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Analysis on the Measurement and Shape Classification of the Head and Face for Korean Male Children Aged 9~12 Years

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Ⅰ. Introduction

The studies about the Head and Face of Koreans were actively carried out in the field of the Western Medical Science, Oriental Medical Science and the Industrial Hygiene. as well as the field of Clothing and Textile. But in the most part of these studies, data were obtained through the taking a photography of the subjects, therefore anthropometric data of the head and face were not obtained sufficiently especially the data of Korean pupils. Also due to the scarce of these data in designing products for the pupils, the industrial and clothing designers were cautious in applying the existing size to design products. So this study was aimed to provide the fundamental anthropometric data of the head and face for Korean pupils and also to find out the shape classification of these data.

Ⅱ. Methods

Two hundred forty one male pupils, age ranged nine to twelve, participated for this study in Seoul and Gyeonggi Province. The period of the measuring was from June to July, 2004. The twenty nine regions including the height, width, length, circumstance, thickness part on the head and face of the subjects were directly measured by the expert experimenters of Ewha Womans University. The Martin measuring instrument (Anthropometer, Large Sliding Caliper, Spreading Caliper, Sliding Caliper, Ruler, Scales) and the ruler and scale were used for this measurement.

For analysing the anthropometric data, the Frequencies and the Description were performed, and to see the shape classifications of the Korean pupils, the Factor analysis, the Cluster analysis, the GLM analysis and Tukey HSD test were performed using the SPSS for Win ver.10.0 package.

Ⅲ. Results

1. The frequency data and the descriptive data were obtained and arranged for each twenty nine points.

2. Through factor analysis, six factors were extracted upon factor scores and those factors comprised 67.47% for the total variances.

The first factor was described the general height elements for the mouth and the environs of the mouth. The second factor was described the general height around the nose, forehead and eyes. The third factor was described the height of the ear environs. The forth factor contained the length around the sinciput to the occiput, the head thick and the head circumstance. The fifth factor was described the general width of the outer head and the corner of the eyes. The last factor contained the depth of the mouth and nose.

3. Four clusters as their head and face shape were categorized using six factor scores by cluster analysis. The four type were extracted from these results.

Type 1 was characterized by the shortest head and face width, surface length and girth, and the shorter length of head, but the highest position of chin, philtrum, upper lip. Their height and weight were smaller, and the variances of this factor was 33.9%.

Type 2 was characterized by the shortest head and face length and thickness, and the lowest position of the forehead, eye, nose, mouth, ear environs, but that had wider width of head and face Their height and weight were the smallest, and the variances of this factor was 27.7%.

Type 3 was characterized by the longest and the widest head and face type, and the highest position of the mouth. Their height and weight were the largest, and the variances of this factor was 18.8%.

Type 4 was characterized by longer length of head and face, and the widest head girth and largest head thickness, and the highest position of the forehead, eye, nose environs. And this type had the widest width of nose and mouth, and the longest head surface length. Their height and weight were larger, and the variances of this factor was 19.6%.