.48***
Waist girth/height	0.35	0.76	0.49	0.07	0.36	0.95	0.54	0.09	-44.11***
Abdomen girth/height	0.40	0.80	0.56	0.06	0.43	1.07	0.63	0.09	-61.76***
Hip girth/height	0.49	0.78	0.60	0.04	0.50	1.13	0.67	0.08	-69.48***
BMI	0.15	0.39	0.23	0.03	0.05	0.70	0.27	0.06	-52.94***
Vervaeck	67.50	137.23	93.10	9.99	62.20	212.12	107.08	17.73	-62.61***
Rohrer	0.94	2.50	1.45	0.22	0.30	4.34	1.64	0.40	-37.72***

\*\*\*p<.001

in this study.

First, it is determined that U.S. females have measurements that exceed Korean women. However, Shoulder Slope of American female was smaller than that of Korean.

Second, height and weight are verified as a good ratio factors to analyze the body characteristics by the results of correlation analysis.

Third, according to analyses of body measurement ratios and indices, there are significant differences between two countries' female body measurement ratio analysis. The height ratio analysis of Korean and American women establishes that Korean women's body measurement ratios significantly differ from American women's height ratio in a few height ratios such as across shoulder/height, trunk length/height and cross-back width/height. Korean females' girths and lengths are bigger than American in the same weight group by the comparison of weight ratio analysis. In case of hip girth-waist girth, bust girth-waist girth and hip girth-bust girth, American females are bigger than Korean. It is determined that the body trunk shapes of American females are more curved than Koreans. Finally, American women are much bigger, heavier and wider than Korean by the comparison of height ratios and indices related to obesity.

The comparison of body measurement ratios and indices in each country's measurements could be meaningful and practical data for suggesting convertible sizing system between two countries.

It is necessary to research on the 3D information including body shape and posture in further study. It will be also feasible to investigate the changes of body shapes and measurements by age groups.

## References

- ASTM. (2006a). ASTM D 5585-95. Standard tables of body measurements for adult female misses figure type, size 2 to 20. *ASTM Book of Standards, 7.02*. West Conshohocken, PA: ASTM International.
- ASTM. (2006b). ASTM D 5586-01. Standard tables of body measurements for women aged 55 and older (all figure types). *ASTM Book of Standards, 7.02*. West Conshohocken, PA: ASTM International.
- Calculate your Body Mass Index. *NHLBI*. Retrieved November 21, 2006, from <http://www.nhlbisupport.com/bmi/bmicalc.htm>
- ISO. (2006a). ISO 3637: Size designation of clothes-Women's and girls' Outwear Garments. *ICS 61.020 Clothes*. Geneva, Switzerland: ISO.
- ISO. (2006b). ISO 7250 Basic Human Body Measurements for Technological Design. *ICS 61.020 Clothes*. Geneva, Switzerland: ISO.
- ISO. (2006c). ISO TR 10652 Standard Sizing Systems for Clothes. *ICS 61.020 Clothes*. Geneva, Switzerland: ISO.
- Istook, C. L. & Hwang, S. (2001). 3D body scanning systems with application to the apparel industry. *Journal of Fashion Marketing and Management*, 5(2), 120–132.
- KATS. (2004a). *The 5<sup>th</sup> Size Korea Survey Final Report*. Seoul: Korean Agency for Technology & Standards.
- KATS. (2004b). *KS K 0055 Sizing Systems for Elderly Women's Garments*. Seoul: Korean Standards Association, Seoul, Korea.
- KATS. (2004c). *KS K 0051 Sizing Systems for Female Adult's Garments*, Seoul: Korean Standards Association.
- Kim, S. & Choi, H. (2004). Upper body somatotype classification and discrimination of elderly women according to index. *Journal of the Korean Society of Clothing and Textiles*, 28(7), 983–994.
- Lee, J., Istook, C., Nam, Y., & Park, S. (2007). Comparison of body shape between USA and Korean women. *International Journal of Clothing and Technology*, 19(5), 374–391.
- [TC]<sup>2</sup>. (2004, February). *The national sizing survey, women: Body measurements and data analysis reports on the U.S. population*. Cary NC, USA: [TC]<sup>2</sup>.
- Yi, K. & Choi, H. (1994). A study of body form classification on elderly women using body indices. *Journal of the Korean Society of Clothing and Textiles*, 18(4), 560–565.
- Yi, K., Istook, C., Kang, Y., & Choi, H. (2007). Comparative study of Korean and American body sizes & shapes using 3D scanned anthropometric data. *Journal of the Korean Society of Clothing and Textiles*, 31(6), 892–901.



## 요 약

본 연구는 한국과 미국간 성인 여성의 3차원 인체치수에 대한 지수치의 비교를 통해 양국간 성인 여성의 신체의 비례를 분석하고, 이 연구결과를 대미 수출입 업무를 수행하는 의류업체의 생산자료 및 양국여성의 체형 차이를 이해할 수 있는 기초 자료로 활용할 수 있도록 하는데 연구의 목적이 있다. 본 연구의 분석대상은 Size Korea사업에 의해 수집된 18세 이상의 한국인 성인 여성 1,988명과 SizeUSA사업에 의해 확보된 18세 이상 미국 성인 여성 6,306명의 3차원 측정자료이다. 본 연구에서는 총 35개의 지수치(키, 몸무게, 기타 비만 파악 지수치)를 활용해 양국 성인 여성의 신체 특징을 파악하고자 하였다. 첫째, 양국 여성의 3차원 측정치간의 분석결과, 살았뒤길이는 양국간 유의차가 검증되지 않았고, 어깨경사각을 제외한 전체 항목에서 미국 여성의 측정치가 한국 여성의 측정치에 비해 유의적으로 큰 것을 확인하였다. 둘째, 지수치를 통한 체형 특징 분석의 타당성을 검증하고자 한국과 미국 여성 측정치 각각에 대한 상관분석을 행하였으며, 이 결과에 의거해 양국 모두 키와 몸무게 항목이 다른 주요 측정치와의 상관이 고르게 높은 것을 확인할 수 있었으므로 이 두 항목을 활용한 지수치의 비교가 유효함을 알 수 있었다. 셋째, 키 지수치, 몸무게 지수치, 드롭치 및 비만을 판단할 수 있는 지수치를 활용해 양국 여성간 차이를 분석한 결과, 직접측정치를 통한 분석과는 달리 키 지수치에서는 키에 대한 다른 높이항목의 지수치는 미국인 여성이 유의적으로 작지만, 키에 대한 타 너비항목의 지수치는 한국인 여성이 유의적으로 큰 것을 확인할 수 있었다. 또한 몸무게 지수치 비교 결과, 모든 항목에서 한국 여성의 지수치가 유의적으로 큰 것을 알 수 있었으며, 반면 드롭치와 비만판정이 가능한 지수치의 비교에서는 모두 미국 여성의 지수치가 한국 여성보다 유의적으로 큰 것으로 나타나, 미국 여성이 한국 여성에 비해 체간부의 굴곡이 큰 체형이며 비만도도 높은 것을 알 수 있었다.